TECHNICAL PUBLICATION SJ 83-1

WATER QUALITY MONITORING ANNUAL REPORT

1979 - 1981

by

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St. Johns River Water Management District

Palatka, Florida

April 1982

Project Number 200312

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

The assistance provided by Rick Keller and Joel Steward in the laboratory and Environmental Science personnel is gratefully acknowledged. Special thanks goes to Don Mock for his enthusiastic work in data collection, and to the Melbourne Field Station personnel for their helpfulness and patience.

LIST OF FIGURES

LIST OF TABLES

ABSTRACT

Water quality data were collected quarterly for two years at 30 to 47 stations in the upper St. Johns River basin. Hydrologic conditions were atypical due to a minor hurricane followed by a progressively intense drought. The river became segmented at low flow by manmade barriers and water quality varied among sections. Concentrations of the major chemical constituents (chloride, sulfate, sodium, magnesium, etc.) increased downstream in the basin. Mineralization due to groundwater influences increased as stages decreased. Chloride and stage exhibited a linear relationship at U.S. Highway 192 (regression equation: $[Cl^- mg/l] = 1243 - 79.8$ [Stage (ft msl)]; $F_{1,12} = 73.4$; $p<.001$).

Dissolved oxygen levels for river ($\bar{x}$=7.4 mg/l) and lake ($\bar{x}$=7.6 mg/l) sites generally exceeded the state criterion of 5 mg/l. Canals exhibited lower D.O. levels ($\bar{x}$=5.5 mg/l), and near anoxic conditions were recorded in stratified deep canals during high stages. Dissolved oxygen levels at marsh ($\bar{x}$=4.5 mg/l) and hardwood swamp ($\bar{x}$=3.2 mg/l) sites were typically below 5 mg/l, but the minimum D.O. in an undisturbed marsh was 2 mg/l.

Total phosphorus concentrations averaged 0.07 mg/l in the basin, and inorganic nitrogen levels averaged 0.14 mg/l. Chlorophyll *a* concentrations were generally low except for marsh sites or Rockledge Creek. Peak phosphorus, turbidity and suspended solid concentrations were recorded in canals following storm events and in Rockledge Creek, which receives effluent from a sewage treatment plant.

INTRODUCTION

BACKGROUND

Flowing north nearly 300 miles to its ocean outlet at Jacksonville, the St. Johns River is Florida's longest river. Orignating in an extensive marsh southwest of Vero Beach the river sheetflows slowly northward, forming a small channel south of Lake Hell'n Blazes. The headwaters are only about 25 feet above mean sea level, resulting in a low hydraulic gradient.

The southern portion of the river, designated the upper St. Johns River basin (Fig 1), stretches from the headwaters to SR 46. The upper basin has a drainage area of about 2000 sq. mi. It is separated from the Indian River basin to the east by the Atlantic coastal ridge, and abuts the Kissimmee River basin to the west.

The climate of the area is characterized by mild dry winters and long, warm, humid summers (St. Johns River Water Management District, 1979). Rainfall averages 56 inches a year, most of which falls in June through August in short, intense showers. Temperatures average around 81°F in the summer and evaporation rates are high.

The upper basin is characterized by an extensive floodplain, a meandering river channel expanding into shallow lakes, and tributaries draining the western uplands. The primary natural features are lakes (Blue Cypress, Hell n' Blazes, Sawgrass, Washington, Winder, Poinsett, and Puzzle) and tributaries (Fort Drum, Blue Cypress, Jane Green, Wolf and Taylor Creeks). The major manmade features include highways, canals, levees, and water control structures.

That portion of the basin upstream of and including Lake Washington has been designated Class IA (Chapter 17-3, DER rules) since it serves as a potable water supply for the Melbourne area. Downstream of Lake Washington has been designated Class III.

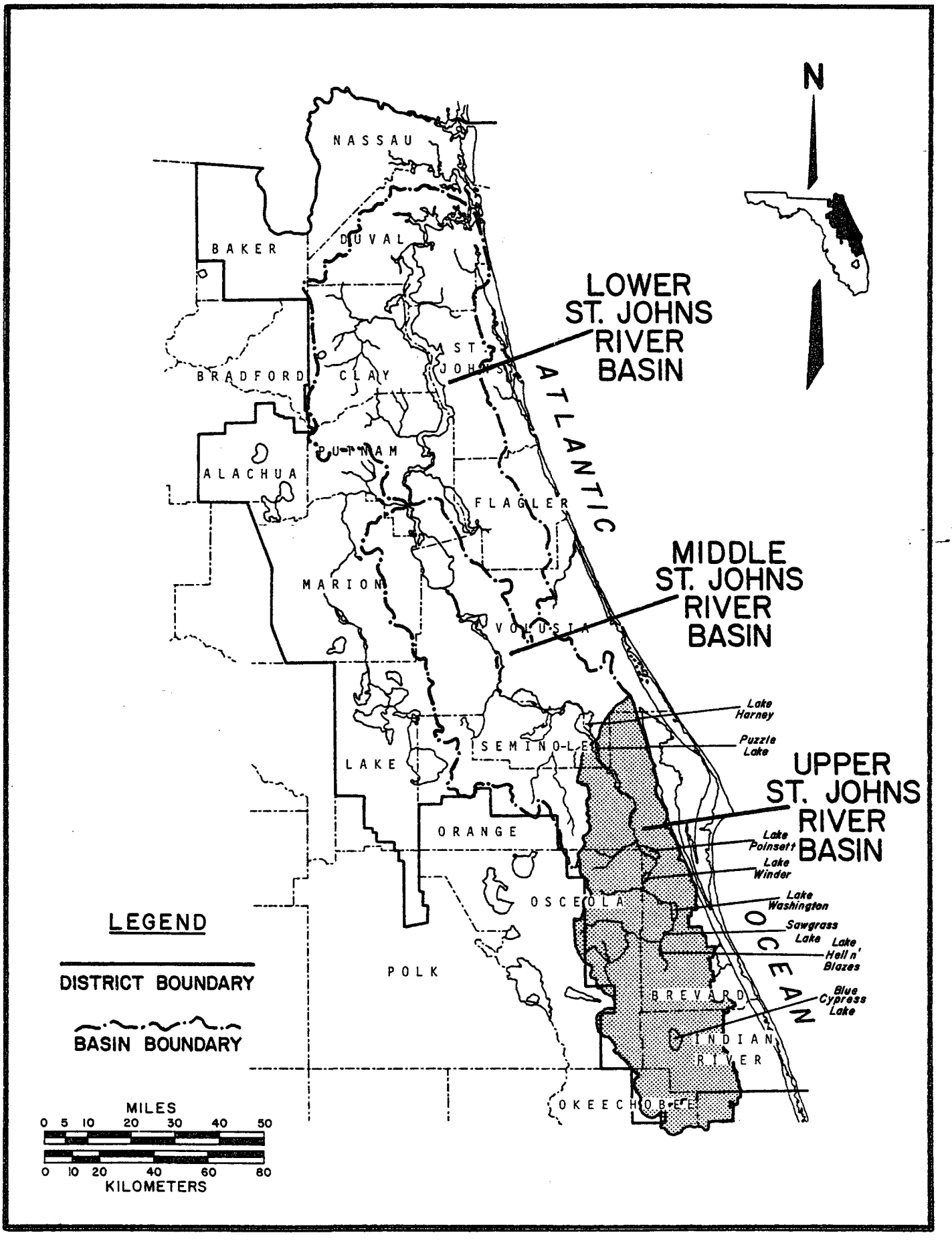


Figure I. Location of the Upper St. Johns River Basin Study Area within the St. Johns River Water Management District.

Physically, the basin has been drastically altered by man. Encroachment into the floodplain and drainage of the marsh began in the early 1900's. Sections of the floodplain were isolated by levee, then drained by canals and pumps, sometimes through the coastal ridge. Canals in the floodplain replaced marsh sheetflow with channelized flow.

Loss of floodplain reduced the basin's water storage capacity and altered the hydrologic regime (St. Johns River Water Management District, 1979 and Goolsby, 1970). Following storm events, water levels rose higher and faster than they would have under natural conditions, causing more frequent flooding. During the dry season, water levels dropped lower than normal because of reduced storage.

To compensate for the loss of natural storage under low rainfall conditions, artificial impoundments were created. A water control structure was installed in the Fellsmere Grade, a road bed traversing the valley north of Blue Cypress Lake. A weir was constructed at the outlet of Lake Washington with a crest elevation of 13.5 ft msl. These parochial solutions prevented the movement of water downstream once water levels fell below low stage threshholds, effectively segmenting the river during the dry season.

A more ambitious attempt to supplement water during the dry season and alleviate flooding during the wet season was undertaken by the Corps of Engineers and the Central and South Florida Flood Control District. Their plan provided for impoundment of upland tributaries, valley storage, and interbasin diversion (U. S. Army Corps of Engineers, 1975). Portions of the upland impoundment system and inter-basin diversion canal (C-54) were completed before the project was halted. One tributary, Taylor Creek, was impounded in 1969.

Much of the marsh originally removed from the floodplain was used as pasture for cattle. The land use is still primarily agricultural, although it has intensified to improved pasture, citrus groves, or row crops. Urban development

formerly occurred in portions of the floodplain drained to the Indian River and protected by levees. Recently, residential development has taken place in the Lake Washington and Lake Poinsett drainage basins.

PURPOSE AND SCOPE

The St. Johns River Water Management District has focused much of its attention on the Upper St. Johns River basin in an effort to solve its problems with water quantity and quality. Responsibility for the water resources of the area was inherited from South Florida Water Management District in 1977. As the local co-sponsor with the U.S. Army Corps of Engineers, of the Upper St. Johns River Project, the District has the responsibility for developing and implementing a program of surface water management for the basin. Activities within the basin are reviewed under the District's permitting and enforcement programs.

A water quality monitoring program was established to provide baseline data for regulatory decisions and to document the relationship between water quantity management and water quality. This report presents the results from the first two years of data collection. The overall condition of the basin is described and a comparison of water quality in marsh, tributary, river and lake sites is made. A literature review of data collected by other agencies and an explanation of the water quality parameters discussed may be found in Phase I, Volumes I and II of the Upper St. Johns River Basin Surface Water Management Plan (1979).

METHODS OF INVESTIGATION

STATION LOCATION AND SAMPLING FREQUENCY

Samples were collected quarterly, with November, February, May, and August as the target months (Fig. 2-4, Table 1). Sample collections were planned for 30 stations for the first year. Beginning in November 1980, 16 stations were added in the Lake Washington area and in agricultural canals south of Three Forks Run. The station at Blue Cypress Marsh (BCM) was dropped because its location was subject to mixing with water from the lake. The actual number of stations sampled each quarter varied with water levels. Marsh and tributary sites which contained no water or were inaccessible under low flows were not sampled. The center of Lake Poinsett or Blue Cypress Lake could not be sampled under extreme weather conditions.

During the first year in situ measurements were made at most stations three times daily (morning, noon, afternoon) to indicate daily fluctuations. This practice was discontinued in November 1980.

Water quality parameters measured varied throughout the study as equipment malfunctioned or new capabilities were added to the laboratory facility. In general, dissolved oxygen, temperature, specific conductance, pH, depth, and transparency were measured in situ. Samples were analyzed in the laboratory for total phosphorus, orthophosphate, ammonia nitrogen, nitrate-nitrite nitrogen, turbidity, alkalinity, hardness, true color, sulfate, chloride, BOD, total dissolved solids, suspended solids (total nonfiltrable residue), and chlorophyll. Samples collected in February 1980 were analyzed for total nigrogen, organic nitrogen, total kjeldahl nitrogen, ammonia, nitrate nitrogen and nitrite nitrogen by an outside laboratory. Metals samples were collected semi-annually and analyzed for potassium, magnesium, calcium, sodium, and iron by the District laboratory or South Florida Water Management District laboratory. Sediment

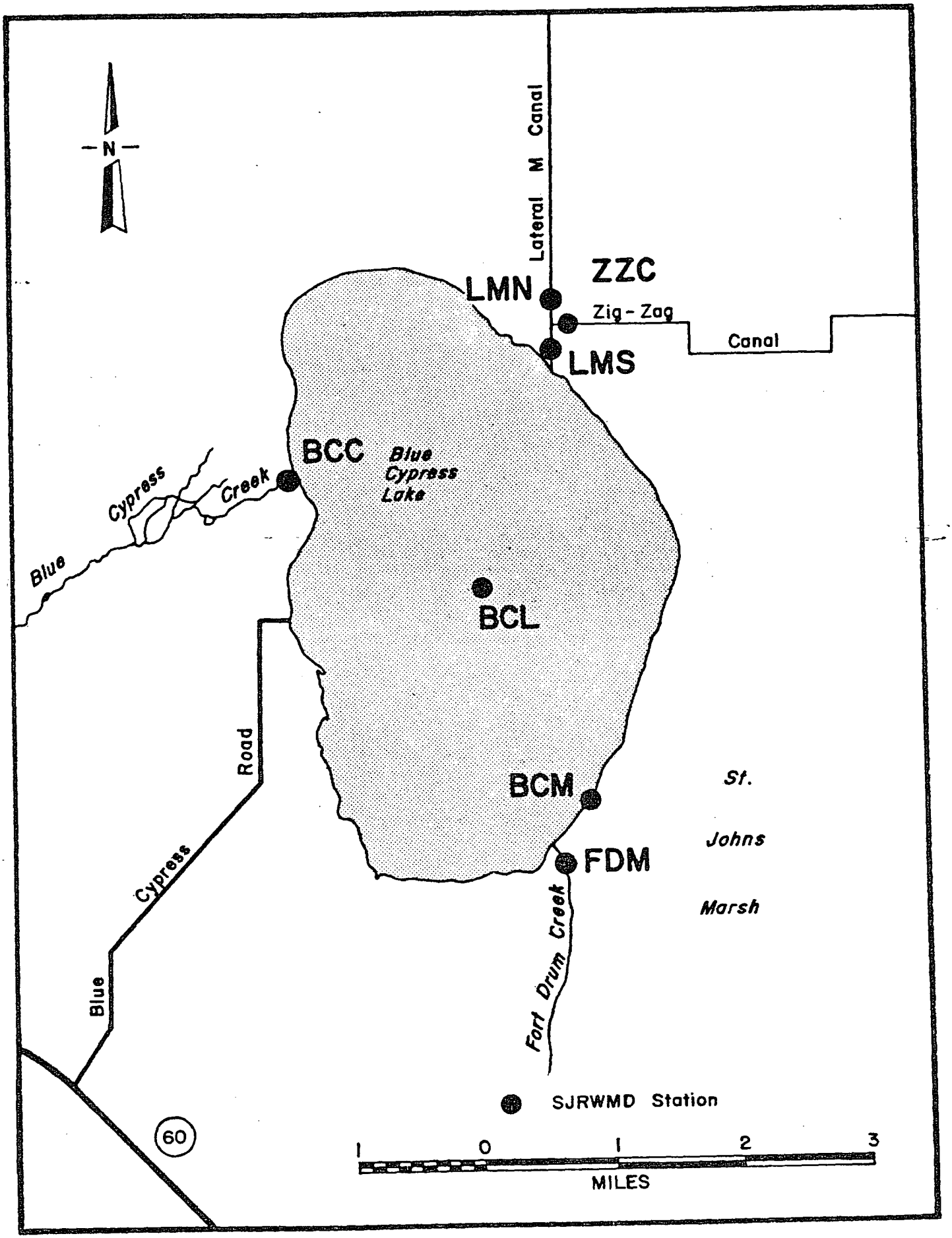


Figure 2. Station Location Map: Blue Cypress Lake Area

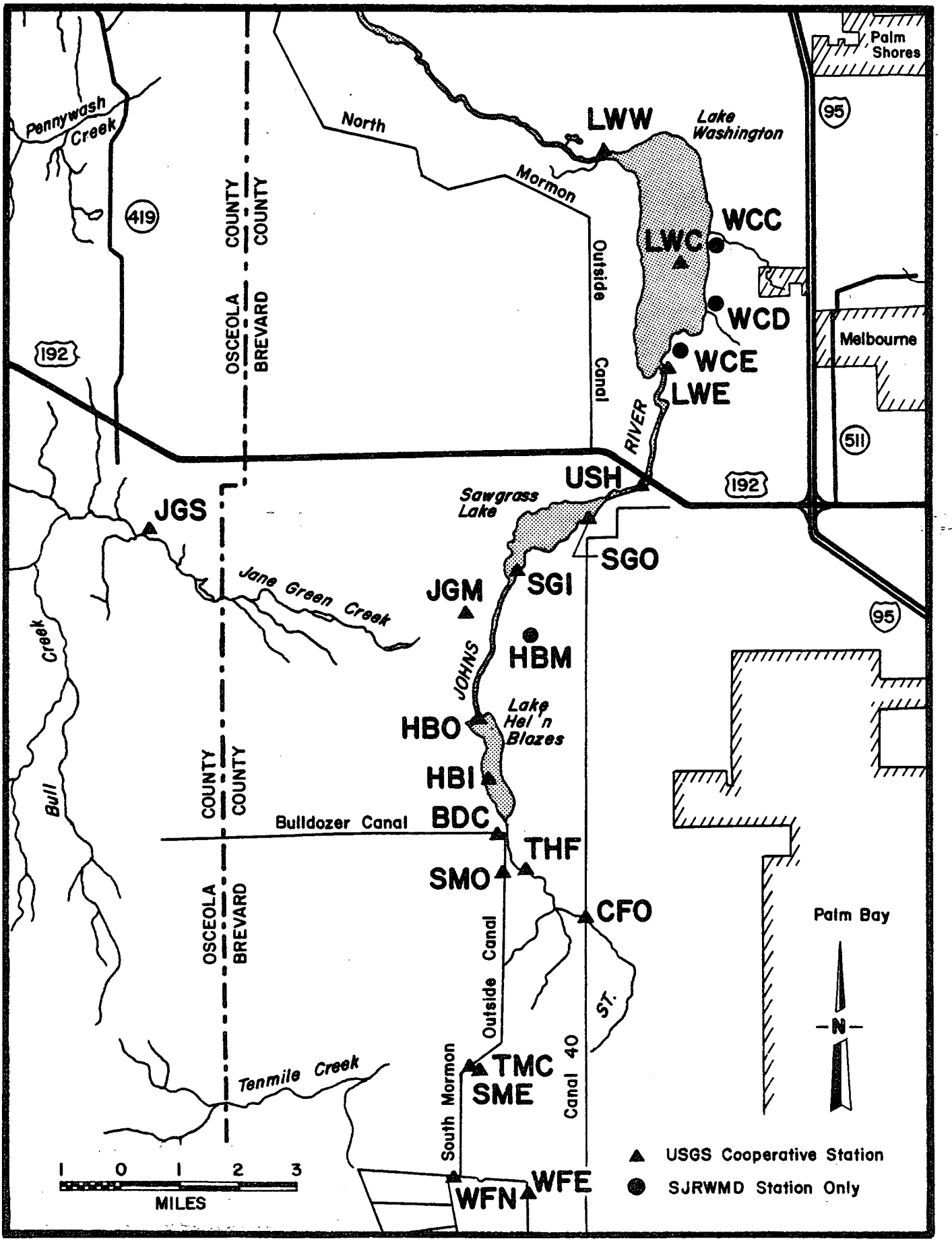


Figure 3. Station Location Map: Fellsmere Grade to Lake Washington Weir.

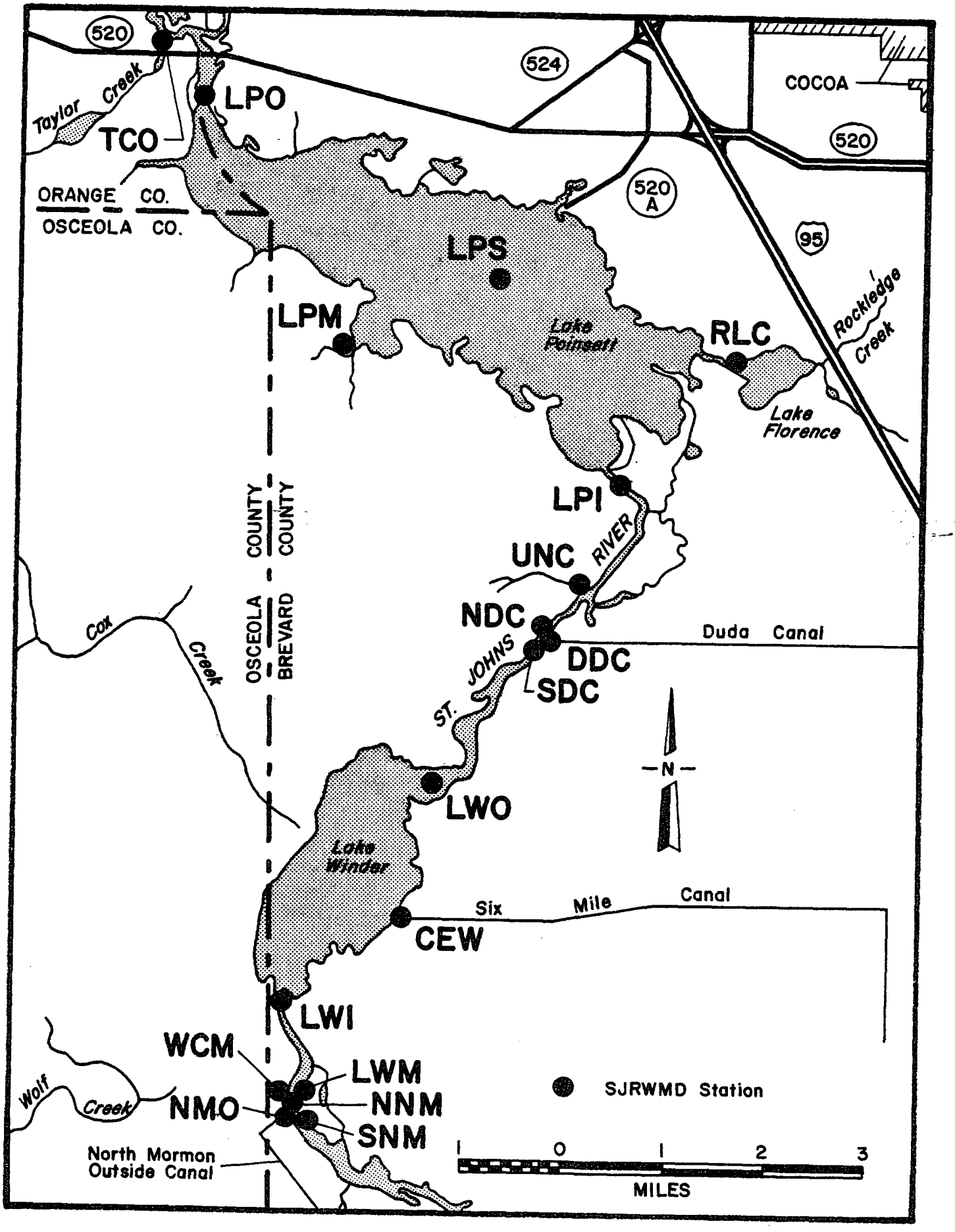


Figure 4. Station Location Map: Lake Washington Weir to SR520

Table 1

WATER QUALITY MONITORING STATION KEY

STATION NAME	LAT.-LONG.	DESCRIPTION
FDM	274147-804432	Fort Drum Marsh
BCM **	274224-804412	Blue Cypress Marsh
BCC	274421-804639	Blue Cypress Creek
LMS	274520-804438	Lateral M South
ZZC	274527-804427	Zig Zag Canal
LMN	274538-804438	Lateral M North
BCL	274336-804512	Blue Cypress Lake
WFE*	275425-804713	Willowbrook Farms East
WFN*	275442-804823	Willowbrook Farms North
SME*	275621-804809	South Mormon Extension
SMO	275917-804732	South Mormon Outside Canal
CFO*	275834-804614	Canal Forty
THF	275918-804710	Three Forks
BDC	275949-804735	Bulldozer Canal
HBI	280039-804744	Hell'n Blazes Inlet
HBO	280132-804756	Hell'n Blazes Outlet
HBM	280249-804708	Hell'n Blazes Marsh
JGM	280308-804811	Jane Green Marsh
SGI	280346-804723	Sawgrass Inlet
SGO	280437-804613	Sawgrass Outlet
USH*	280503-804511	U.S. Highway 192
LWE*	280648-804452	Lake Washington Entrance
LWC*	280819-804439	Lake Washington Center
LWW*	280956-804555	Lake Washington Weir
TMC*	275624-804811	Ten Mile Canal
JGS*	280427-805318	Jane Green Swamp
SNM	281255-805118	South of North Mormon Canal
NMO	281258-805139	North Mormon Outside Canal
NNM	281308-805130	North of North Mormon Canal
LWM	281330-805115	Lake Winder Marsh
LWI	281405-805132	Lake Winder Inlet
WCM*	281308-805132	Wolf Creek Marsh
CEW	281449-805026	Canal on East Bank of Winder
LWO	281605-804951	Lake Winder Outlet
SDC	281709-804914	South of Duda Canal
DDC	271715-804905	Duda Canal
NDC	281721-804909	North of Duda Canal
LPI	281835-804826	Lake Poinsett Inlet
LPS	282015-804938	Lake Poinsett
RLC	281938-804713	Rockledge Creek
LPM	281937-805105	Lake Poinsett Marsh
LPO	282131-805223	Lake Poinsett Outlet
TCO*	282211-805248	Taylor Creek Outlet
UNC*	281741-804848	Unnamed Canal North of Duda Canal
WCE*	280700-804438	S. Sarno Rd. Canal: E. Shore of L. Washington
WCD*	280744-804405	Tom's canal: E.Shore of L.Washington
WCC*	280834-804402	Sands Canal: E.Shore of L.Washington

*Stations added beginning November 1980

**Station dropped after August 1980

samples were collected semi-annually and analyzed for total phosphorus, total kjeldahl nitrogen, ammonia and total volatile solids by an outside consultant.

A cooperative sampling program with the United States Geological Survey (USGS) was undertaken in 1980-1981. Eighteen stations in the area between the Fellsmere Grade and the Lake Washington weir (Figure 3) were sampled monthly from November 1980 through August 1981. The District conducted its scheduled quarterly sampling in November, February, May and August, and USGS sampled the intermediate months. Samples were collected and analyzed by USGS with the exception of chlorophyll, which was analyzed by the District. Analyses performed by USGS in addition to those listed above were D.O. (percent saturation), carbon dioxide, bicarbonate and carbonate ion, total nitrogen (as N and NO3), total organic nitrogen, total kjeldahl nitrogen, sodium absorption ratio, percent sodium, dissolved fluoride, silica and strontium, suspended solids (180°c), non-carbonate hardness, and dissolved solids (sum of constituents).

A special project to measure diurnal dissolved oxygen fluctions was conducted in August 1981. A USGS Minimonitor was installed at various locations for 2 to 4 days. Dissolved oxygen, temperature, and specific conductance were recorded hourly. Measurements were made in Fort Drum Marsh, Zig Zag Canal, South Mormon Outside Canal, the exit of Lake Sawgrass, and the entrance to Lake Washington. Additional diurnal recordings of dissolved oxygen and temperature were made in Lake Poinsett and Blue Cypress Lake using a YSI Model 57 D.O. meter. Readings were taken every two hours for a 20-24 hour period.

SAMPLE COLLECTION AND ANALYSIS METHODS

A Hydrolab Surveyor model 6D12 was used to measure D.O., temperature, pH, specific conductance, ORP, or depth on site. On occasions when the Hydrolab

malfunctioned, or did not have sufficient depth to operate, a Y.S.I. Model 33 S-C-T meter, a YSI Model 57 D.O. Meter or a Cole-Parmer Digisense pH meter were substituted. Transparency was measured using a secchi disk with alternating black and white quadrants.

Instruments were calibrated before and after each daily sampling period. PH meters were calibrated using two pH buffers. D.O. meters were initially calibrated using the Modified Winkler titration (Standard Methods, 14th ed.). Beginning May 1980, air calibration with an air calibration chamber was used. Conductivity meters were calibrated with a 1413 umho/cm standard. Temperature readings were calibrated using a laboratory grade thermometer. Internal calibrations of the Hydrolab were checked. Calibration results were recorded on the Field Calibration Check Sheet.

Samples were primarily collected by hand at .5m depth with a polyethylene bottle. Deep samples were collected using a Van Dorn sampler. Samples were collected the first year in re-usable Nalgene bottles appropriately washed and rinsed. Beginning November 1980 disposable polyethylene bottles were used, again appropriately rinsed. Samples were stored in iced coolers and transported to the laboratory within 24 hours. Metal and nutrient bottles were preserved with acid in the field or shortly before shipping. Metal samples were acidified to a pH less than 2 with nitric acid. Nutrient samples were acidified to a pH less than 2 with sulfuric acid. Acid used to preserve samples was submitted to the laboratory for preparation of an acid blank.

A field replicate sample was collected at one station each sampling day. In situ measurements and laboratory analyses were recorded on the Quality Assurance Field Replicates form.

Samples were identified by a 14 character code which incorporated the three letter station name, a comment code, the date collected (YYMMDD) and time collected. The comment code (Table 2) signified depth of collection, type of sample, or cooperative samples. For example, the sample number BCLA8106241400 identifies a sample collected in Blue Cypress Lake at .5m or less depth on June 24, 1981 at 2:00 p.m.

For a more detailed description of sample collection techniques refer to the St. Johns River Water Management District Water Quality Monitoring Field Manual, July 1981. Laboratory analyses were performed according to the EPA Methods for Analyis of Water and Wastes, March 1979 or Standard Methods for the Examination of Water and Wastewater, 14th edition (Table 3). The laboratory quality control procedures are outlined in the St. Johns River Water Management District Laboratory Quality Assurance Program, October 1980. Results from this program are presented in Appendix A.

TABLE 2

COMMENT CODE

A	.5 m or less	R	Rainfall sample
B	1.0 m	S	Sediment Sample
C	1.5 m	T	
D	2.0 m	U	Unspecified depth code, usually feet
E	2.5 m	V	
F	3.0 m	W	
G	3.5 m	X	Grab sample, approximate station
H	4.0	Y	
I	4.5 m	Z	USGS Cooperative sample
J	5.0 m		
K	5.5 m		
L	6.0 m		
M	6.5 m		
N	7.0 m		
O	7.5 m		
P	8.0 m		
Q	8.5 m or greater		

TABLE 3

Laboratory Analysis Techniques

Orthophosphate Storet #70507	-	Single Reagent Method, EPA Methods ..., pg. 365.2-1.
Total Phosphorus Storet #00665	-	Single Reagent Method, EPA Methods ..., pg. 365.2-1.
Ammonia Nitrogen Storet #00610	-	Automated Phenate Method, EPA Methods ..., pg. 350.1-132.
NOx (Nitrate plus Nitrite) Storet #00630	-	Automated Cadmium Reduction Method, EPA Methods ..., pg. 353.2-6
Turbidity Storet #00076	-	Nephelometric Method Std. Methods, 14th Edition, pg. 1.
Total Alkalinity Storet #00410	-	Bromcresol green - methyl red titration, Std. Methods, 14th Edition, pg. 280.
Hardness Storet #00900	-	EDTA titration, Std. Methods, 14th Edition, pg. 202.
True Color Storet #00080	-	Visual Comparison, Std. Methods, 14th Edition, pg. 64.
Sulfate Storet #00945	-	Turbidimetric Method, Std. Methods, 14th Edition, pg. 496.
Chloride Storet #00941	-	Argentometric Method, Std. Methods, 14th Edition, pg. 303.
Chloride Storet #00940	-	Automated Ferricyanide Method, EPA Methods ..., p. 325.1-1.
BOD Storet #00310	-	Incubation, 5 day, Std. Methods, 14th Edition, pg. 543.
Total Dissolved Solids Storet #20300	-	Total Filterable Residue @ 180C, Std. Methods, 14th Edition, pg. 92.
Suspended Solids Storet #00530	-	Total Nonfilterable Residue @ 105C, Std. Methods, 14th Edition, pg. 94.
Chlorophyll Storet #32211, 32212, 32214, #32223, 32219	-	Spectrophotometric Method, Std. Methods, 14th Edition pg. 1030 with pheophyton correction, pg. 1032.
Potassium, dissolved Storet #935	-	Atomic Absorption, EPA Methods ..., p. 258.1-1
Magnesium, dissolved Storet #925	-	Atomic Absorption, EPA Methods ..., p. 242.1-1
Calcium, dissolved Storet #915	-	Atomic Absorption, EPA Methods ..., p. 215.1-1
Sodium, dissolved Storet #930	-	Atomic Absorption, EPA Methods ..., p. 273.1-1
Iron, dissolved Storet #1046	-	Atomic Absorption, EPA Methods ..., p. 236.1-1

DATA ANALYSIS

Temporal and spatial trends were examined by plotting concentration versus time and rivermile. Stations north of the Fellsmere Grade were assigned a rivermile from the headwaters (Table 4). The reference point, or 0.0 rivermile, is located 3.96 miles south of SR 60, 299.40 rivermiles from the outlet of the St. Johns.

Stations were grouped by basin (Upper St. Johns), local area, or water body type for simple statistical analysis. Concentrations of water quality parameters below the analytical detection limit were assumed to be equal to the detection limit for statistical purposes.

Data interpretation planned for the final report, but not included in this interim report, include calculation of pollution loads, more advanced statistical analysis, sediment data review, and a comparison of current results with historical data.

Additional investigative studies are planned to examine diurnal dissolved oxygen fluctuations, spatial variability of water quality in a marsh, possible relationships between vegetation and water quality, and the impacts of agricultural pumpage.

TABLE 4

Station Rivermiles

Station Name	Rivermile
WFE	22.63
WFN	22.73
SME	24.84
TMC	24.88
CFO	26.97
SMO	28.09
THF	28.60
BDC	29.12
HBI	30.20
HBO	31.40
JGM	32.90
HBM	32.95
SGI	34.17
SGO	36.25
USH	37.37
LWE	39.65
LWC	41.90
LWW	44.60
SNM	51.70
NMO	51.90
NNM	52.34
LWI	53.44
CEW	54.75
LWO	56.40
SDC	59.40
DDC	59.50
NDC	59.60
LPI	61.12
RLC	62.00
LPS	63.22
LPM	63.70
LPO	66.40

RESULTS AND DISCUSSION

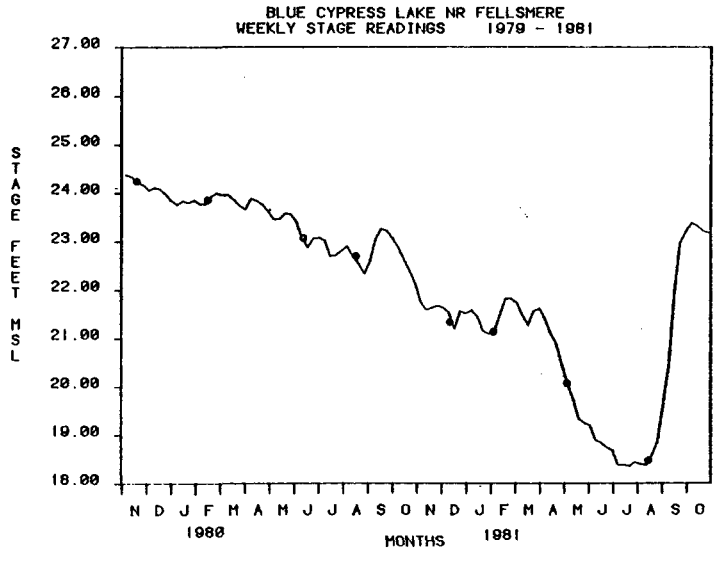
GENERAL WATER QUALITY

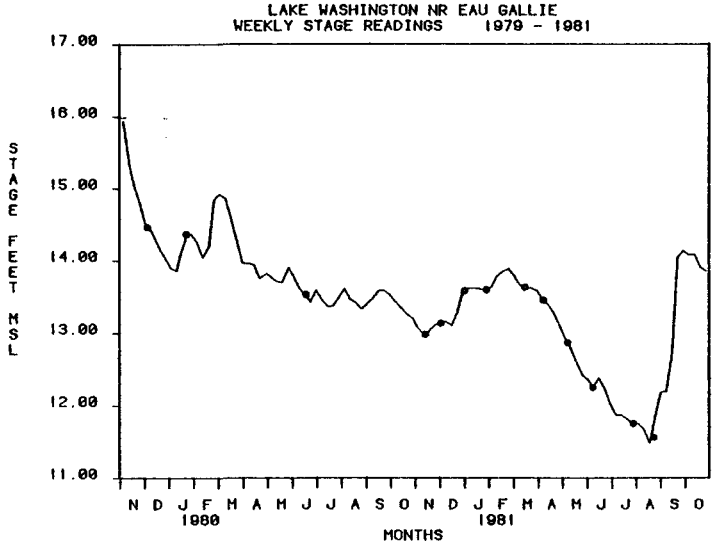
Water quality sampling began in November 1979 following Hurricane David and continued through the low flow and drought conditions of 1980 and 1981. Hurricane David in September 1979 dumped about 7.5 inches of rain over the Upper St. Johns River Basin. Between June 1980 and September 1981 a 30 inch rainfall deficit was recorded for Melbourne.

Stages receded from a high following the hurricane through the dry season and continued to decline through the drought. Weekly stage readings for Blue Cypress Lake, Lake Washington and SR 520 are given in Figure 5 with sampling events denoted. When stages in Lake Washington were at 14.5 ft msl it took 32 days for water to travel from the Fellsmere Grade to the Lake Washington weir (Rao, personnal communication, 1982). At a stage of 13.5 ft. msl, travel time from Bulldozer Canal to the Lake Washington weir was approximately 83 days. As stages dropped below 13.5 ft. msl and water ceased to flow over the weir, retention times upstream escalated and became impossible to calculate. As flow over the weir ceased, portions of the riverbed downstream were exposed.

During low flow conditions, the river was divided into three separate unconnected pools by the Fellsmere Grade and Lake Washington weir. Isolated by physical barriers, each area (Blue Cypress Lake, Fellsmere Grade to Lake Washington weir, and from the weir to SR 520) assumed distinct water quality characteristics (Table 5).

Because of the lack of rainfall, wet season data were atypical and no seasonality due to stage was observed. The data reflect low rainfall and declining stages and describe the basin's response to drought conditions. Table 6 presents a statistical summary of the data, which are presented in their entirety in Appendix B.





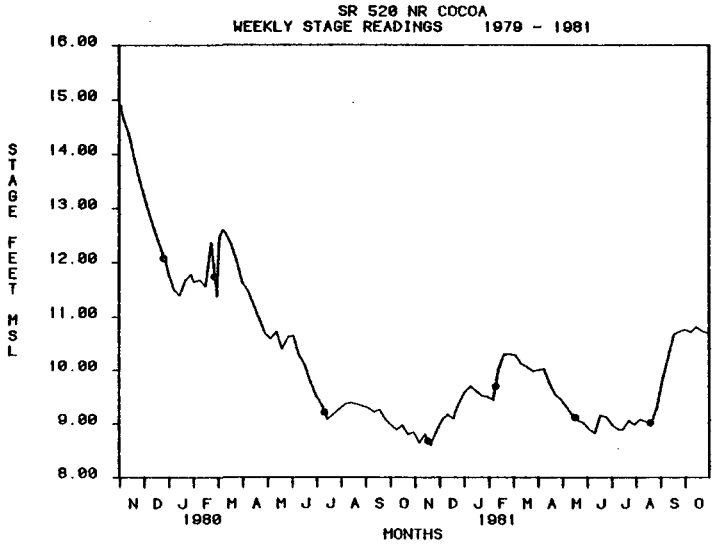


Figure 5.

Weekly Stage Readings

o Sample Event

Table 5

Mean Concentrations by General Area
Nov. 1979- Aug. 1981

	Blue Cypress Lake Area	Fellsmere Grade to L. Washington Weir	Lake Washington Weir to SR 520
Water Temp. (°C)	22.5	21.0	23.0
Turbidity (NTU)	3.0	1.5	6.3
Secchi Depth (in)	31	35	30
Conductivity (umhos/cm)	285	960	1495
Diss. Oxygen (mg/l)	4.9	7.3	7.0
pH	6.5	7.7	7.4
Color (cpu)	115	75	90
B.O.D. (mg/l)	2.7	1.7	2.8
Susp. Solids (mg/l)	7.6	5.5	22
Diss. Solids (mg/l)	220	640	950
Chloride (mg/l)	53	190	410
Sulfate (mg/)	9.7	70	93
Alkalinity (mg/l)	40	130	132
Hardness (mg/l)	64	280	300
Magnesium (mg/l	5.7	23	26
Calcium (mg/l)	17	69	57
Potassium (mg/l)	2.6	3.7	4.7
Sodium (mg/l)	27	86	184
Iron (ug/l)	300	130	360
Orthophosphate (mg/lP)	.07	.02	.06
Total Phosphorus (mg/l P)	.11	.04	.11
Ammonia-N (mg/l)	.09	.10	.229
Nitrate-Nitrite N (mg/l)	.04	.05	.03
TKN (mg/l)	1.9	1.3	5.1
Chlorophyll a (ug/l)	19.4	9.3	27.4

Table 6

Simple Statistics for all Stations Combined

Nov. 1979 - Aug. 1981

	Mean	Max.	Min.	Std. Dev.	No. of Observations
Water Temp. (°C)	22.0	35.0	7.0	6.4	735
Turbidity (NTU)	3.2	102	0.0	7.6	330
Secchi Depth (in)	33	91	3	17	322
Conductivity (umhos/cm)	1050	6500	20	880	382
Diss. Oxygen (mg/l)	6.3	18.8	0.0	2.9	625
pH	7.3	9.9	4.8	.8	514
Color (cpu)	86	350	0	47	312
B.O.D. (mg/l)	2.1	13.3	0.0	1.8	266
Susp. Solids (mg/l)	12.5	340	0.0	28	245
Diss. Solids (mg/l)	680	2880	1.0	420	308
Chloride (mg/l)	240	1150	13.0	200	360
Sulfate (mg/l)	68	290	0.0	51	359
Alkalinity (mg/l)	100	310	5.2	60	360
Hardness (mg/l)	260	750	32	135	360
Magnesium (mg/l)	22	60	1.7	13	244
Calcium (mg/l)	61	310	6.8	33	244
Potassium (mg/l	3.8	12.0	0.2	1.9	244
Sodium (mg/l)	107	500	9.0	88	244
Iron (ug/l)	46	1300	0.0	120	229
Orthophosphate (mg/lP)	0.04	0.70	0.0	0.07	356
Total Phosphorus (mg/lP)	0.07	1.10	0.0	.10	359
Ammonia-N (mg/l)	0.10	5.8	0.0	0.38	251
Nitrate-Nitrite N (mg/l)	0.04	0.86	0.0	0.09	301
TKN (mg/l)	2.0	35.5	0.0	4.0	182
Chlorophyll a (ug/l)	17.0	600	0.0	48	303

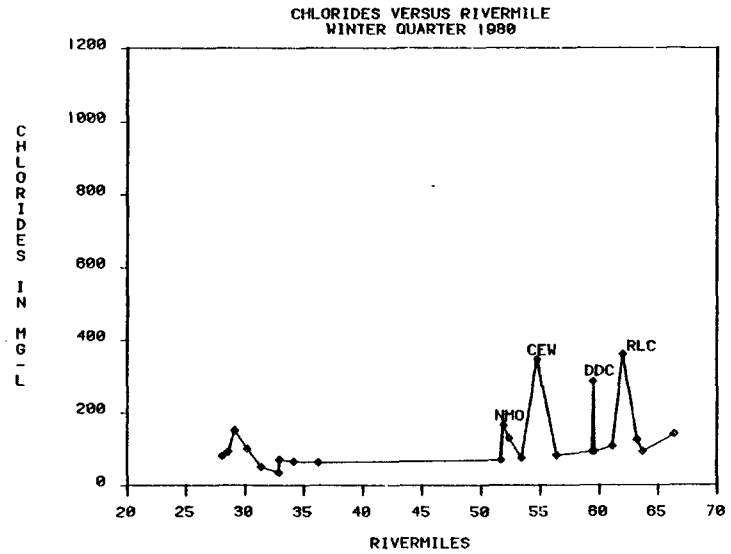
Major Chemical Constituents

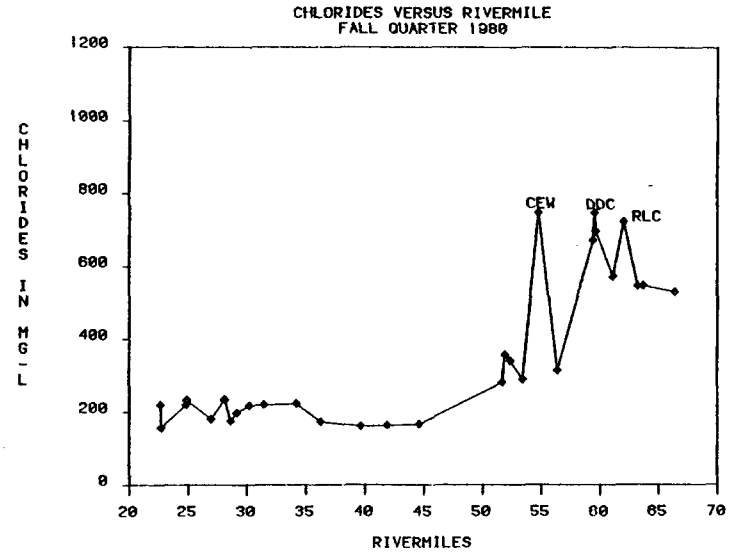
Concentrations of chloride, total dissolved solids, hardness, sulfate, magnesium, potassium, sodium and specific conductance increased in a northerly direction. For example, total dissolved solids averaged 210 mg/l around Blue Cypress Lake, increased to 650 mg/l south of the weir, and increased again to 950 mg/l north of the weir. Goolsby and McPherson (1970), Cox et al (1976), and others also have documented an increase in mineralization of the Upper St. Johns River as one moves downstream.

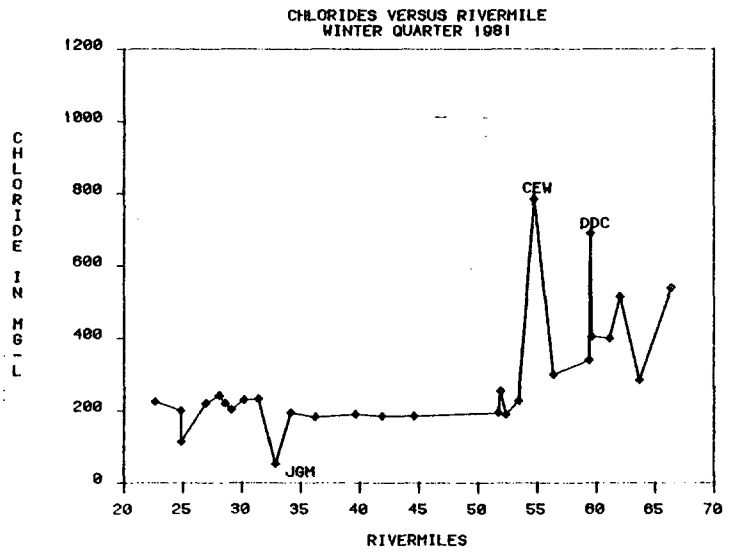
As the drought progressed, concentrations of the major chemical constuents increased over time. The magnitude of increase in mineralization was associated primarily with decreasing stage. For example, in February 1980 downstream peaks in chloride concentration found in the canals were absent in the river due to dilution (Figure 6). In subsequent quarters much less water flowed over the Lake Washington weir (rivermile 45) and groundwater and canal influences increased. Consequently, chloride levels rose sharply and remained elevated, as did dissolved solids, hardness, sulfate, and conductivity levels.

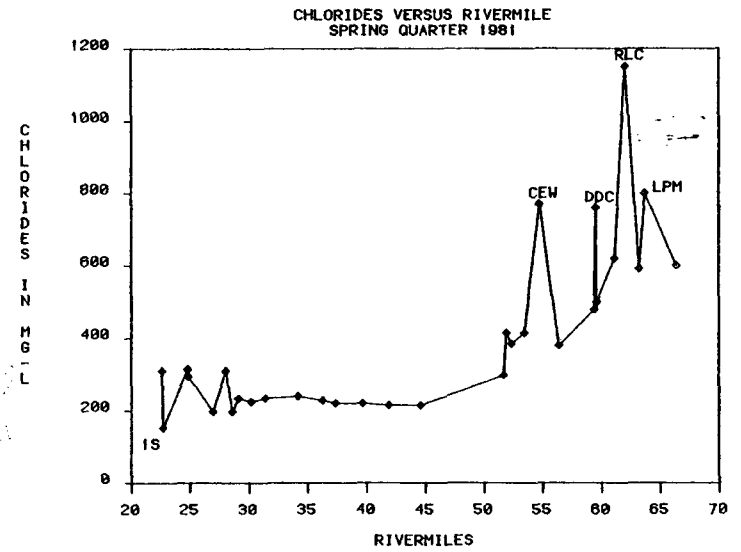
The relationship between stage and chloride levels at US 192 (Figure 7) was linear ($[Cl^-mg/l]=1243-79.8[Stage(Ft\ msl)]; F_{1,12}=73.4; p<.001; r^2=.86$) at low flows (Range = 11.80-14.62 Ft msl) and may be used to predict values exceeding Class IA standards. However, at a wider range of flow the relationship typically becomes asymptotic (Betz, 1979).

The impact of the drought on mineralization was more intense at the downstream stations where spatial and temporal trends were combined. For example, chloride levels increased twofold in Blue Cypress Lake, fourfold in Lake Sawgrass, and tenfold in Lake Poinsett (Figure 8). This increase was due to a variety of factors: the loss of dilution by rainfall and river flow, the increased proportional contribution of agricultural canals with highly mineralized water, and the decrease in stage which allowed greater upward seepage of ground-









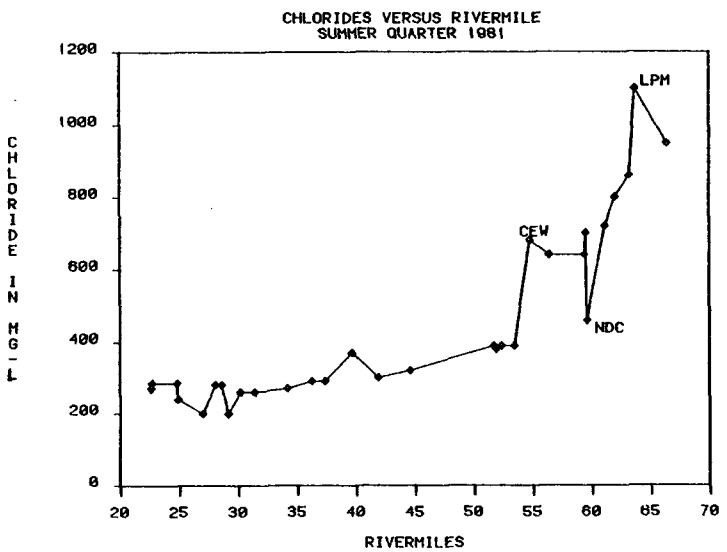


Figure 6.

Chloride Concentration

Versus Rivermile

◆ Sample Station

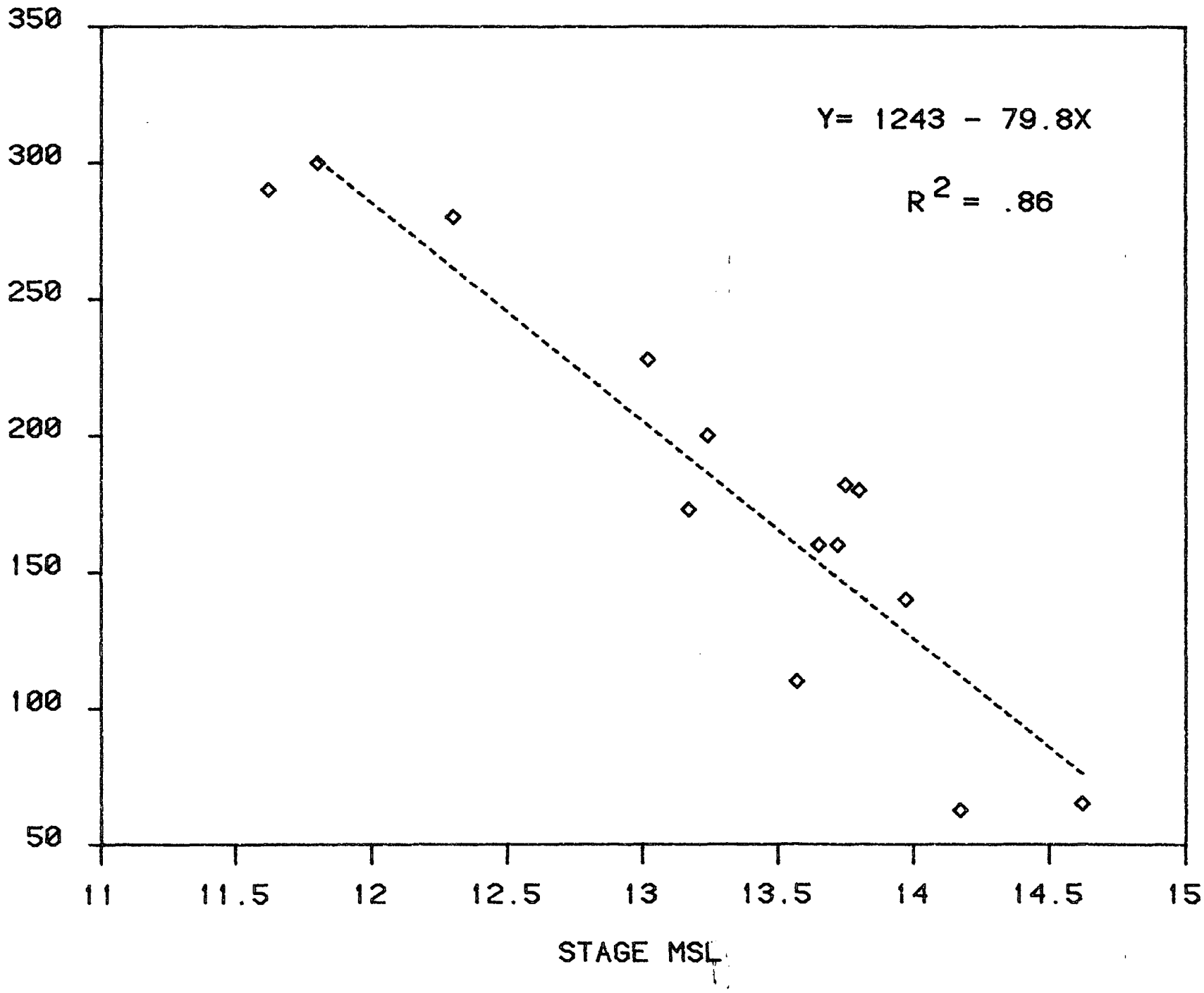

CHLORIDE CONCENTRATION VERSUS RIVERSTAGE AT US192
Y= 1243 - 79.8X
R 2 = .86
CHLORIDE MG/L
350
300
250
200
150
100
50
11
11.5
12
12.5
13
13.5
14
14.5
15
STAGE MSL

Figure 7.

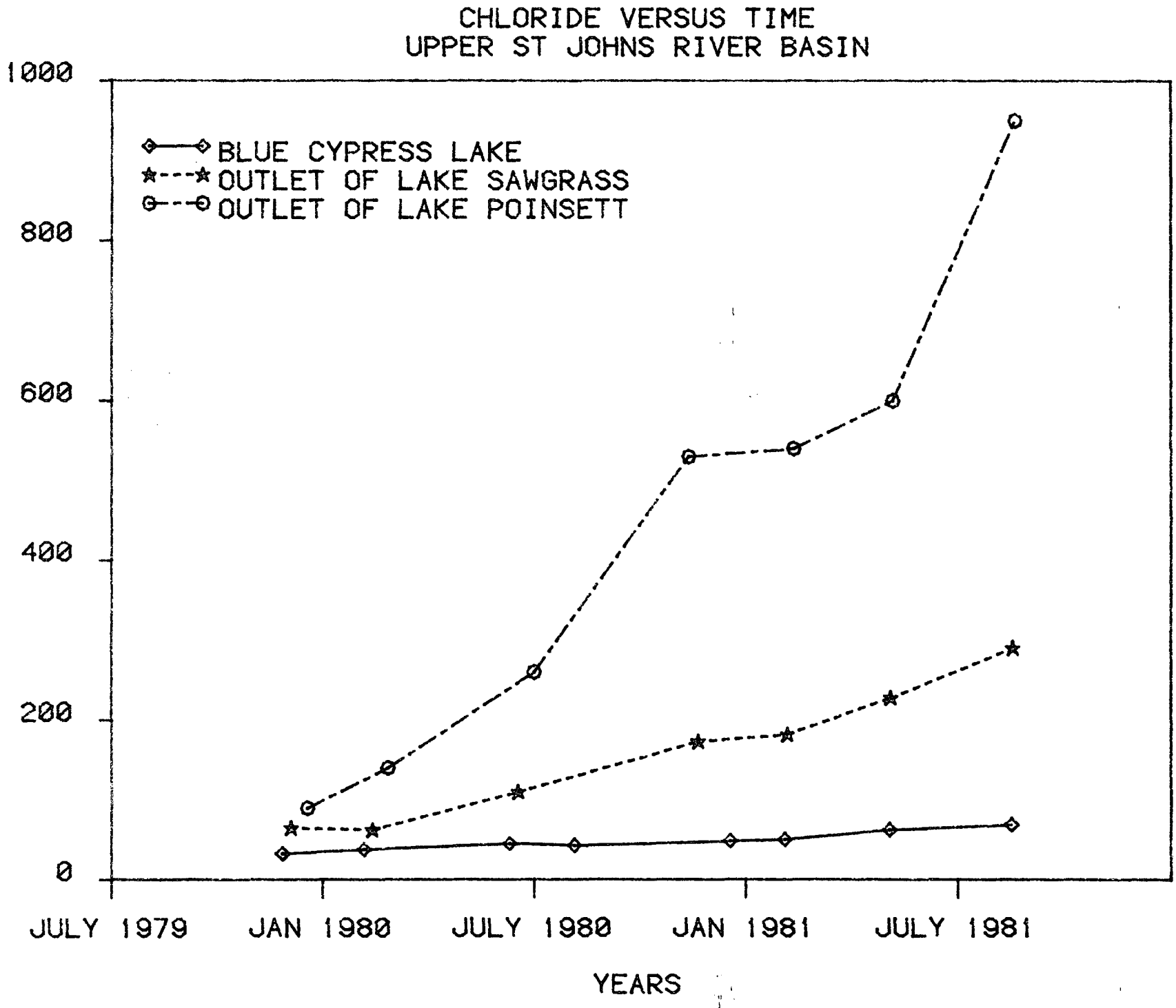

CHLORIDE VERSUS TIME
UPPER ST JOHNS RIVER BASIN
BLUE CYPRESS LAKE
OUTLET OF LAKE SAWGRASS
OUTLET OF LAKE POINSETT
1000
800
600
400
200
0
CHLORIDE MG/L
JULY 1979
JAN 1980
JULY 1980
JAN 1981
JULY 1981
YEARS

Figure 8.

water. The isolated pools and increased retention times which occurred under low flows cause increased evaporation and concentration of conservative parameters.

Dissolved Oxygen

Dissolved oxygen (D.O.) levels generally met the state minimum of 5 mg/l except in deep canals during high stages or in marsh or tributary sites. Profiles of Lateral M, Zig Zag, South Mormon Outside Canal and Duda Canal (Table 7) showed stratification and depressed D.O. levels under high water conditions. D.O. levels were lowest in Zig Zag Canal ranging from 1.3 mg/l at the surface to .5 mg/l at the bottom. D.O. levels in Lateral M Canal were higher at the surface (4.3 mg/l) but still dropped to .5 mg/l at the bottom. Blue Cypress Lake under the same conditions appeared well-mixed with D.O. levels ranging from 5.0 - 5.4 mg/l. D.O. levels in the deeper canals north of the Fellsmere Grade were higher and less stratified than in Zig Zag and Lateral M canals. Levels in South Mormon Outside Canal ranged from 2.8 mg/l at the bottom to 6.10 mg/l at the surface and levels in Duda Canal ranged from 2.6 - 4.0 mg/l. The shallower canals such as Bulldozer and Duda's Lake Winder canal had levels of 5 mg/l or greater.

Low D.O. levels in the canals and marsh in late 1979 did not cause major drops in D.O. levels in the river (Figure 9). Since sample collection began in late November 1979 approximately three months after the hurricane, no samples were collected before or immediately after the storm event to document short-term response or first flush effects. As high water levels receded in the deep canals, D.O. Levels generally recovered although some stratification and relatively low levels remained.

TABLE 7

Dissolved Oxygen Profiles

	Nov'79*	Feb'80*	Jun'80	Avg'80	Dec'80	May'81	Depth
Zig Zag	.9	6.0	6.8	3.8	4.9		.5
Canal	.7	5.3	5.7	3.35	4.6		1.0
	.5	5.0	1.9	2.55	1.5		2.0
	.5	4.8	.4	1.4			3.0
Lateral M	2.8	6.0	7.1	2.5	7.8	7.5	.5
Canal	2.0	5.8	6.2	2.1	5.5	6.8	1.0
	1.2	5.7	2.5	0.0	5.4	4.7	2.0
	.8	6.0	0.0	0.0	4.9	5.0	3.0
	.5	5.2	0.0	0.0	3.7		4.0
South Mormon	5.4						.5
Outside	3.4						1.0
Canal	2.8						1.5
Blue Cypress	5.4	10.40	7.2	4.9	9.5	7.9	.5
Lake	5.2	10.0	7.0	4.5	9.2	8.0	1.0
	5.1	9.8	6.8	4.3	9.0	7.0	2.0
	5.0	9.6	6.5	4.0			3.0
River South	7.3						.5
of Duda	7.3						1.0
Canal	7.2						2.0
	7.15						3.0
Duda Canal	4.0						.5
	3.8						1.0
	3.6						2.0

* Noon Sample Run

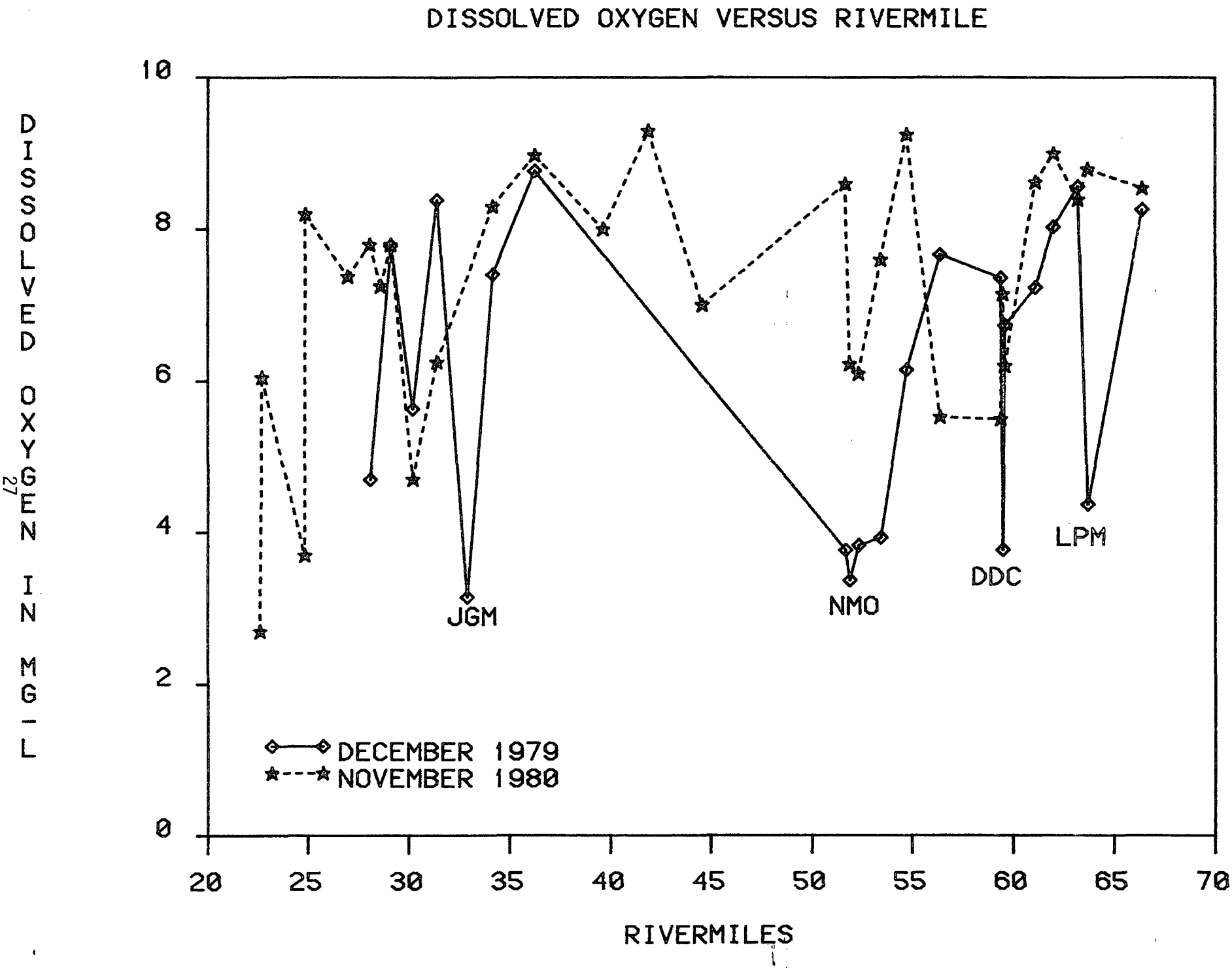

DISSOLVED OXYGEN VERSUS RIVERMILE
DISSOLVED OXYGEN IN MG/L
10
8
6
4
2
0
20
25
30
35
40
45
50
55
60
65
70
RIVERMILES
JGM
NMO
DDC
LPM
DECEMBER 1979
NOVEMBER 1980

Figure 9.

Reaeration in lakes was documented throughout the study. A comparison of dissolved oxygen levels at lake inlets and outlets shows an average increase of .7 mg/l, and an average percent increase of 16%.

Biochemical oxygen demand (B.O.D.) levels were generally low and varied little throughout the mainstem of the river. B.O.D. averaged 2 mg/l during the study and ranged from 0-13.3 mg/l.

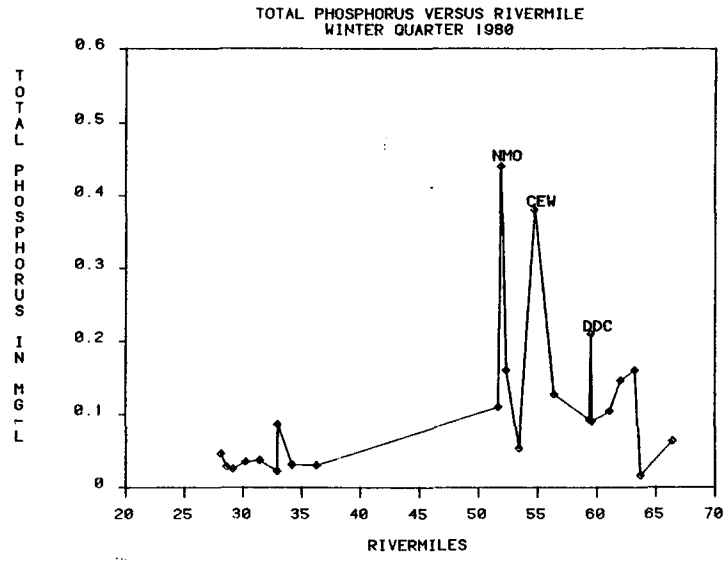
Nutrients

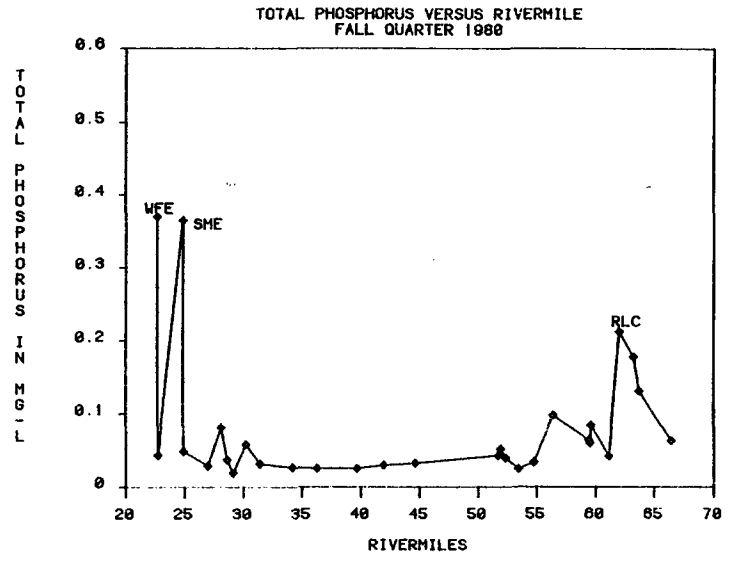
Total phosphorus levels in the Upper Basin averaged .07 mg/l and ranged from 0.0 mg/l to 1.1 mg/l. The lowest average phosphorus values (.04 mg/l) occurred between Lakes Hell'n Blazes and Washington (Table 5). Total phosphorus levels averaged .09 mg/l and .11 mg/l in the Blue Cypress Lake area and north of the weir, respectively.

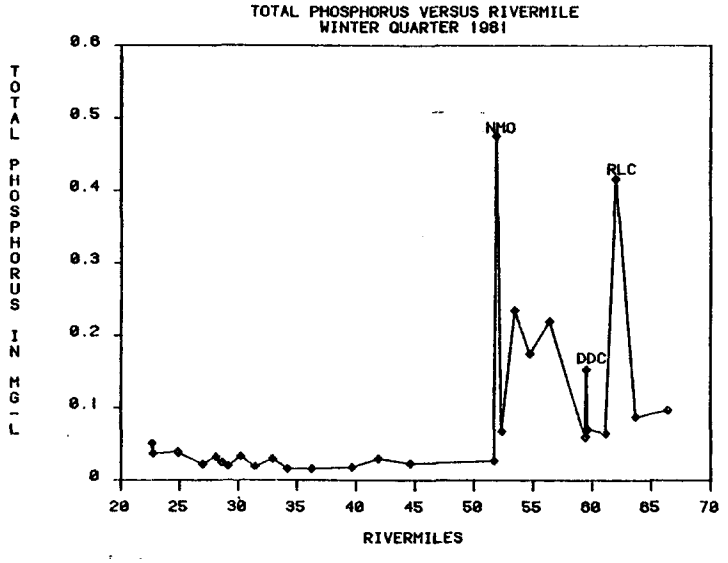
Phosphorus concentrations fluctuated considerably north of the weir (Figure 10). The winter quarters showed the most variation in phosphorus concentration, since samples were collected after storm events in the Lake Winder area. Total phosphorus concentrations in the canals ranged from .153 mg/l to .475 mg/l after the storms. Concentrations in North Mormon Outside Canal after the storms averaged .45 mg/l, about 9 times higher than background levels. Flow measurements were made in the canals, and pollutant loads will be calculated in the final report.

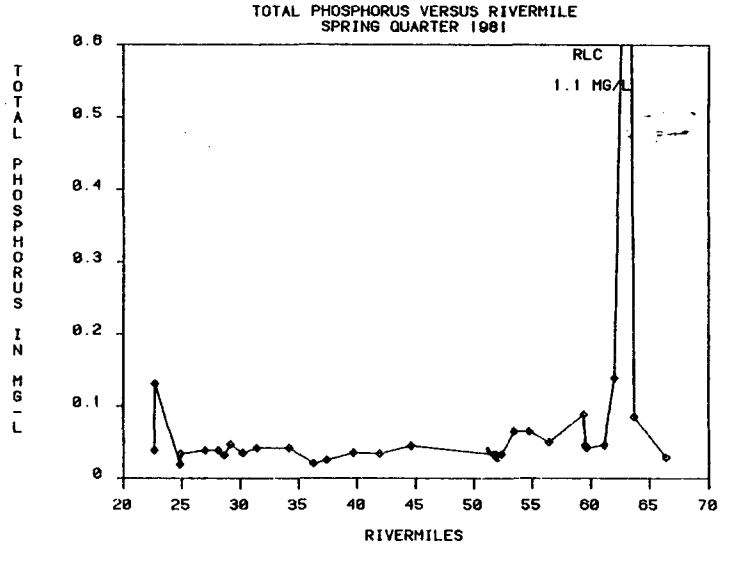
Rockledge Creek receives effluent from Silver Pines sewage treatment plant in addition to urban and agricultural drainage, and therefore had consistently high total phosphorus levels. Concentrations ranged from .097 mg/l to 1.1 mg/l and averaged .406 mg/l.

Orthophosphate concentrations averaged .04 mg/l overall and ranged from 0.0 mg/l to .58 mg/l. Orthophosphate followed the same trends demonstrated by total phosphorus, particularly the sag in concentration in the Lake Hell'n Blazes to









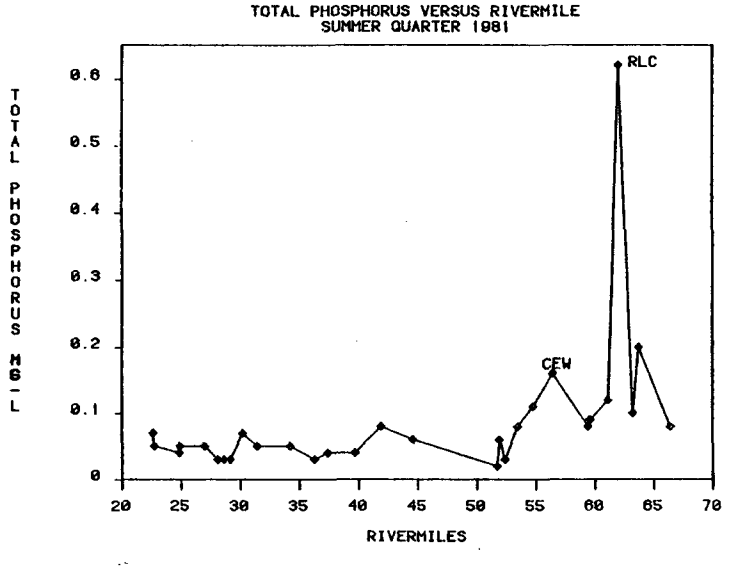


Figure 10.

Total Phosphorus

Concentration

Versus Rivermile

◆ Sample Station

Lake Washington area and the elevated concentration in canals following storm events. Orthophosphate concentrations in the canals in the Lake Winder area averaged .217 mg/l and ranged from .100 mg/l to .368 mg/l following the storms. The orthophosphate levels in the canals were 3 to 17 times higher than background levels. Orthophosphate made up 60-77 percent of the total phosphorus during storm events. The percent of total phosphorus as orthophosphate varied considerably during the study period, from 0 to 100 percent.

Analyses for total nitrogen, total organic nitrogen and total kjeldahl nitrogen were performed in February 1980 for 31 stations. Total nitrogen averaged 2.0 mg/l, 81% of which was in the organic form. Subsequent analysis by USGS for six months for the area between the Fellsmere Grade and the Lake Washington weir had an average total nitrogen concentration of 1.18 mg/l. Total organic nitrogen averaged 1.12 mg/l or 95% of the total.

Inorganic nitrogen concentrations averaged .14 mg/l throughout the study period. Ammonia was the predominant component averaging .096 mg/l, or 61% of the total. A maximum ammonia concentration of 8.0 mg/l was sampled in the Lake Winder marsh site by collecting seepage water from a hole.

Determination of limiting nutrients was beyond the scope of this study. A preliminary analysis using the ratios proposed by Stumm and Morgan (1970) was performed, however the applicability of this theory to Upper Basin has not been documented. Stumm and Morgan have proposed a ratio of N:P in algal protoplasm of 16.1 by atomic ratio or 7:1 by weight ratio. Ratios of total inorganic nitrogen to orthophosphate concentration in the Upper basin (248 cases) show a system which is nitrogen limited ($[N]/[P] < 7$) in 70% of the cases. Phosphorus limitation ($[N]/[P] > 7$) was characteristic of a few areas, including the Lake Washington weir, canals along the east bank of Lake Washington and Jane Green Marsh. Canal 40 exhibited the most frequent and severe phosphorus limitation,

with a maximum N:P ratio of 218:1, a condition which was often transferred downstream through Three Forks Run to the inlet of Lake Hell n' Blazes.

Chlorophyll

Chlorophyll a values averaged 17.0 ug/l overall, and were generally below 20 ug/l except at marsh sites and in Rockledge Creek. Chlorophyll a levels for marsh sites averaged 43 ug/l and peaked at 250 ug/l when epiphytes were abundant.

Rockledge Creek suffered from extensive algae blooms, with the most severe occurring under drought conditions in May - August 1981. At this time Rockledge Creek and the southeast shore of Lake Poinsett exhibited a green cast and noxious odor. Anabaena sp., a blue-green algae capable of fixing atmospheric nitrogen, was the dominant bloom species. Chlorophyll a levels of 603 ug/l and pheophytin a levels of 0 ug/l were recorded on May 12, causing a low transparency of 5 inches and a high pH of 9.9. Patches of foam were noted and D.O. was measured at 18.8 mg/l. Nitrate-nitrite nitrogen levels fell below .01 mg/l and orthophosphate levels measured .301 mg/L. Samples collected in August still had a high chlorophyll a level (258 ug/l), pH, D.O. and orthophosphate concentration. Nitrate and pheophytin a concentrations were still negligible. Because of low water conditions, the bloom remained in the creek and along the shore and was not flushed into the lake.

Color, Turbidity and Transparency

Color averaged 85 cpu throughout the basin, ranging from 0-350 cpu. The wide range in concentration is due to the variation in sample location and the increased groundwater influence as the drought progressed. Color levels decreased during the study period (Figure 11) reflecting the decreased runoff. The range in observed color was 2 to 3 times higher for the area north of the Fellsmere Grade than for the Blue Cypress Lake area where groundwater contributions were reduced.

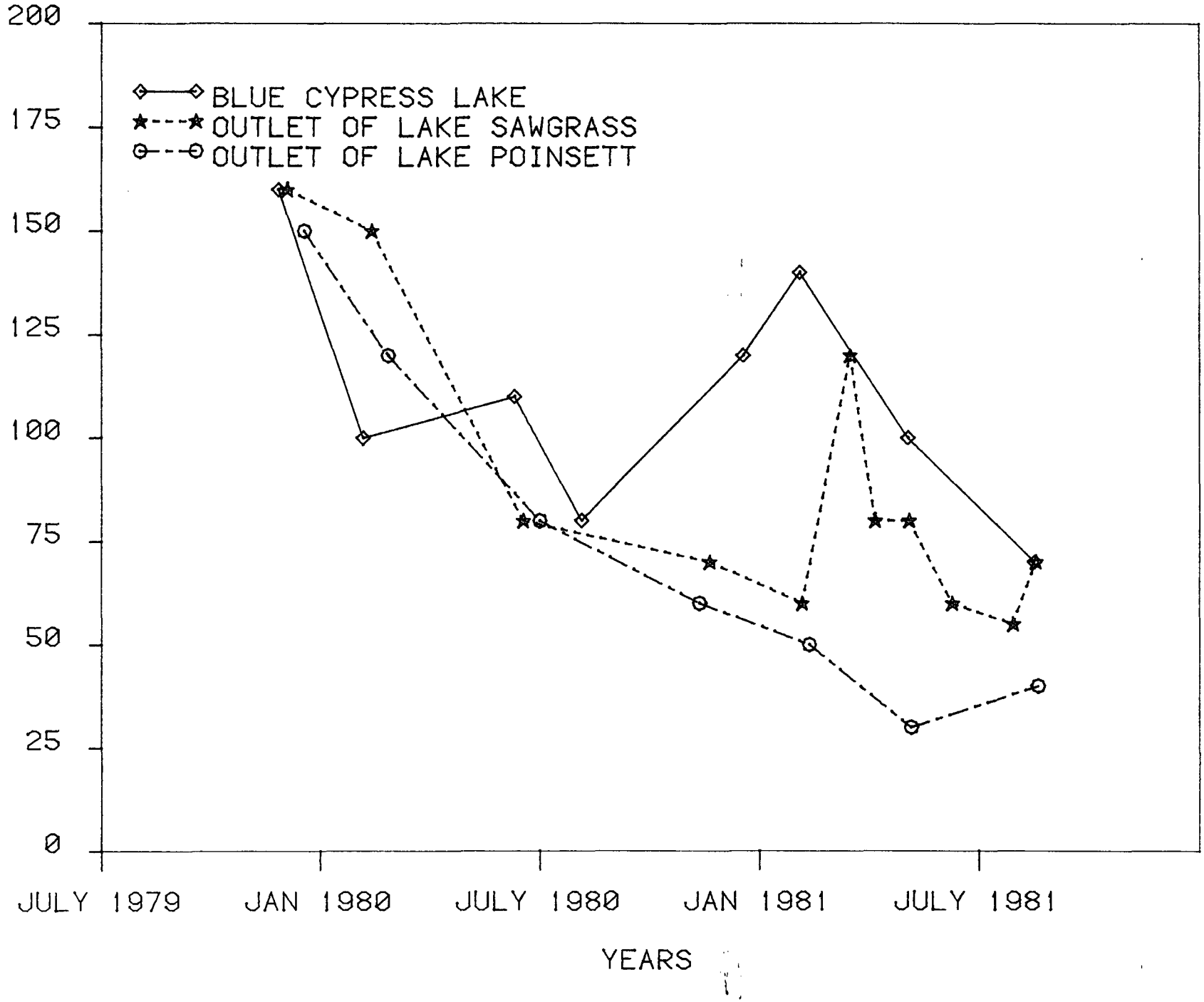

COLOR VERSUS TIME
UPPER ST JOHNS RIVER BASIN
BLUE CYPRESS LAKE
OUTLET OF LAKE SAWGRASS
OUTLET OF LAKE POINSETT
200
175
150
125
100
75
50
25
0
COLOR IN CPU
JULY 1979
JAN 1980
JULY 1980
JAN 1981
JULY 1981
YEARS

Figure 11.

Turbidity averaged 3.2 NTU for all sites, ranging from 0-102 NTU. Turbidity levels were usually below 10 NTU except for canals in the Lake Winder area following storm events (19-34 NTU) and Rockledge Creek during the May 1981 algae bloom (68-102 NTU).

The influence of color on transparency cannot be evaluated by comparison with Secchi depth. Under drought conditions, many Secchi disk readings were at the bottom (recorded as greater than bottom depth), leading to an under-estimation of true Secchi depth.

Suspended Solids

Suspended solids (nonfiltrable residue) levels averaged 12.5 mg/l in the basin, ranging from 0-320 mg/l. Peak levels (233-320 mg/l) were recorded in Rockledge Creek during the algae bloom and in North Mormon outside canal following a storm event (102 mg/l). As the drought progressed and water levels decreased, collecting an undisturbed sample became very difficult because of turbulence caused by the sampling boat. This problem was especially aggravated in the shallow marshes, probably leading to an over-estimation of suspended solid concentrations for marsh sites.

DIURNAL STUDIES

Diurnal measurements of dissolved oxygen, temperature and conductivity were made in August 1981 at Fort Drum Marsh, South Mormon Outside Canal, Zig Zag Canal, the outlet of Lake Sawgrass, and the entrance to Lake Washington. Sampling periods ranged from 45 to 92 hours.

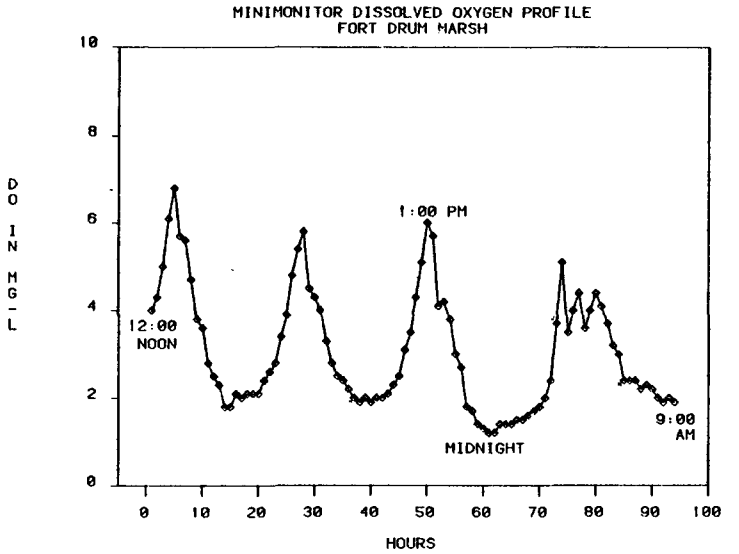
Fort Drum Marsh was sampled at a 1 foot depth under over-cast conditions (Tropical storm Dennis). It exhibited the greatest fluctuation in D.O. with an average daily range of 4 mg/l (Figure 12). Dissolved oxygen readings at night dropped to about 2 mg/l, climbing back to around 6 mg/l in the early afternoon. This increase in D.O. can be attributed to photosynthetic activity by phytoplankton and periphyton. The chlorophyll a concentration was 107 ug/l at the time the monitor was installed. Temperature followed a similar pattern to that for D.O., peaking a few hours later in the afternoon. Temperature ranged from 25°C to 33°C, with an average daily range of about 5°C. Conductivity followed no diurnal pattern, but did slowly increase then decrease through the 93 hour sampling period. Conductivity ranged from 1700 to 2200 umhos/cm.

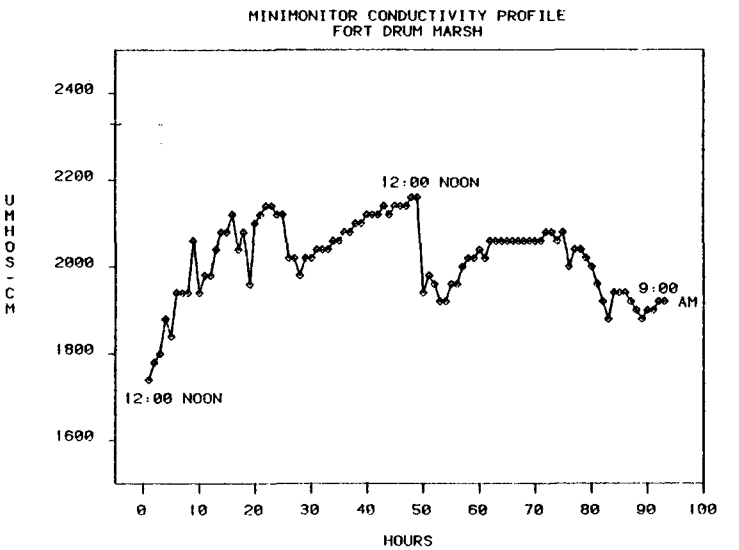
South Mormon Outside Canal was sampled at the hyacinth barrier at a 2 foot depth under clear, sunny conditions. Dissolved oxygen followed a diurnal pattern with dual peaks and troughs (Figure 13). D.O. levels dropped from an afternoon high to a low near midnight, rose slightly, and dropped to a similar low in early morning. D.O. concentrations ranged from 3.5 to 7 mg/l. The average daily range of 2 mg/l was half that of Fort Drum Marsh. The chlorophyll a concentration in the canal (7.6 mg/l) was much lower than in Fort Drum Marsh. The rise in D.O. between midnight and dawn cannot be accounted for solely by water temperature (change in solubility), which ranged from about 28°C to 35°C. Conductivity varied little, ranging from about 2000 to 1800 nmhos/cm

Zig Zag Canal was sampled at a depth of 2 feet with clear skies becoming overcast. Dissolved oxygen concentrations exhibited a depressed diurnal curve, rarely exceeding 2 mg/l (Figure 14). D.O. levels ranged from .5 mg/l to 2.4 mg/l. Samples collected five days previous to installation of the monitor had a D.O. reading of 2.1 mg/l and chlorophyll a concentration of 11.70 mg/l. No pumping was observed, but rapid flow and high turbidity were noted at that time. Temperature fluctuated 2 to 3°C daily and steadily increased about 1°C/ day over the sample period. Conductivity remained relatively unchanged the first few days of sampling, then sharply increased. Measurements rose from about 1800 umhos/cm to 3000 umhos/cm in 20 hours.

Diurnal measurements for Lake Sawgrass were taken in a shallow area (<1 ft. deep) at the outlet of the lake. Weather conditions varied between clear skies and scattered thunderstorms. Dissolved oxygen concentrations ranged between 4 and 9 mg/l in a simple curve (Figure 15). The average daily range of about 4 mg/l was comparable to Fort Drum Marsh, although concentrations were higher. Temperature paralleled the D.O. curve without the lag observed in the marsh. Temperature ranged from about 30 to 33°C, changing very little despite the shallowness of the water. Conductivity showed no pattern, varying between 1700 to 1800 umhos/cm.

The river upstream of Lake Washington was sampled at a 1 foot depth about 10 feet from shore. Overcast skies gradually cleared during the sample period. Dissolved oxygen concentrations were relatively high, between 5 and 7 mg/l, varying only about 2 mg/l per day (Figure 16). Temperature and conductivity varied very little, about 3°C and 75 umhos/cm respectively.





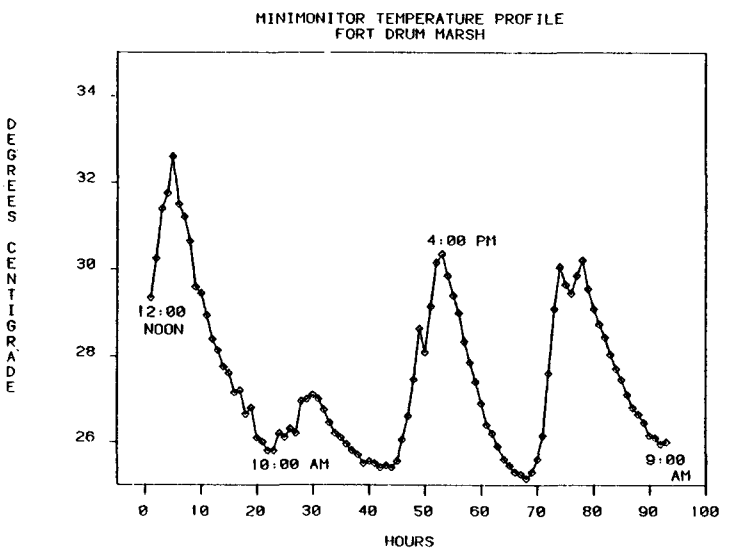
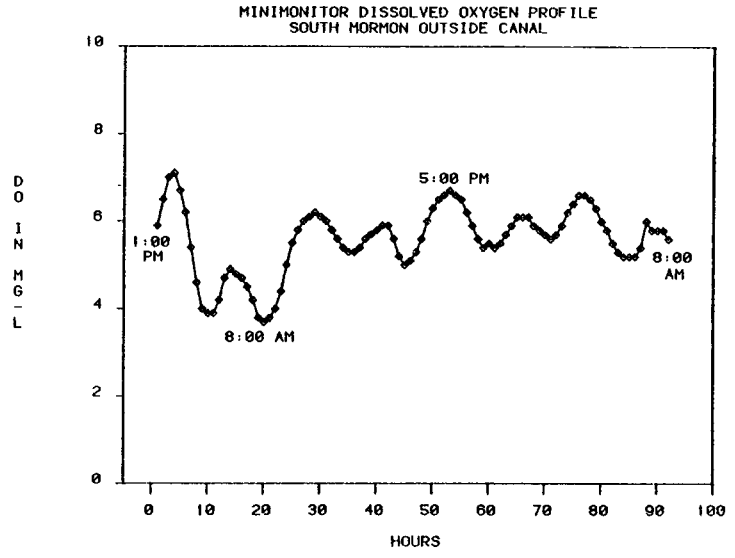


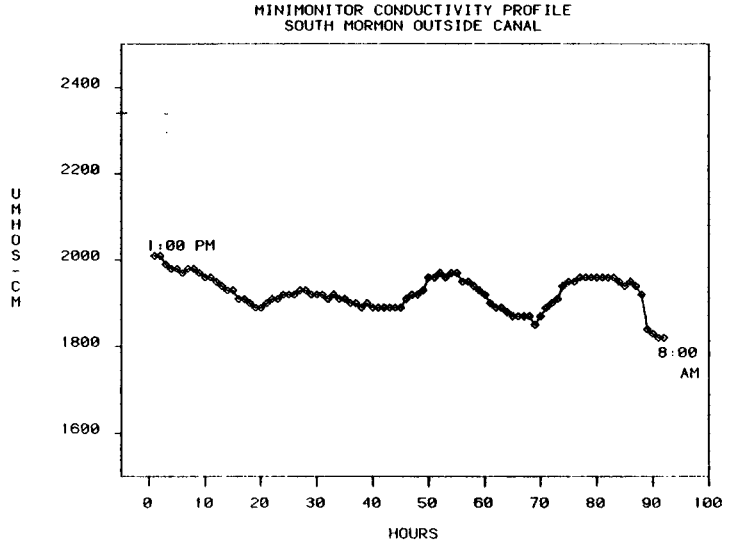
Figure 12

Fort Drum Marsh -

Minimonitor

Profiles





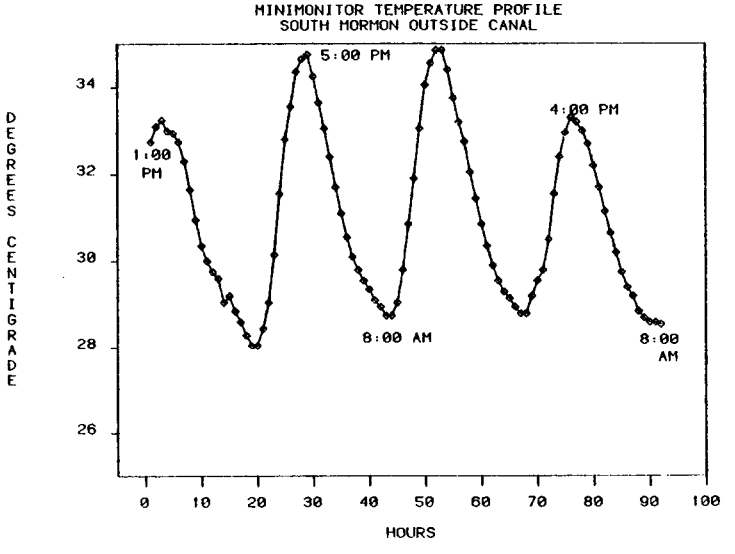
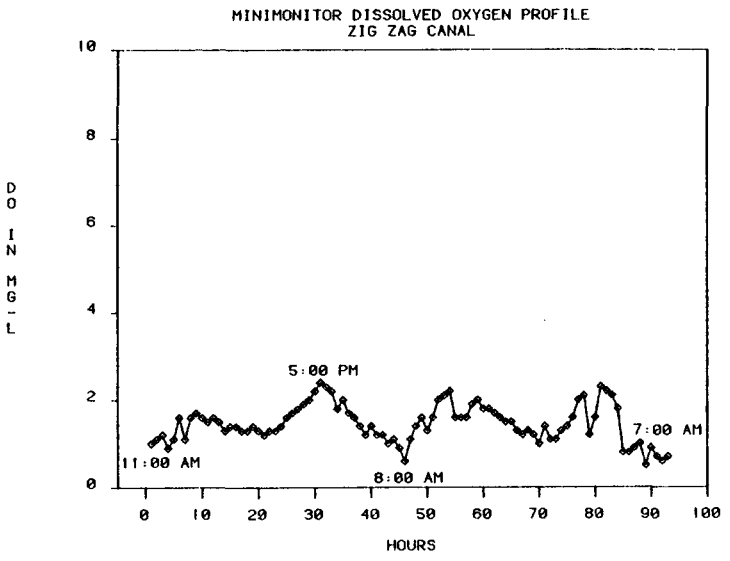
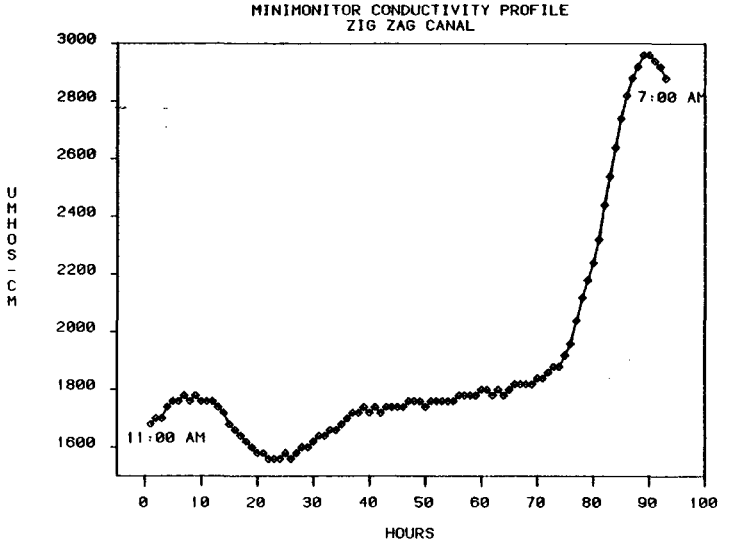


Figure 13. South Mormon Outside Canal Minimonitor Profile





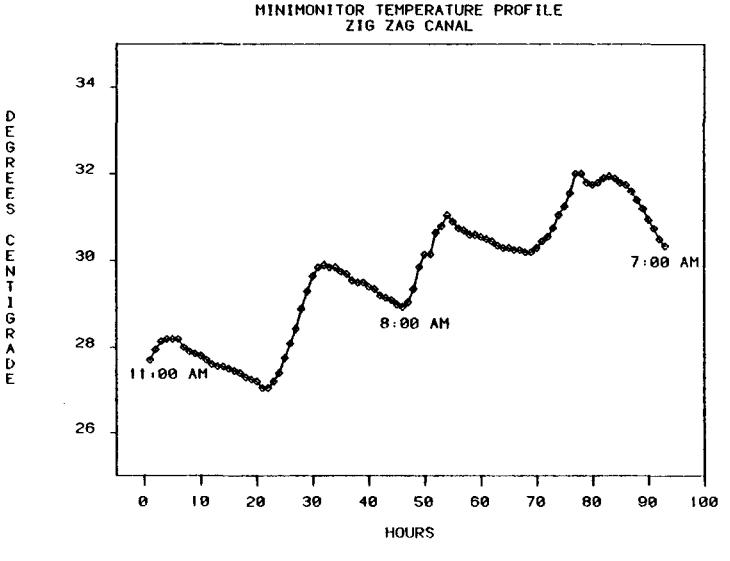
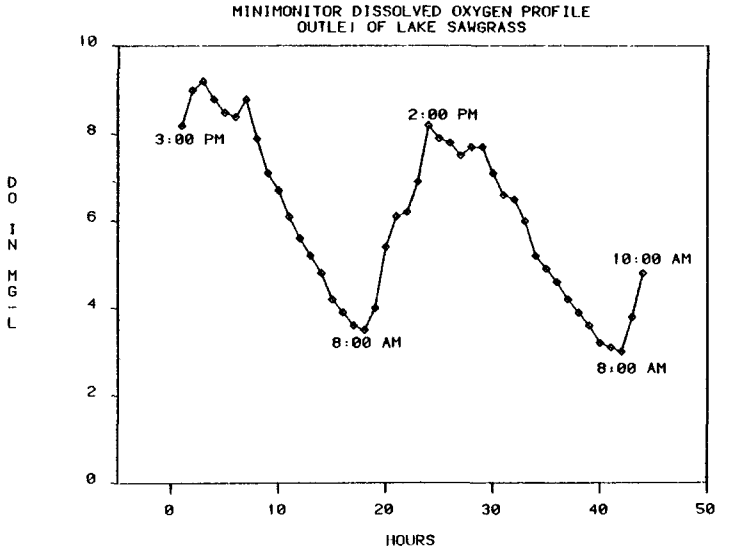
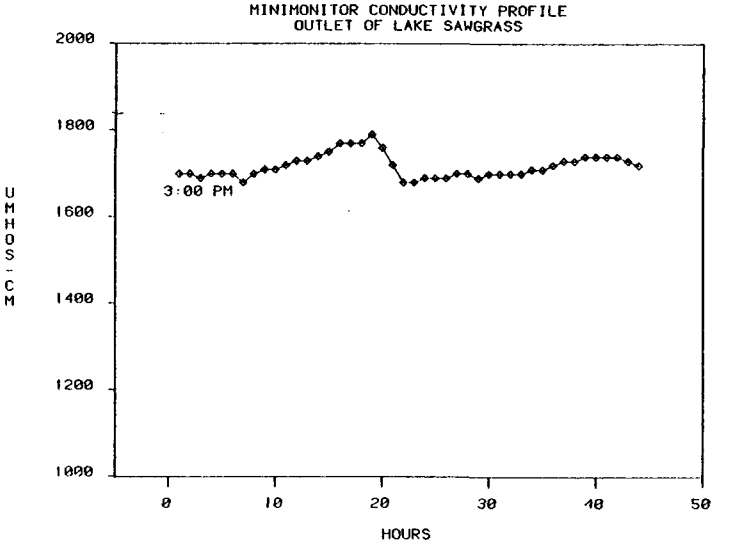


Figure 14. Zig Zag Canal Minimonitor Profile





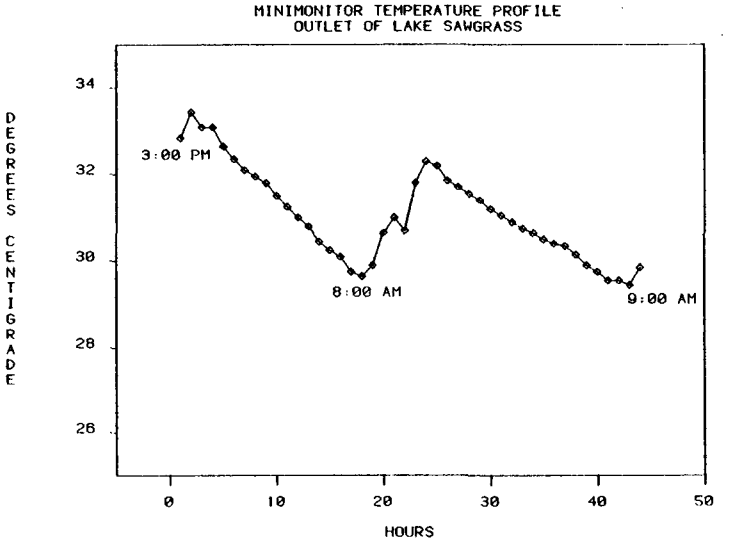
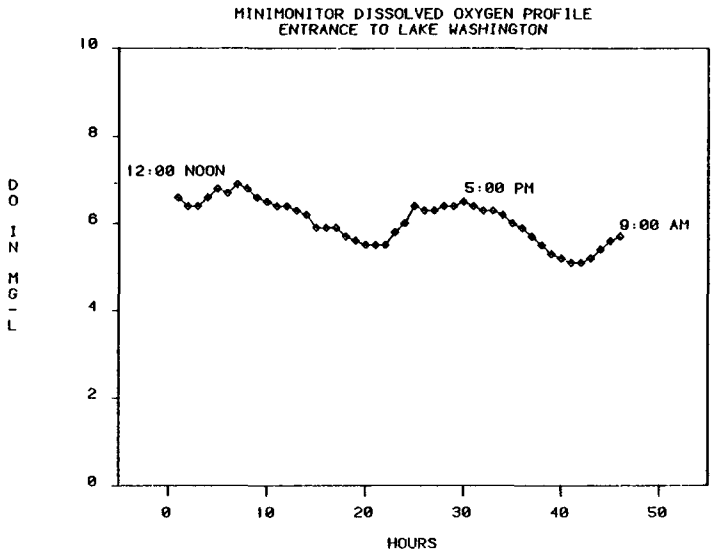
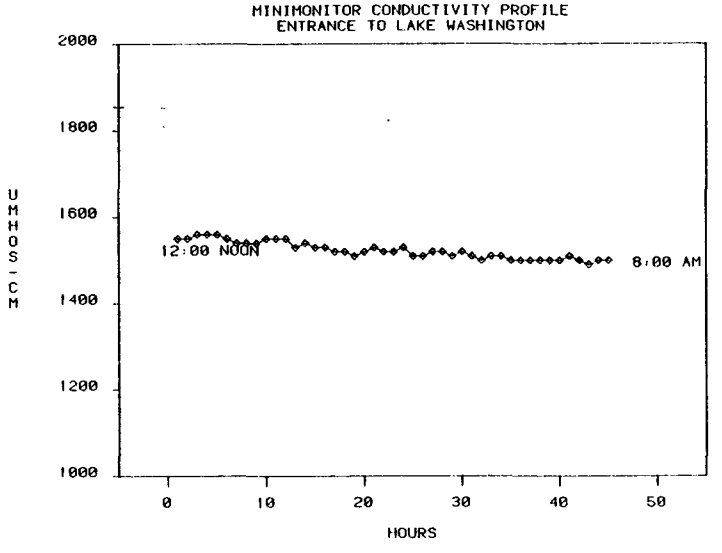


Figure 15. Lake Sawgrass Minimonitor Profile





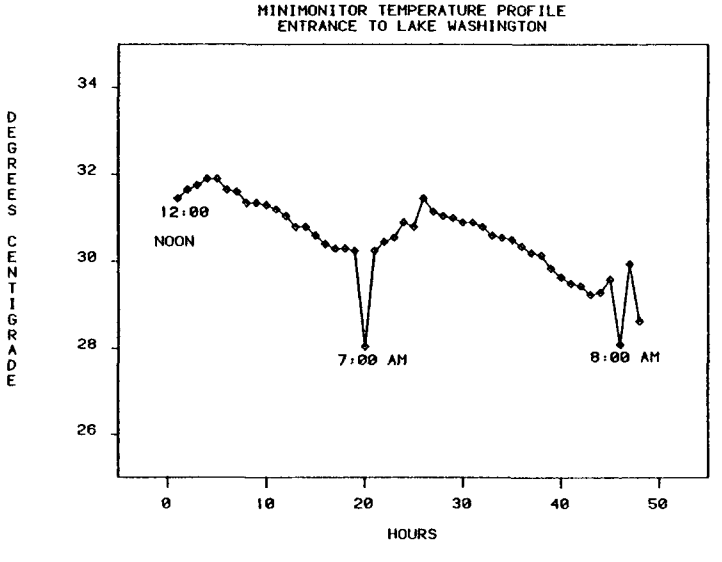


Figure 16. Lake Washington Minimonitor Profile

COMPARISON OF WATER BODY TYPES

Sample sites were divided into categories based on the type of water body (river, tributary, lake, canal or marsh). A subcategory of river stations was established which excluded stations immediately downstream of major influences, such as canals, to better represent typical river conditions. In addition, the Jane Green marsh site was isolated as being representative of historical, pre-development water quality in the basin. The remaining marsh sites have been altered by agricultural drainage, either through changes in the hydroperiod or addition of flowing wells to sheetflow. These criteria yielded seven categories (Table 8). Simple statistics comparing the various types of water bodies are presented in Tables 9, 10, and 11.

The tributary sites at Jane Green Swamp and Blue Cypress Creek are relatively natural. The creeks can be characterized as high color, shaded systems where groundwater influence is minimal, and nutrient levels and phytoplankton densities are low. Tributaries had the lowest mean values for most nutrients, minerals, suspended solids, BOD, turbidity, chlorophyll *a* and dissolved oxygen.

In contrast, the canals were highly influenced by groundwater, and had the highest mean concentrations of total dissolved solids, chlorides, hardness, sulfate, alkalinity and conductivity. Scouring and sediment transport in the canals were reflected by the highest mean and peak values for turbidity.

Marshes demonstrated their detrital nature by having the highest mean and peak levels of B.O.D., suspended solids, color, and chlorophyll *a*. Altered marshes were more highly mineralized than Jane Green marsh with 2 to 3 times greater average concentrations of chlorides, hardness, sulfate, dissolved solids, alkalinity and conductivity. Peak concentrations of all the tabulated parameters occurred in the canals or marsh sites, however Jane Green marsh contributed only one of these maximum values - color.

Table 8

WATER QUALITY MONITORING PROGRAM
Statistical Summary
Nov. '79 - Aug. '81

Station Name Classification According to Water Body Type

River	River*	TRIB	Lake	Canal	Marsh
THF	HBI	BCC	HBO	LMN	FDM
HBI	SGI	JGS	SGO	LMS	JGM
SGI	LWE		LWC	ZZC	HBM
LWE	USH		LWO	SME	LWM
USH	SNM		LPS	TMC	LPM
LWW	LWI		LPO	WFE	
SNM	SDC		BCL	WFN	
NNM	LPI		BCM	SMO	
LWI				CFO	
SDC				BDC	
NDC				WCC	
LPI				WCD	
TCO				WCE	
				NMO	
				CEW	
				DDC	
				RLC	
				UNC	

River*: River Stations Excluding Nearby Influences

TABLE 9

Comparison of Water Body Types
Nov. 1979 - Aug. 1981
Mean Concentration

	River	River*	Tributary	Lake	Canal	Marsh	JGM**
Water Temp. (°C)	22.0	22.0	19.5	23.0	21.5	21.0	17.0
Turbidity (NTU)	1.7	1.6	1.1	3.7	4.2	4.1	1.0
Secchi Depth (in)	39	41	25	32	30	21	>10
Conductivity (umhos/cm)	1100	1000	150	880	1240	770	240
Diss. Oxygen (mg/l)	7.2	7.4	3.2	7.6	5.5	4.5	4.7
pH	7.6	7.7	6.2	7.5	7.4	6.0	5.8
Color (cpu)	77	81	145	86	75	160	210
B.O.D.(mg/l)	1.8	1.8	1.6	1.7	2.2	4.9	3.8
Susp. Solids (mg/l)	7.2	6.8	3.0	13	17	18	6.2
Diss. Solids (mg/l)	730	700	170	600	760	520	180
Chloride (mg/l)	256	240	35	225	260	180	45
Sulfate (mg/l)	70	69	7.3	61	78	50	8.4
Alkalinity (mg/l)	115	110	28	81	125	40	20
Hardness (mg/l)	280	270	54	230	295	150	83
Magnesium (mg/l)	23	23	3.0	20	25	10	2.3
Calcium (mg/l)	64	60	18	52	72	26	15
Potassium (mg/l)	3.9	3.8	0.7	3.8	4.4	2.1	.7
Sodium (mg/l)	115	105	16	100	120	78	17
Iron (ug/l)	120	112	440	220	260	280	-
Orthophosphate (mg/l P)	0.02	0.02	0.03	0.03	0.05	0.09	0.03
Total Phosphorus(mg/l P)	0.05	0.04	0.05	0.07	0.09	0.13	0.08
Ammonia-N (mg/l)	0.06	0.06	0.05	0.05	0.09	0.51	1.20
Nitrate-Nitrite N (mg/l)	0.04	0.03	0.01	0.02	0.05	0.04	0.03
TKN (mg/l)	1.92	2.09	1.2	2.4	1.83	3.9	1.77
Chlorophyll a (ug/l)	8.9	8.8	3.7	11.3	22	44	20
Number of Observations	60-192	54-129	4-23	46-177	93-295	15-54	4-9

* River Stations excluding other nearby influences
** Marsh (historical) baseline station

Table 10

Comparison of Water Body Types
Nov. 1979 - Aug. 1981
Maximum Concentration

	River	River*	Tributary	Lake	Canal	Marsh	JGM**
Water Temp. (°C)	34.0	34.0	27.5	33.0	34.0	35.0	34.0
Turbidity (NTU)	9.2	9.2	3.5	34	102	23	2.0
Secchi Depth (in)	91	91	36	60	90	72	>12
Conductivity (umhos/cm)	3400	2600	210	3500	6500	4350	350
Diss. Oxygen (mg/l)	14.8	14.8	9.8	14	18.8	11.4	8.3
pH	9.4	9.3	8.8	9.3	9.9	7.6	6.6
Color (cpu)	180	180	200	180	240	350	350
B.O.D. (mg/l)	7.4	7.4	6.0	5.2	9.1	13.3	10.0
Susp. Solids (mg/l)	30	30	44.0	84	320	64	10.8
Diss. Solids (mg/l)	2220	1920	320	2330	2250	2880	230
Chloride (mg/l)	960	720	46	950	1150	1100	65
Sulfate (mg/l)	200	132	52	200	180	295	23
Alkalinity (mg/l)	290	225	37	200	310	160	29
Hardness (mg/l)	590	490	96	570	640	750	260
Magnesium (mg/l)	54	50	4.5	42	60	47	3.2
Calcium (mg/l)	120	110	31	100	310	87	20
Potassium (mg/l)	8.6	8.2	2.0	7.0	12	5.5	1.5
Sodium (mg/l)	380	350	21	380	500	460	20
Iron (ug/l)	370	300	1000	1100	3800	600	-
Orthophosphate (mg/l P)	0.19	0.19	0.1	0.14	0.58	0.70	0.17
Total Phosphorus(mg/l P)	0.24	0.24	0.16	0.22	1.10	0.39	0.34
Ammonia-N (mg/l)	0.30	0.30	0.12	0.16	1.54	5.8	5.8
Nitrate-Nitrite N (mg/l)	0.75	0.34	0.06	0.11	0.86	0.17	0.08
N (mg/l)	34.4	34.4	1.5	35.5	16.1	15.2	2.55
Chlorophyll a (ug/l)	83	83	18	100	603	250	93
Number of Observations	60-192	54-129	4-23	46-177	93-295	15-54	4-9

* River Stations excluding other nearby influences
** Marsh (historical) baseline station

Table 11

Comparison of Water Body Types
Nov. 1979-Aug. 1981
Minimum Concentration

	River	River*	Tributary	Lake	Canal	Marsh	JGM**
Water Temp. (°C)	9.0	9.0	8.5	7.0	8.0	9.0	9.0
Turbidity (NTU)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Secchi Depth (in)	6	6	6	5	2.5	8	8
Conductivity (umhos/cm)	60	295	20	75	220	140	140
Diss. Oxygen (mg/l)	2.2	2.2	0.4	2.8	0.0	0.9	2.0
pH	5.7	5.7	4.8	5.6	5.2	4.9	5.1
Color (cpu)	25	25	90	30	0.0	80	150
B.O.D. (mg/l)	0.4	0.4	0.0	0.4	0.2	0.9	1.2
Susp. Solids (mg/l)	0.0	0.0	0.3	0.3	0.0	0.2	3.2
Diss. Solids (mg/l)	240	240	1.0	150	155	130	130
Chloride (mg/l)	57.5	140	20	13	35	46	25
Sulfate (mg/l)	1.0	1.0	0.0	1.0	3.0	0.0	0.3
Alkalinity (mg/l)	43	43	14	5.2	17	12	13.0
Hardness (mg/l)	40	59	32	40	44	31	35
Magnesium (mg/l)	5.1	5.1	2.1	3.6	3.8	1.7	1.7
Calcium (mg/l)	21	21	10	10	14	6.8	10
Potassium (mg/l)	1.3	1.3	0.2	1.8	0.7	0.2	0.2
Sodium (mg/l)	28	28	9.0	20	19	12	12
Iron (ug/l)	30	20	180	30	10	100	-
Orthophosphate (mg/l P)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Phosphorus (mg/l)	0.0	0.0	0.01	0.0	0.0	0.01	0.01
Ammonia-N (mg/l)	0.0	0.0	0.0	0.0	0.0	0.01	0.01
Nitrate-Nitrite N(mg/l)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TKN (mg/l)	0.03	0.03	0.87	0.77	0.26	1.0	1.2
Chlorophyll a (ug/l)	0.0	0.8	0.5	0.9	0.2	0.4	0.5
Number of Observations	60-192	54-129	4-23	46-177	93-295	15-44	4-9

*River Stations excluding other nearby influences
** Marsh (historical) baseline station

Dissolved oxygen levels were lowest in the tributaries where about 75% of the recorded measurements were less than 5 mg/l. D.O. levels were somewhat higher in the marsh where about half the measurements were less than 5 mg/l, and a third were less than 2 mg/l. D.O. levels in the canals fell below 5 mg/l about 25% of the time, however values below 2 mg/l were only observed in Lateral M and Zig Zag canals.

A comparison of morning, noon and afternoon D.O. readings for each water body type shows that the daily fluctuation for marsh sites was typically twice that of the canal, river, lake, or tributary sites. Although low D.O. values were found frequently in the marsh, dissolved oxygen increased an average 4 mg/l throughout the day. Similar daily ranges and minimum values were recorded by the minimonitor during the diurnal studies.

Dissolved oxygen concentrations in tributary sites fluctuated about 1.4 mg/l throughout the day. Because of extensive shading, concentrations usually peaked at noon and declined during the afternoon instead of increasing throughout the day as at most other sites.

Summary and Recommendations

Water quality data were collected quarterly at approximately 40 sites in the Upper St. Johns River Basin for the past two years. Hydrologic conditions were atypical, due to a minor hurricane followed by a progressively intense drought. The basin was segmented at low flows by manmade barriers.

Concentrations of the major chemical constituents (chloride, sulfate, sodium, magnesium, etc.) increased downstream in the basin. Mineralization due to groundwater influences increased as stages decreased. Chloride concentration in Lake Washington exceeded the 250 mg/l criteria (Florida Department of Environmental Regulation, Chapter 17-3) in July and August 1981. Canals generally exhibited the highest degree of mineralization, and hardwood swamps the lowest.

Dissolved oxygen levels generally exceeded 5 mg/l with the exception of deep canals during high stages or in marsh or tributary sites. Stratification in deep canals resulted in near anoxic conditions (.5 mg/l) at the bottom of the canals. Tributary sites located in hardwood swamps such as Jane Green Creek or Blue Cypress Creek exhibited low D.O. levels, averaging 3.2 mg/l. D.O. level in marsh sites were consistently low, although the minimum D.O. in an undisturbed marsh (2.0 mg/l) did not approach anoxic conditions. Diel fluctuations in D.O. for marsh sites were twice that of canal sites.

Total phosphorus concentrations averaged .07 mg/l in the basin and tended to sag in the Lake Hell'n Blazes and Sawgrass area. Peak total phosphorus levels were recorded in canals following storm events and in Rockledge Creek which receives effluent from a domestic sewage treatment plant. Total nitrogen concentrations averaged 2.0 mg/l for all sites, predominantly in the organic form. Inorganic nitrogen levels averaged .14 mg/l and appeared to be the limiting nutrient in most cases.

Chlorophyll a concentrations were generally low in the mainstem of the river. High chlorophyll a levels were observed at marsh sites because of the

extensive epithytic communities, but were not transferred to the river system. An extensive bloom of Anabaena sp. occurred in Rockledge Creek in May 1981.

Color levels were generally highest in the marsh and tributary sites, averaging 85 cpu throughout the basin. Peak turbidity and suspended solids levels were observed during the algae bloom in Rockledge Creek and in canals following storm events.

Based on the data reviewed in this initial report, the following recommendations are made to mitigate existing and potential water quality problems:

1. The operation of existing works should be modified so as to reduce their impacts on mineralization, i.e. alter structures at the Fellsmere Grade and Lake Washington Weir to allow continous flow and minimize pooling effects.
2. The construction and operation of new works should be designed so as to prevent increased mineralization and minimize other water quality impacts.
3. The relationship between stage and mineralization should be considered in determination of minimum stages and levels. Based on the findings of this report, a minimum stage of 12.5 msl at US 192 should keep chloride levels below the 250 mg/l criteria for Class I waters.
4. To decrease sediment transport and increase nutrient uptake modify high velocity canal systems by plugging and/or construction of sediment basins.
5. Minimize degradation of remaining marsh and encourage rehabilitation of currently impacted marsh. Permit no further encroachment into the annual floodplain. Discourage activities which would result in rapid changes in stage or cause long-term dewatering of the marsh.
6. Discourage activities which would degrade water quality in hardwood swamps, currently the source of the best quality water in the basin.

7. Preliminary conclusions show the basin to be nitrogen limited. However the theories and data used in this determination can only be tentatively applied. Until further research shows otherwise, activities which cause excessive nitrogen loads by dewatering of peat soils should be carefully evaluated.
8. Continue monitoring to collect sufficient wet season and normal rainfall data.

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APPENDIX A

Laboratory Quality Assurance Report

St. Johns River Water Management District

By

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Palatka, Florida

September 1982

Project Number 15/20-700-01

Laboratory Quality Assurance Report

Introduction

In order to insure the reliability of water quality data the St. Johns River Water Management District Laboratory follows a specific quality assurance program. This includes the analysis of:

1) replicates on 10% of all samples
2) spikes on 20% of all samples
3) a field replicate on 20% of all samples or with each daily sample run
4) a known EPA standard with each daily sample run
5) unknown USGS "round robin" samples monthly (Since June, 1981)

The results of the quality assurance analysis for the last 2 years have been compiled. Control limits have been calculated and will be used to monitor laboratory performance. Calculations are based on EPA Handbook for Analytical Quality Control in Water and Wastewater Laboratories, Chapter 6. Statistics for replicate, field replicate, spike, EPA, and USGS. analysis are presented for each parameter and summarized in Tables I - V. In Tables VI and VII, these statistics are compared with precision and accuracy data from the following sources:

1) USGS Ocala Round Robin Program, 44 laboratories, monthly since June, 1981
2) USGS Colorado, Round Robin Program, 97 laboratories, Report on Standard Reference Water Samples #80, 81, and 7, July 1982
3) Standard Methods, 14th edition
4) EPA-EMSL, Methods for the chemical Analysis of Water & Wastewater

Results and Conclusions

Replicate and field replicate quality assurance data are presented in Tables I and II. For each parameter, the number of replicates analyzed is recorded, and the following statistics are calculated:

a) the minimum and maximum concentration

b) the average range, i.e., the average difference between replicates

c) the standard deviation of the ranges

d) the Upper Control Limit (UCL)

In some cases, the statistics may not accurately reflect the precision of laboratory analysis. For instance, the number of significant figures reported (which are based on USGS guidelines) can have a pronounced effect on the control limits. In the case of alkalinity and sulfate replicates, concentrations greater than 100 mg/l have been recorded to the nearest 10 mg/l. Therefore, replicate values of 122 and a 128 mg/l would be rounded off to 120 and 130 mg/l, resulting in an unrealistically high UCL. The opposite effect occurred on color, Cl, PO4, TP, and NOx control limits. For instance, chloride concentrations greater than 100 mg/l are also recorded in increments of 10 mg/l. Thus replicate values of 208 and 212 mg/l would both be recorded as 210 mg/l, resulting in an unrealistically low UCL.

In every case except color, the number of significant figures recorded has been increased (based on EPA reporting guidelines) in order to avoid this "large error/zero error" dilema. However, until this change is reflected in the body of quality assurance data, the above mentioned control limits cannot be strictly interpreted.

Another source of error is that the precision of a test is usually a function of concentration. Therefore, separate control limits must be calculated for specific ranges of concentration. These ranges are usually set by examining a large body of QA data and identifying the appropriate cutoff points. In some

cases there is not enough laboratory QA data to make the necessary distinctions. Therefore, the statistics may not be realistically applicable to the entire range of concentration. In other cases the distinction has been made in spite of the fact that the statistics are based on an inadequate number of determinations.

It is recommended by the EPA that quality assurance statistics be based on at least 20 determinations taken over an extended period of time. As indicated in the tables, many of the statistics in this report are based on less than 20 determinations. This tends to exaggerate the effect which one bad result can have on the statistics. Nevertheless, the statistics are presented as an estimate of laboratory performance.

In Table VI the standard deviation of the ranges is compared to the standard deviation of precision data generated by EPA-EMSL (Environmental Protection Agency-Environmental Monitoring and Support Laboratory). In almost every case, the standard deviation of laboratory replicates and field replicates is less than the standard deviations of the EPA data, indicating good precision in sampling and analysis for these parameters. In four cases (sulfate field replicate, calcium field replicate, sodium replicate and sodium field replicate), the standard deviation is slightly higher than the EPA value. The discrepancies do not significantly affect the reliability of the data, however, these analysis will be monitored closely in the future.

Accuracy data for the analysis of spikes, EPA standards and USGS standards is presented in Tables III, IV, and V. For each parameter, the number of accuracy standards analyzed is recorded and the following statistics are calculated:

a) average percent recovery

b) relative standard deviation

c) upper and lower control limits (calculated for spikes only)

As was the case with precision, the method of reporting has distorted some of the statistics. For example, iron concentrations were recorded in increments of 0.1 mg/l, and since iron spikes ranged from 0.2 to 0.6 mg/l, the percent error was either very large or zero, resulting in loose control limits. The high relative standard deviation of EPA orthophosphate analysis is also due to the method of recording.

Table V summarizes the results of the laboratory participation in the USGS Round Robin Program since June, 1981. The number of standards analyzed is signficantly less than what EPA recommends for statistical analysis and in some cases one poor result has had an exaggerated effect on the statistics.

In Table VII the relative standard deviation of laboratory accuracy results is compared with data from USGS in Ocala, USGS in Denver, and Standard Methods, 14th edition. With the exception of some of the USGS "Round Robin" standards laboratory accuracy statistics compared favorably, indicating good accuracy in laboratory analysis.

The laboratory will add to and refine the quality assurance data base. As the data base grows, it is expected that the statistics will more accurately reflect laboratory performance.

TABLE I

Replicate QA Summary

Parameter	Number of Values	Conc.	Average Range	Standard Deviation	UCL
BOD	18	0.3 - 5.9	0.1	0.1	0.4
Color	19	35 - 200	0	0	0
TSS - Low	13	1.9 - 7.7	0.6	0.7	1.9
TSS - High	5	10 - 38	2.4	1.3	7.8
Turb	20	0.3 - 7.1	0.1	0.1	0.2
TDS - Low	9	93 - 431	2.9	2.9	9.4
TDS - High	9	542 - 1380	20	15	67
ALK - Low	10	29 - 99	1.1	1.4	3.6
ALK - High	10	100 - 190	6.0	5.2	19
SO_4 - Low	10	22 -98	0.4	0.7	1.3
SO_4 - High	6	100 - 220	3.7	4.9	12
Cl	19	36 - 690	0.26	1.1	0.3
Hardness - Low	3	26 - 80	2.0	2.0	6.5
Hardness - High	15	180 - 900	2.8	4.5	9.2
Ca	13	12 - 87	0.5	0.7	1.8
Mg	16	11 - 43	0.5	1.1	1.7
Na - Low	10	8 - 96	3.8	3.0	12
Na - High	5	140 - 440	16	15	52
K	12	0.2 - 7.7	0.1	0.1	0.2
Fe	14	0.03 - 1.10	0.02	0.04	0.08
PO_4	20	.01 - .35	0.002	0.004	0.006
TP	20	.02 - .32	0.002	0.004	0.008
NO_x	19	.010 - .410	0.001	0.003	0.003
NH4	19	.020 - .290	0.004	0.006	0.010
chlorophyll a - Low	9	1.1 - 9.8	0.40	0.32	1.31
chlorophyll a - High	8	11 - 53	1.0	1.1	3.4

TABLE II

Field Replicate QA Summary

Parameter	Number of Values	Conc.	Average Range	Standard Deviation	UCL
BOD	12	1.0-3.8	0.3	0.2	0.9
Color	20	15-280	0.7	2.4	2.5
TSS	20	0.9-35	1.4	1.3	4.5
Turb	19	0.6-7.7	0.2	0.4	0.8
TDS-Low	9	97-905	17	12	55
TDS-High	5	1030-1460	16	9	52
AIK	20	10-170	2.4	4.8	7.7
SO_4-Low	11	14-82	1.8	2.7	5.9
SO_4-High	7	100-550	19	17	62
Cl-Low	6	13-83	0.5	0.8	1.6
Cl-High	10	140-690	8.0	10	26
Hardness - Low	6	20-86	2.5	2.3	8.1
Hardness - High	11	210-480	9.5	6.5	31
Ca	9	22-84	2.4	2.8	8.0
Mg	9	3.7-32	0.4	0.9	1.4
Na-Low	5	7.1-64	2.3	1.5	7.4
Na-High	4	98-310	8.0	5.4	26
K	9	1.5-8.3	0.1	0.1	0.5
Fe	8	0.1-0.4	0.04	0.05	0.1
PO_4	17	.01-.26	0.003	0.005	0.010
TP	20	.05-.35	0.012	0.017	0.039
NO_x	15	.10-.190	0.003	0.004	0.009
NH_4	17	.020-.140	0.020	0.013	0.065
chlorophyll a	14	2.0-38	1.0	1.0	3.1

TABLE III

Spike QA Summary

Parameter	Number of Values	Average Percent Recovery	Relative Standard Deviation	LCL	UCL
AIK	20	98	6	81	115
SO_4	18	98	6	80	117
Cl	20	97	6	78	116
Hardness	17	96	5	82	110
Ca	13	107	5	90	123
Mg	12	104	10	74	134
Na	9	97	3	88	107
K	11	103	8	80	126
Fe	10	102	13	63	141
PO_4	20	98	4	84	111
TP	20	99	8	76	122
NO_x	20	96	7	75	116
NH_4	20	98	10	68	128

TABLE IV

Analysis of EPA Standards
Summary of Results

Parameter	Number of Values	Average Percent Recovery	Relative Standard Deviation
AIK	20	101	2
SO_4	20	101	4
Cl	14	104	3
Hardness	15	102	3
Ca	8	101	3
Mg	9	97	4
Na	9	97	3
K	9	98	4
PO_4	18	107	13
TP	16	104	3
NO_x	18	100	3
NH_4	15	101	8

TABLE V

Analysis of USGS Standards
Summary of Results

Parameter	Number of Values	Average Percent Recovery	Relative Standard Deviation
PH	9	100	3
TDS	3	102	1
Cond	4	99	3
AIK	9	94	6
SO_4	3	103	13
Cl	8	100	7
Ca	4	72	13
Mg	3	110	2
Na	3	101	3
K	5	101	28
PO_4	4	103	11
TP	4	111	11
NO_x	4	99	4
NH_4	4	110	25

TABLE VI

Standard Deviation of Precision Results
SJRWMD and EPA-EMSL Laboratories

Parameters	SJRWMD Replicates	SJRWMD Field Replicates	EPA-EMSL
BOD	0.1	0.2	0.7
Color	0	2.4	-
TSS	0.7	1.3	-
Turb	0.1	0.4	0.6
TDS	9.4	12	-
AIK	5.2	4.8	5.3
SO_4	4.9	17	9.2
Cl	1.1	0.8	-
Hardness	4.5	6.5	9.7
Ca	0.7	2.8	0.6
Mg	1.1	0.9	-
Na	3.0	1.5	0.8
K	0.1	0.1	0.2
Fe	0.04	0.05	0.07
PO_4	0.004	0.005	0.041
TP	0.004	0.017	-
NO_x	0.003	0.004	0.012
NH_4	0.006	0.013	0.005
chlorophyll a	1.1	1.0	-

TABLE VII

Relative Standard Deviation of Accuracy Results
SJRWMD and Other Laboratories

Parameter	SJRWMD Spikes	SJRWMD EPA Standards	SJRWMD USGS Standards	USGS Ocala	USGS Colorado	Standard Methods 14th Ed
PH	-	-	3	3	2	2
TDS	-	-	1	3	5	10
Cond	-	-	3	3	6	-
AIK	6	2	6	6	3	4
SO_4	6	4	13	4	8	5
Cl	6	3	7	4	3	3
Ca	5	3	23	5	7	-
Mg	10	4	2	6	6	10
Na	3	3	3	5	5	-
K	8	4	28	12	8	-
PO_4	4	13	11	10	19	9
TP	8	3	11	6	12	-
NO_x	7	3	4	13	12	4
NH_4	10	8	25	24	13	-

APPENDIX B

HEADER FILE

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SC LAT    LONG    ID   GA NAME                    TOPO QUAD              SOURCE   SETWRNQD CTY HU BASIN NAME        SUB-BASIN NAME
ST LC WQ SR MN NV    REC         USGSNO           ESTDATE      FQ    DRAIN AREA   DATE HI     EXTREME HI  DATE LO     EXTREME LO
MN HI WAT LEV    WETLAND ECOS   LITTORAL ZONE     MESIC ECOS       XERIC ECOS
        COMMENTS

04 274147 804432 0001 UN FDM                     FELLSMERE 4 NW         SJRWMD   00323600  61  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE NO NO FB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000         0.000000         0.000000        0.000000
        FDM-FORT DRUM MARSH S OF BLUE CYPRESS LAKE

04 274224 804412 0001 UN BCM                     FELLSMERE 4 NW         SJRWMD   00323600  61  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE NO NO NO      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000         0.000000         0.000000        0.000000
        BCM-BLUE CYPRESS MARSH AT SE EDGE OF LAKE

04 274421 804639 0001 UN BCC                     FT DRUM NE             SJRWMD   00313600  61  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE NO NO CA      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000         0.000000         0.000000        0.000000
        BCC-BLUE CYPRESS CREEK 50 YDS UPSTREAM FROM LAKE EDGE

04 274520 804438 0001 UN LMS                     FELLSMERE SW           SJRWMD   00313600  61  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X0 YE NO NO FB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000         0.000000         0.000000        0.000000
        LMS-LATERAL M CANAL S 100 YDS SOUTH OF CONFLUENCE WITH ZIGZAG CANAL

04 274527 804427 0001 UN ZZC                     FELLSMERE SW           SJRWMD   00313600  61  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X0 YE NO NO FB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000         0.000000         0.000000        0.000000
        ZZC-ZIGZAG CANAL 100 YDS UPSTREAM OF CONFLUENCE WITH LATERAL M CANAL

04 274538 804438 0001 UN LMN                     FELLSMERE SW           SJRWMD   00313600  61  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X0 YE NO NO FB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000         0.000000         0.000000        0.000000
        LMN-LATERAL M CANAL 100 YDS NORTH OF CONFLUENCE WITH ZIGZAG CANAL

04 275425 804713 0001 UN WFE                     KENANSVILLE NE         SJRWMD   0130351C   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE UN UN FB      0         00000000        11/15/1980   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000         0.000000         0.000000        0.000000
        WILLOWBROOK FARMS EAST, 100YDS SO OF BEND IN OUTSIDE CANAL

04 275442 804823 0001 UN WFN                     KENANSVILLE NE         SJRWMD   34293540   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE UN UN FB      0         00000000        11/15/1980   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000         0.000000         0.000000        0.000000
        WILLOWBROOK FARMS NORTH, HALFWAY BETWEEN CULVERTS & CONFLUENCE WITH SME
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04 275621 804809 0001 UN SME                    KENANSVILLE NE          SJRWMD   2629351A   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE UN UN PB      0         00000000        11/15/1980   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        S MORMON EXTENTION, 50 YDS SO OF CONFLUENCE WITH TEN MILE CANAL


04 275624 804811 0001 UN TMC                    KENANSVILLE NE          SJRWMD   2229353K   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE UN UN PB      0         00000000        11/15/1980   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        TEN MILE CANAL, 100 YDS WEST OF CONFLUENCE WITH S MORMON EXTENSION CANAL


04 275917 804732 0001 UN SMO                    KENANSVILLE NE          SJRWMD   02293500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X0 YE NO NO PB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        SMO-SOUTH MORMON OUTSIDE CANAL 100 YDS UPSTREAM FROM CONFLU W/THREE FORK


04 275834 804614 0001 UN CFO                    KENANSVILLE NE          SJRWMD   0729364F   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE UN UN PB      0         00000000        11/15/1980   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        CANAL 40, 100 YDS SOUTH FO CONFLUENCE WITH THREE FORKS


04 275918 804710 0001 UN THF                    KENANSVILLE NE          SJRWMD   01293500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE NO NO PB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000
        THF-ST JOHNS RIVER IN THREE FORKS AREA


04 275949 804735 0001 UN BDC                    KENANSVILLE NE          SJRWMD   02293500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X0 YE NO NO PB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        BDC-BULLDOZER CANAL 100 YDS UPSTREAM OF CONFLU W/SOUTH MORMON OUTSIDE


04 280039 804744 0001 UN HBI                    DEER PARK SE            SJRWMD   35283500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE NO NO PB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        HBI-ST JOHNS RIVER AT ENTRANCE TO LAKE HELL'N BLAZES


04 280132 804756 0001 UN HBO                    DEER PARK SE            SJRWMD   26283500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE NO NO PB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        HBO-ST JOHNS RIVER AT EXIT OF LAKE HELL'N BLAZES


04 280427 805318 0001 UN JGS                    DEER PARK               USGS     02283400  97  5 ST JOHNS RIVER    JANE GREEN CREEK
UN 01 YE UN UN CA     23        02231600        05/19/1954   UN     260.000     00/00/0000  0.000000    00/00/0000  0.000000
  25.0000       0.000000        0.000000        0.000000        0.000000
        JANE GREEN CREEK NEAR DEER PARK, FLORIDA ON TEN MILE RD
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04 280427 805318 0002 CH JGS                    DEER PARK              SJRWMD   02283400  97  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE UN UN CA      0        02231600        11/15/1980   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        JANE GREEN CREEK AT USGS GAGE AT TEN MILE ROAD

04 280308 804811 0001 UN JGM                    DEER PARK SE           SJRWMD   14283500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE NO NO NO      1        00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        JGM-JANE GREEN MARSH W OF ST JOHNS 1/2 BETWEEN HELL'N BLAZES & SAWGRASS

04 280249 804708 0001 UN HBM                    DEER PARK SE           SJRWMD   14283500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE NO NO NO      1        00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        HBM-MARSH E OF ST JOHNS RIVER HALFWAY BETWEEN HELL'N BLAZES & SAWGRASS

04 280346 804723 0001 UN SGI                    DEER PARK SE           SJRWMD   11283500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X3 YE NO NO PB      1        00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        SGI-NEXT TO GAUGING STATION AT RAILROAD TRESTLE IN LITTLE LAKE SAWGRASS

04 280437 804613 0001 UN SGO                    DEER PARK SE           SJRWMD   06283600   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE NO NO PB      1        00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        SGO-ST JOHNS RIVER AT EXIT OF L SAWGRASS NEXT TO GAUGING STATION

04 280503 804511 0002 UN USH                    DEER PARK SE           SJRWMD   06283600   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE UN UN PB      0        00000000        11/15/1980   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        ST JOHNS RIVER BETWEEN OLD BRIDGE AND NEW U. S. 192 HIGHWAY BRIDGE

04 280504 804508 0001 UN USH                    DEER PARK SE           USGS     06283600   9  5 ST JOHNS RIVER    UPPER ST JOHNS
UN 01 YE YE YE PB     26        02232000        12/18/1952   UN    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
  17.0000       0.000000        0.000000        0.000000        0.000000
        ST JOHNS RIVER NEAR MELBOURNE, FLORIDA AT US HGWY 192

04 280648 804452 0001 UN LWE                    MELBOURNE W            SJRWMD   20273600   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE UN UN PB      0        0000000         11/15/1980   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        LAKE WASHINGTON ENTRANCE, IN ST JOHNS RIVER, 100YDS SOUTH OF THE LAKE

04 280700 804438 0001 UN WCE                    MELBOURNE W            SJRWMD   20273600   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE UN UN PB      0        00000           02/01/1981   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        S. SARNO RD CANAL, E. SHORE OF L. WASHINGTON

04 280744 804405 0001 UN WCD                    EAU GALLIE             SJRWMD   16273600   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE UN UN PB      0        000000          11/01/1980   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        TOM'S CANAL, E. SHORE OF L. WASHINGTON
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04 280834 804402 0001 UN WCC                    EAU GALLIE            SJRWMD   09273600   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE UN UN PB      0         0000           11/01/1980   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        SANDS CANAL, E. SHORE OF L. WASHINGTON

03 280819 804439 0001 UN LWC                    EAU GALLIE            SJRWMD   08273600   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC B1 YE UN YE PB      0         00000000       11/15/1980   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        LAKE WASHINGTON CENTER, 100 YDS WEST OF INTAKE

04 280956 804555 0001 UN LWW                    DEER PARK NE          SJRWMD   01273500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X1 YE UN UN PB      0         00000000       11/15/1980   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        LAKE WASHINGTON WEIR, 50 YDS DOWNSTREAM OF THE STRUCTURE

04 281255 805118 0001 UN SNM                    DEER PARK NE          SJRWMD   18263500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X3 YE YE YE PB      1         00000000       11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        SNM-ST JOHNS RIVER 100 YDS UPSTREAM OF NORTH MORMON OUTSIDE CANAL

04 281258 805139 0001 UN NMO                    DEER PARK NE          SJRWMD   18263500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X0 YE NO NO PB      1         00000000       11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        NMO-IN NORTH MORMON OUTSIDE CANAL 100 YDS UPSTREAM OF CONFLUENCE WITH RI

04 281308 805130 0001 UN NNM                    DEER PARK NE          SJRWMD   18263500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X3 YE YE YE PB      1         00000000       11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        NNM-ST JOHNS RIVER 100 YDS N OF CONFLUENCE OF NORTH MORMON OUTSIDE CANAL

04 281308 805132 0001 UN WCM                    DEER PARK NE          SJRWMD   18263500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X3 YE UN UN NO      0         00000000       11/01/1980   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        WOLF CREEK MARSH  WEST OF RIVER 100 YDS NORTH OF N. MORMAN OUTSIDE

04 281330 805115 0001 UN LWM                    DEER PARK NE          SJRWMD   18263500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X3 YE NO NO NO      1         00000000       11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        LWM-LAKE WINDER MARSH AT SLOUGH DOWNSTREAM OF NORTH MORMON OUTSIDE CANAL

04 281405 805132 0001 UN LWI                    DEER PARK NE          SJRWMD   07263500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X3 YE YE YE PB      1         00000000       11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        LWI-LAKE WINDER INLET OPPOSITE SHACK IN ST JOHNS RIVER
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04 281449 805026 0001 UN CEW                    DEER PARK NE          SJRWMD   05263500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC XO YE NO NO NO      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        CEW-UNNAMED DUDA CANAL ON EAST BANK OF LAKE WINDER

04 281605 804951 0001 UN LWO                    L POINSETT            SJRWMD   33253500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X3 YE YE YE PB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        LWO-ST JOHNS RIVER AT EXIT OF L WINDER

04 281709 804914 0001 UN SDC                    L POINSETT            SJRWMD   28253500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X3 YE YE YE PB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        SDC-ST JOHNS RIVER 100 YDS UPSTREAM OF SOUTH DUDA CANAL CONFLUENCE

04 281715 804905 0001 UN DDC                    L POINSETT            SJRWMD   22253500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC XO YE NO NO PB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        DDC-100 YDS UPSTREAM OF CONFLUENCE WITH RIVER IN CANAL

04 281721 804909 0001 UN NDC                    L POINSETT            SJRWMD   22253500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X3 YE YE YE PB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        NDC-ST JOHNS RIVER 100 YDS DOWNSTREAM OF DUDA CANAL CONFLUENCE

04 281741 804849 0001 UN UNC                    L POINSETT            SJRWMD   22253500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X3 YE UN UN NO      0         00000000        11/01/1980   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        UNNAMED CANAL ON WEST SIDE OF RIVER 1.5 MILES NORTH OF DUDA CANAL

04 281835 804826 0001 UN LPI                    L POINSETT            SJRWMD   15253500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X3 YE YE YE PB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        LPI-LAKE POINSETT INLET OPPOSITE SHACK IN ST JOHNS RIVER

04 281938 804713 0001 UN RLC                    L POINSETT            SJRWMD   12253500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC X3 YE NO NO PB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        RLC-ROCKLEDGE CREEK AT OUTLET OF LAKE FLORENCE

03 282015 804938 0001 UN LPS                    L POINSETT            SJRWMD   04253500   9  5 ST JOHNS RIVER    UPPER ST JOHNS R
AC B3 YE YE YE PB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000    00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        LPS-LAKE POINSETT AT CENTER OF LAKE
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04 281937 805105 0001 UN LPM                    L POINSETT            SJRWMD   08253500   9  5 ST JOHNS RIVER     UPPER ST JOHNS R
AC X3 YE NO NO NO      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000     00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        LPM-LAKE POINSETT MARSH SW OF LAKE POINSETT

04 282131 805223 0001 UN LPO                    L POINSETT            SJRWMD   36243400   9  5 ST JOHNS RIVER     UPPER ST JOHNS R
AC X3 YE YE YE PB      1         00000000        11/15/1979   QT    0.000000     00/00/0000  0.000000     00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        LPO-ST JOHNS RIVER AT EXIT OF L POINSETT

04 282211 805248 0001 UN TCO                    L POINSETT SW         SJRWMD   00243400  95  5 ST JOHNS RIVER     UPPER ST JOHNS R
AC X3 YE UN UN PB      0         00000000        11/01/1980   QT    0.000000     00/00/0000  0.000000     00/00/0000  0.000000
 0.000000        0.000000        0.000000        0.000000        0.000000
        TAYLOR CREEK OUTLET 50YDS UPSTREAM OF 520 BRIDGE
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FIELD DATA SUMMARY

SAMPLE	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
FDMD7911271126	2.0 MT		20.5	26.0	100.	67.5	9.				0.20		6.30	60.0
FDMA7911271447	0.3 MT		22.0	25.5	100.	67.5	8.				1.30		6.30	52.0
FDMB7911270730	1.0 MT		21.0	20.5	0.	22.5	2.				0.60		6.40	48.0
FDMA7911271124	0.5 MT		21.5	26.0	100.	67.5	9.	24.0			1.40		6.10	62.0
FDMA8002050840	0.5 MT		9.3	7.5	0.	360.0	7.			170.	5.00			45.0
FDMA8002051200	0.5 MT	2.0 MT	10.0	19.0	75.	22.5	10.	72.0		170.	5.30			32.0
FDMA8002051555	0.5 MT		11.5	17.0	70.	45.0	10.			170.	5.35		5.60	23.0
FDMA8006100730	0.5 MT		27.0	29.0	50.	270.0	6.			250.	0.80		6.20	5.9
FDMA8006101140	0.5 MT	2.5 MT	28.5	33.0	50.	247.5	6.	24.0		250.	4.60		6.10	5.9
FDMA8006101614	0.5 MT		30.5	33.0	75.	90.0	10.			240.	9.40		6.40	5.0
FDMB8006101615	1.0 MT		28.0								3.90			
FDMC8006101616	1.5 MT		27.5								0.90			
FDMD8006101617	2.0 MT		27.0								0.40			
FDME8006101618	2.5 MT		27.0								0.40			
FDMA8008050755	0.5 MT		24.0		0.	90.0	2.			410.	1.35		5.70	95.0
FDMA8008051125	0.5 MT	1.0 MT	28.0		50.	135.0	12.	18.0		390.	0.60		5.50	8.0
FDMA8008051600	0.5 MT	1.0 MT	29.5		70.	112.5	15.			390.	10.60		5.85	7.8
FDMA8012180909	0.5 MT		14.0	15.0	10.	30.0	10.			210.	5.70		6.35	
FDMA8012181515	0.5 MT	0.5 MT	17.0	18.0	5.	20.0	8.	24.0L			6.10		5.30	7.0
FDMA8102030820	0.5 MT	0.5 MT	13.0	7.0	30.	360.0	12.			465.	0.50		6.10	4.0
FDMA8102031430	0.5 MT	0.5 MT	10.5	15.0	0.	360.0	5.	31.0		465.	7.70		4.90	5.3
FDMA8105041450	0.3 MT	0.3 MT	29.0	29.0	0.			12.0L		315.	10.80			8.5
FDMA8108171500	0.5 MT	0.5 MT	29.0	32.0	100.	135.0	5.	16.0L		2100.	3.40		6.75	
FDMA8108250750	0.3 MT		28.0	29.0	60.	135.0	5.				3.60			
BCMA7911270755	0.5 MT		21.0	20.5	0.	22.5	2.				4.00		7.00	40.0
BCMA7911271139	0.3 MT		22.0	26.0	100.	67.5	9.				4.60		6.60	48.0
BCMA7911271458	0.3 MT		22.5	25.5	100.	67.5	8.				4.30		6.80	45.0
BCMA8002051230	0.5 MT	0.5 MT	12.0	19.0	75.	22.5	10.	12.0		200.	10.60			35.0
BCMA8002051610	0.5 MT		13.5	17.0	70.	45.0	10.			200.	10.20		6.40	23.0
BCMA8006100750	0.5 MT		27.5	29.0	50.	270.0	6.			225.	4.90		6.70	5.9
BCMA8006101150	0.3 MT	0.3 MT	29.5	33.0	50.	247.5	6.	24.0L		225.	6.50		6.70	5.0
BCMA8006101630	0.5 MT		33.0	33.0	75.	90.0	10.			225.	7.20		6.40	3.4
BCMA8008050810	0.1 MT		29.5		0.	90.0	2.			220.	4.30		6.40	6.5
BCMA8008051150	0.1 MT	0.1 MT	31.0		50.	135.0	12.	6.0L		230.	7.90		6.95	6.5
BCMA8008051610	0.1 MT		31.0		70.	112.5	15.			230.	7.10		6.90	7.0
BCLB7911270803	1.0 MT		23.5	20.5	0.	22.5	2.				5.30		7.20	38.0
BCLA7911271213	0.5 MT		21.5	26.0	100.	67.5	9.	24.0			5.30		6.90	45.0
BCLA7911271510	0.5 MT		22.0	25.5	100.	67.5	8.				5.20		7.00	42.0
BCLA7911271603	0.5 MT		22.0								5.40			
BCLB7911271604	1.0 MT		22.0								5.20			
BCLD7911271605	2.0 MT		22.0								5.10			
BCLF7911271606	3.0 MT		22.0								5.00			
BCLA8002050900	0.5 MT		13.5	7.5	0.	360.0	7.			205.	10.10			40.0
BCLA8002051300	0.5 MT	3.5 MT	12.0	19.0	75.	22.5	10.	30.0		205.	10.40			29.0
BCLB8002051301	1.0 MT		12.0								10.00			
BCLC8002051302	1.5 MT		12.0								9.80			
BCLD8002051303	2.0 MT		12.0								9.80			
BCLE8002051304	2.5 MT		12.0								9.70			
BCLF8002051305	3.0 MT		11.5								9.60			
BCLG8002051306	3.5 MT		12.0								9.50			
BCLA8002051619	0.5 MT		12.5	17.0	70.	45.0	10.			200.	10.20		6.30	22.0

FIELD DATA SUMMARY

SAMPLE	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
BCLA8006100800	0.5 MT		28.5	29.0	50.	270.0	6.			225.	7.10		7.40	5.0
BCLA8006101205	0.5 MT	3.0 MT	29.0	33.0	50.	247.5	6.	48.0		225.	7.20		7.30	5.0
BCLB8006101206	1.0 MT		28.5								7.00			
BCLC8006101207	1.5 MT		28.0								6.80			
BCLD8006101208	2.0 MT		28.0								6.80			
BCLE8006101209	2.5 MT		28.0								6.70			
BCLF8006101210	3.0 MT		28.0								6.50			
BCLA8006101639	0.5 MT		29.5	33.0	75.	90.0	10.			220.	7.20		7.30	3.9
BCLA8008050815	0.5 MT		29.5		0.	90.0	2.			225.	4.90		6.55	6.8
BCLA8008051200	0.5 MT	2.8 MT	30.5		50.	135.0	12.	36.0		230.	4.90		6.40	7.5
BCLB8008051201	1.0 MT		30.0								4.50			
BCLC8008051202	1.5 MT		29.5								4.60			
BCLD8008051203	2.0 MT		29.5								4.30			
BCLE8008051204	2.5 MT		29.5								4.15			
BCLF8008051205	3.0 MT		29.5								4.00			
BCLA8008051615	0.5 MT		30.5		70.	112.5	15.			225.	5.50		6.50	7.0
BCLA8012180924	0.5 MT		15.5	15.0	10.	30.0	10.			140.	9.40		7.00	8.0
BCLA8012181530	0.5 MT	2.5 MT	16.5	18.0	5.	20.0	8.	18.0			9.50		7.00	6.5
BCLB8012181531	1.0 MT		16.5								9.20			
BCLC8012181532	1.5 MT		16.5								9.10			
BCLD8012181533	2.0 MT		16.5								9.00			
BCLA8102030835	0.5 MT		15.0	7.0	30.	360.0	12.			240.	10.00		7.10	3.9
BCLA8102031510	0.5 MT	2.0 MT	11.0	15.0	0.	360.0	5.	12.0		240.	9.50		5.60	6.5
BCLA8105041707	0.5 MT		25.5	29.0	0.					260.	7.90			7.0
BCLB8105041708	1.0 MT		25.5								8.00			
BCLD8105041709	2.0 MT		24.5								7.00			
BCLA8108171350	0.5 MT	2.0 MT	28.5	32.0	100.	135.0	5.	34.0		300.	7.20		6.20	
BCLA8108241230	0.5 MT			32.0	80.	180.0	8.				6.70			
BCLB8108241231	1.0 MT										6.30			
BCLA8108241430	0.5 MT		31.0	32.0	80.	180.0	8.				7.20			
BCLA8108241545	0.5 MT		31.0	32.0	80.	180.0	8.				7.20			
BCLA8108241715	0.5 MT		29.0	32.0	80.	180.0	8.				6.20			
BCLB8108241716	1.0 MT		30.0								6.20			
BCLA8108241910	0.5 MT		30.0	32.0	80.	180.0	8.				6.05			
BCLB8108241911	1.0 MT		30.0								6.05			
BCLA8108242025	0.5 MT		30.0	32.0	80.	180.0	8.				6.00			
BCLB8108242026	1.0 MT		30.0								6.00			
BCLA8108242200	0.5 MT		30.0	32.0	80.	180.0	8.				6.60			
BCLB8108242201	1.0 MT		30.0								6.50			
BCLA8108250001	0.5 MT		29.0	29.0	60.	135.0	5.				6.20			
BCLB8108250002	1.0 MT		29.0								6.00			
BCLA8108250200	0.5 MT		29.0	29.0	60.	135.0	5.				6.40			
BCLB8108250201	1.0 MT		29.0								6.30			
BCLA8108250405	0.5 MT		29.0	29.0	60.	135.0	5.				6.50			
BCLB8108250406	1.0 MT		29.0								6.50			
BCLA8108250615	0.5 MT		29.0	29.0	60.	135.0	5.				6.20			
BCLB8108250616	1.0 MT		29.0								6.20			
BCLA8108250840	0.5 MT		29.0	29.0	60.	135.0	5.				5.90			
BCLB8108250841	1.0 MT		29.0								5.90			
BCCB7911270852	1.0 MT		21.5	20.5	0.	22.5	2.				0.40		6.30	52.0
BCCA7911271320			21.5	26.0	100.	67.5	9.	24.0			1.60		6.50	50.0
BCCA7911271612	0.3 MT		21.0	25.5	100.	67.5	8.				0.70		6.60	42.0

FIELD DATA SUMMARY

SAMPLE	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
BCCA8002050935	0.5 MT		10.5	7.5	0.	360.0	7.			130.	1.60			32.0
BCCA8002051425	0.5 MT	1.0 MT	12.0	19.0	75.	22.5	10.	36.0L		130.	2.80			21.0
BCCA8002051654	0.5 MT		12.5	17.0	70.	45.0	10.			130.	2.40		5.70	23.0
BCCA8006100830	0.5 MT		26.0	29.0	50.	270.0	6.			195.	2.70			4.5
BCCA8006101305	0.5 MT	1.0 MT	27.5	33.0	50.	247.5	6.	36.0L		210.	7.40		6.20	2.8
BCCA8006101709	0.5 MT		27.5	33.0	75.	90.0	10.			185.	3.20		6.00	6.0
BCCA8008050840	0.5 MT		25.5		0.	90.0	2.			135.	0.70		5.50	5.7
BCCA8008051310	0.5 MT	1.0 MT	26.5		50.	135.0	12.	36.0		135.	0.80		5.40	6.0
BCCA8008051645	0.5 MT		27.0		70.	112.5	15.			130.	0.80		5.40	7.8
BCCA8012181010	0.3 MT		16.0	15.0	10.	30.0	10.				4.50		6.20	8.0
BCCA8012181630	0.3 MT	0.3 MT	18.0	18.0	5.	20.0	8.	18.0L			3.90		6.00	6.0
BCCA8102030935	0.1 MT		14.0	7.0	30.	360.0	12.			170.	4.60		6.10	7.0
BCCA8102031635	0.3 MT	0.3 MT	11.0	15.0	0.	360.0	5.	18.0L		170.	4.40		4.80	9.0
BCCA8105041730	0.1 MT	0.1 MT	25.0	29.0	0.					210.	4.70			11.0
LMSB7911270835	1.0 MT		23.5	20.5	0.	22.5	2.				3.90		6.90	42.0
LMSF7911270836	3.0 MT		23.0	20.5	0.	22.5	2.				0.90		6.70	47.0
LMSA7911271300			22.0	26.0	100.	67.5	9.	24.0			4.20		6.70	45.0
LMSG7911271302	3.4 MT		21.5								0.70		6.90	45.0
LMSA7911271547	0.3 MT		22.0	25.5	100.	67.5	8.				4.30		6.80	35.0
LMSA7911271550	0.5 MT		22.0								4.30			
LMSB7911271551	1.0 MT		22.0								4.20			
LMSD7911271552	2.0 MT		21.5								2.30			
LMSF7911271553	3.0 MT		21.5								0.90			
LMSA8002050925	0.5 MT		12.0	7.5	0.	360.0	7.			340.	7.30			32.0
LMSA8002051400	0.5 MT	3.5 MT	13.0	19.0	75.	22.5	10.	36.0		400.	6.80			21.0
LMSB8002051401	1.0 MT		12.7								6.40			
LMSC8002051402	1.5 MT		12.5								6.40			
LMSD8002051403	2.0 MT		12.5								6.40			
LMSE8002051404	2.5 MT		12.0								6.80			
LMSF8002051405	3.0 MT		12.0								6.80			
LMSG8002051406	3.5 MT		12.0								5.40			
LMSA8002051642	0.5 MT		14.0	17.0	70.	45.0	10.			410.	6.60		6.50	20.0
LMSA8006100820	0.5 MT		28.5	29.0	50.	270.0	6.			225.	6.60		7.10	5.0
LMSA8006101245	0.5 MT	3.0 MT	30.0	33.0	50.	247.5	6.	48.0		220.	7.10		7.25	2.1
LMSA8006101657	0.5 MT		31.5	33.0	75.	90.0	10.			225.	7.30		7.35	4.2
LMSA8008050835	0.5 MT		29.0		0.	90.0	2.			230.	3.60		6.20	7.5
LMSA8008051250	0.5 MT	2.8 MT	30.0		50.	135.0	12.	36.0		225.	4.60		6.35	5.0
LMSB8008051251	1.0 MT		29.0								4.20			
LMSC8008051252	1.5 MT		29.0								3.70			
LMSD8008051253	2.0 MT		28.5								3.50			
LMSE8008051254	2.5 MT		28.5								3.40			
LMSF8008051255	3.0 MT		28.5								3.05			
LMSA8008051635	0.5 MT		31.0		70.	112.5	15.			225.	5.80		6.50	7.4
LMSA8012180953	0.5 MT		16.0	15.0	10.	30.0	10.				4.40		7.05	8.0
LMSA8012181610	0.5 MT	2.8 MT	17.0	18.0	5.	20.0	8.	24.0			5.00		6.90	4.0
LMSA8102030915	0.5 MT		14.5	7.0	30.	360.0	12.			240.	9.30		6.80	6.0
LMSA8102031610	0.5 MT	2.2 MT	11.5	15.0	0.	360.0	5.	12.0		240.	9.50		5.60	7.5
LMSA8105041700	0.5 MT		28.0	29.0	0.			34.0		260.	7.80			7.0
LMSA8108171420	0.5 MT	2.0 MT	29.0	32.0	100.	135.0	5.	22.0		565.	2.20		6.90	
ZZCB7911270828	1.0 MT		23.0	20.5	0.	22.5	2.				1.00		6.90	45.0
ZZCF7911270830	3.0 MT		23.0	20.5	0.	22.5	2.				0.70		6.70	45.0

F I E L D D A T A S U M M A R Y

S A M P L E	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
ZZCA7911271234	0.5 MT		21.5	26.0	100.	67.5	9.	42.0			1.30		6.90	38.0
ZZCF7911271236	3.0 MT		21.0	26.0	100.	67.5	9.				0.50		7.20	34.0
ZZCA7911271537	0.3 MT		22.0	25.5	100.	67.5	8.				0.90		7.10	45.0
ZZCA7911271540	0.5 MT		22.0								0.90			
ZZCB7911271541	1.0 MT		21.5								0.70			
ZZCD7911271542	2.0 MT		21.5								0.50			
ZZCF7911271543	3.0 MT		21.5								0.50			
ZZCA8002050920	0.5 MT		12.0	7.5	0.	360.0	7.			460.	5.80			35.0
ZZCA8002051345	0.5 MT	3.5 MT	14.3	19.0	75.	22.5	10.	72.0		460.	6.00			25.0
ZZCB8002051346	1.0 MT		13.0								5.30			
ZZCC8002051347	1.5 MT		12.0								5.00			
ZZCD8002051348	2.0 MT		12.0								5.00			
ZZCE8002051349	2.5 MT		12.0								4.90			
ZZCF8002051350	3.0 MT		12.0								4.80			
ZZCG8002051351	3.5 MT		11.7								4.80			
ZZCA8002051635	0.5 MT		14.0	17.0	70.	45.0	10.			495.	5.70		6.55	24.0
ZZCA8006100815	0.5 MT		28.5	29.0	50.	270.0	6.			230.	6.50		7.00	5.0
ZZCA8006101235	0.5 MT	2.5 MT	28.5	33.0	50.	247.5	6.	48.0		225.	6.80		6.90	1.9
ZZCB8006101236	1.0 MT		28.0								5.70			
ZZCC8006101237	1.5 MT		28.0								5.40			
ZZCD8006101238	2.0 MT		27.5								1.90			
ZZCE8006101239	2.5 MT		26.5								0.40			
ZZCA8006101653	0.5 MT		31.5	33.0	75.	90.0	10.			225.	6.90		7.10	4.2
ZZCA8008050830	0.5 MT		29.0		0.	90.0	2.			240.	3.30		6.30	7.1
ZZCA8008051235	0.5 MT	2.8 MT	30.0		50.	135.0	12.	36.0		245.	3.80		6.20	4.5
ZZCB8008051236	1.0 MT		29.0								3.35			
ZZCC8008051237	1.5 MT		28.5								2.90			
ZZCD8008051238	2.0 MT		28.5								2.55			
ZZCE8008051239	2.5 MT		28.5								1.90			
ZZCF8008051240	3.0 MT		28.5								1.40			
ZZCA8008051630	0.5 MT		31.0		70.	112.5	15.			235.	5.25		6.30	7.6
ZZCA8012180946	0.5 MT		16.0	15.0	10.	30.0	10.				5.00		7.10	8.0
ZZCA8012181600	0.5 MT	2.0 MT	17.0	18.0	5.	20.0	8.	18.0			4.90		6.85	3.0
ZZCB8012181601	1.0 MT		17.0								4.60			
ZZCC8012181602	1.5 MT		17.0								4.45			
ZZCD8012181603	2.0 MT		17.0								1.50			
ZZCA8102030900	0.5 MT		14.5	7.0	30.	360.0	12.			260.	8.90		6.70	5.8
ZZCA8102031555	0.5 MT	2.0 MT	11.5	15.0	0.	360.0	5.	12.0		260.	9.05		5.50	7.0
ZZCA8105041650	0.5 MT	2.0 MT	28.0	29.0	0.			36.0		280.	7.90			8.0
ZZCA8108171415	0.5 MT	3.0 MT	29.0	32.0	100.	135.0	5.	20.0		575.	2.10		6.90	
LMNB7911270814	1.0 MT		21.5	20.5	0.	22.5	2.				2.50		7.00	38.0
LMND7911270822	2.2 MT		21.5	20.5	0.	22.5	2.				1.50		6.50	52.0
LMNA7911271250			22.0	26.0	100.	67.5	9.	30.0			3.00		7.00	38.0
LMNH7911271252	4.0 MT		21.5	26.0	100.	67.5	9.				0.50		6.50	55.0
LMNA7911271520	0.3 MT		22.0	25.5	100.	67.5	8.				2.80		7.00	45.0
LMNA7911271530	0.5 MT		22.0								2.80			
LMNB7911271531	1.0 MT		21.5								2.00			
LMND7911271532	2.0 MT		21.5								1.20			
LMNF7911271533	3.0 MT		21.5								0.80			
LMNH7911271534	4.0 MT		21.5								0.50			
LMNA8002050915	0.5 MT		12.0	7.5	0.	360.0	7.			460.	5.70			34.0
LMNA8002051325	0.5 MT	5.0 MT	13.0	19.0	75.	22.5	10.	42.0		420.	6.00			25.0

FIELD DATA SUMMARY

SAMPLE	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
LMNB8002051326	1.0 MT		13.0								5.80			
LMNC8002051327	1.5 MT		12.5								5.70			
LMND8002051328	2.0 MT		12.5								5.70			
LMNE8002051329	2.5 MT		12.5								5.80			
LMNF8002051330	3.0 MT		12.0								6.00			
LMNG8002051331	3.5 MT		12.0								5.60			
LMNH8002051332	4.0 MT		12.0								5.20			
LMNI8002051333	4.5 MT		12.0								5.00			
LMNJ8002051334	5.0 MT		12.0								5.00			
LMNA8002051630	0.5 MT		13.5	17.0	70.	45.0	10.			360.	7.10		6.45	23.0
LMNA8006100810	0.5 MT		28.5	29.0	50.	270.0	6.			230.	7.00		6.20	5.0
LMNA8006101225	0.5 MT	4.0 MT	29.5	33.0	50.	247.5	6.	48.0		225.	7.10		7.10	4.5
LMNB8006101226	1.0 MT		29.0								6.20			
LMNC8006101227	1.5 MT		28.5								6.10			
LMND8006101228	2.0 MT		27.5								2.50			
LMNE8006101229	2.5 MT		26.5								0.10			
LMNF8006101230	3.0 MT		25.5								0.00			
LMNH8006101231	4.0 MT		24.5								0.00			
LMNA8006101649	0.5 MT		31.0	33.0	75.	90.0	10.			220.	7.10		7.10	4.2
LMNA8008050825	0.5 MT		29.5		0.	90.0	2.			250.	2.70		6.30	7.0
LMNA8008051220	0.5 MT	4.0 MT	29.5		50.	135.0	12.	36.0		255.	2.50		6.00	7.0
LMNB8008051221	1.0 MT		28.5								2.10			
LMNC8008051222	1.5 MT		28.5								1.20			
LMND8008051223	2.0 MT		28.5								0.00			
LMNF8008051224	3.0 MT		28.0								0.00			
LMNH8008051225	4.0 MT		27.5								0.00			
LMNA8008051620	0.5 MT		31.0		70.	112.5	15.			240.	6.20		6.40	7.4
LMNA8012180940	0.5 MT		16.5	15.0	10.	30.0	10.				5.70		6.70	7.0
LMNA8012181550	0.5 MT	4.0 MT	17.0	18.0	5.	20.0	8.	42.0			7.80		6.30	7.5
LMNB8012181551	1.0 MT		17.0								5.50			
LMND8012181552	2.0 MT		17.0								5.40			
LMNF8012181553	3.0 MT		17.0								4.90			
LMNH8012181554	4.0 MT		17.0								3.70			
LMNA8102030855	0.5 MT		15.0	7.0	30.	360.0	12.			350.	7.70		6.60	5.0
LMNA8102031535	0.5 MT	3.4 MT	11.5	15.0	0.	360.0	5.	30.0		350.	7.15		5.20	6.5
LMNA8105041640	0.5 MT	3.5 MT	27.0	29.0	0.			51.0		310.	7.50			9.5
LMNB8105041641	1.0 MT		26.0								6.80			
LMND8105041642	2.0 MT		21.5								4.70			
LMNF8105041643	3.0 MT		25.0								5.00			
LMNA8108171405	0.5 MT	2.0 MT	30.5	32.0	100.	135.0	5.	46.0		450.	4.00		6.80	
WFEA8011191005	0.5 MT		19.5	11.0	100.	45.0	12.			950.	2.50		7.10	5.5
WFEA8011201126	0.5 MT	0.8 MT	19.0	18.5	100.	45.0	10.	36.0			2.90		7.10	10.0
WFEZ8012100933			18.0					30.0		1100.	5.30		7.50	
WFEZ8101141345			8.5					47.0L		1150.	11.40		8.10	
WFEA8102041250	0.5 MT	0.9 MT	14.0	13.0	5.	360.0	5.	36.0L		1200.	8.20		7.50	9.0
WFEZ8103170935			16.0					33.0L		1300.	8.40		8.20	
WFEZ8104070850			20.5					36.0L		1390.	7.10		7.60	
WFEA8105061125	5.0 MT	1.0 MT	24.5	30.0	5.	180.0	7.	32.0L		1450.	9.60		8.60	6.0
WFEZ8106091100			28.5					32.0L		1430.	4.50		7.50	
WFEZ8107300900			28.0					24.0		1370.	1.00		6.90	
WFEA8108180930	0.5 MT	0.8 MT	28.0	30.0	100.	135.0	7.	32.0L		1300.	1.20		7.30	
WFEX8108180940	0.3 MT	0.3 MT	26.0	30.0	100.	135.0	7.	8.0L		1400.	2.80		7.40	

FIELD DATA SUMMARY

SAMPLE	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
WFNA8011190956	0.5 MT		19.5	11.0	100.	45.0	12.			990.	5.30		7.25	5.0
WFNA8011201150	0.5 MT	0.8 MT	18.5	18.5	100.	45.0	10.	36.0L		680.	6.80		7.50	9.5
WFNZ8012100950			19.0					24.0L		660.	7.10		7.60	
WFNZ8101141405			9.5					28.0		710.	9.40		8.00	
WFNA8102041310	0.5 MT	0.8 MT	13.5	13.0	5.	360.0	5.	30.0L		900.	11.20		7.80	8.5
WFNZ8103171010			17.0					25.0		745.	9.20		8.30	
WFNZ8104070945			20.0					6.0		660.	4.50		7.30	
WFNA8105061135	0.2 MT	0.2 MT	25.0	30.0	5.	180.0	7.	20.0L		800.	8.45		8.50	3.0
WFNZ8106091120			29.5					22.0		1310.	5.90		7.60	
WFNZ8107300935			28.0					18.0		1120.	2.10		7.80	
WFNA8108180950	0.5 MT	0.5 MT	28.0	30.0	100.	135.0	7.	23.0L		1350.	6.20		7.30	
SMEA8011190946	0.5 MT		20.0	11.0	100.	45.0	12.			965.	3.30		7.20	10.5
SMEA8011201205	0.5 MT	0.5 MT	19.5	18.5	100.	45.0	10.	36.0			4.10		7.20	9.5
SMEZ8012091010			19.0					36.0L		1080.	6.90		7.10	
SMEZ8101141430			8.0					24.0L		1100.	11.10		8.00	
SMEA8102041355	0.5 MT	0.8 MT	14.0	13.0	5.	360.0	5.	36.0L		1100.	11.00		7.70	9.0
SMEZ8103171030			18.5					43.0		1050.	10.80		6.40	
SMEZ8104071030			21.5					6.0		1300.	7.10		8.00	
SMEA8105051435	0.3 MT	0.3 MT	26.5	29.0	15.			17.0L		1300.	13.00		9.10	5.0
SMEZ8106091140			30.0					25.0L		1440.	4.10		7.40	
SMEZ8107301000			29.0					15.0		1020.	2.30		7.20	
SMEA8108180910	0.5 MT	0.6 MT	28.0	30.0	100.	135.0	7.	21.0L		6500.	2.70		7.40	
TMCA8011191020	0.5 MT		20.0	11.0	100.	45.0	12.			900.	7.30		7.70	6.5
TMCA8011201215	0.5 MT	0.7 MT	19.5	18.5	100.	45.0	10.	36.0			9.10		7.90	9.0
TMCZ8012101026			20.0					24.0L		364.	7.00		7.80	
TMCZ8101141440			10.5					41.0L		550.	10.30		8.40	
TMCA8102041335	0.5 MT	0.8 MT	14.5	13.0	5.	360.0	5.	36.0L		690.	10.80		8.00	7.5
TMCZ8103171050			18.0					19.0L		755.	10.20		8.70	
TMCZ8104071045			21.0					12.0		845.	5.00		8.90	
TMCA8105051445	0.4 MT	0.4 MT	27.5	29.0	15.			29.0L		1200.	13.00		9.50	4.1
TMCZ8106091210			31.0					26.0L		1460.	8.70		8.80	
TMCZ8107301020			28.0					15.0L		1330.	2.70		7.20	
TMCA8108181010	0.5 MT	0.5 MT	27.5	30.0	100.	135.0	7.	27.0L		1100.	3.50		7.50	
SMOA7912040856	0.5 MT		16.0	15.0	50.		0.				5.40		7.30	4.8
SMOA7912040857	0.5 MT		20.5								3.40			
SMOC7912040858	1.5 MT		20.0								2.80			
SMOA7912041230	0.5 MT	1.5 MT	17.0	25.0	75.	45.0	5.	24.0			6.10		7.10	5.8
SMOA7912041517	0.5 MT		18.0	21.0	50.	45.0	11.				5.80		7.15	5.8
SMOA8002121055	0.5 MT		14.5	8.5	100.	360.0	1.			470.	8.40			16.0
SMOA8002121530	0.5 MT	1.2 MT	16.5	21.0	10.			48.0		465.	8.70		6.90	12.5
SMOA8006170840	0.5 MT		27.5		0.		0.		0.00	725.	6.20		7.45	6.0
SMOA8006171225	0.5 MT	0.5 MT	28.5	32.0	60.		0.	18.0L		740.	6.70		7.45	6.0
SMOA8006171555	0.5 MT		30.0		40.					765.	8.70		7.50	5.2
SMOA8011190930	0.4 MT		20.5	11.0	100.	45.0	12.			1000.	7.50		7.40	10.5
SMOA8011191510	0.5 MT	0.5 MT	21.5	18.5	20.	30.0	10.	36.0L	33.50	1000.	8.10		7.65	9.5
SMOZ8012091450			21.0					30.0L		1020.	8.60		8.00	
SMOZ8101131515			10.5					34.0L	20.70	1130.	7.70		9.50	
SMOA8102040805	0.5 MT		12.5	6.0	30.	360.0	2.			1300.	5.90		7.90	9.5
SMOA8102041420	0.5 MT	0.8 MT	15.0	13.0	5.	360.0	5.	36.0L		1250.	10.40		7.90	8.5
SNOZ8103191045			20.0					33.0L	2.21	1020.	8.20		8.20	

FIELD DATA SUMMARY

SAMPLE	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
SMOZ8104091335			23.4					36.0L	1.30	1300.	8.20		8.30	
SMOA8105061400	0.5 MT	0.8 MT	27.0	30.0	5.	150.0	5.	25.0L	2.89	1450.	9.10		8.70	6.5
SMOZ8106091305			32.0					18.0L	13.50	1400.	7.80		7.90	
SMOZ8107301400			33.0					18.0	9.94	1430.	6.00		7.90	
SMOA8108190930	0.5 MT	0.5 MT	27.5	31.0	100.	180.0	3.	18.0L	17.50	1200.	3.30		7.40	
CFOA8011190909	0.5 MT		21.5	11.0	100.	45.0	12.			910.	6.50		7.80	9.5
CFOA8011191415	0.5 MT	2.7 MT	22.0	18.5	20.	30.0	10.	48.0		915.	8.25		7.85	9.0
CFOZ8012101105			19.5					84.0		1040.	7.10		7.90	
CFOZ8101141300			10.5					90.0		1350.	8.80		7.50	
CFOA8102041205	0.5 MT	2.0 MT	14.5	13.0	5.	360.0	5.	72.0L		1300.	8.60		7.70	8.5
CFOZ8103171135			18.5					57.0		1250.	8.50		8.00	
CFOZ8104071140			23.5					54.0		1100.	6.50		7.80	
CFOA8105051400	0.5 MT	2.0 MT	26.5	29.0	15.			62.0		1100.	7.40		8.00	7.5
CFOZ8106091245			31.5					53.0		1040.	5.50		7.90	
CFOZ8107301105			30.0					36.0		1070.	5.70		8.10	
CFOA8108181035	0.5 MT	1.3 MT	26.0	30.0	100.	135.0	7.	26.0		1000.	6.40		8.10	
THFA8002121215	0.5 MT		14.5	8.5	100.	360.0	1.			520.	7.20			15.0
THFA8002121510	0.5 MT	0.8 MT	16.0	21.0	10.			30.0L		520.	7.80		6.80	15.0
THFA8006170830	0.5 MT		27.0		0.		0.			640.	5.00		7.05	6.0
THFA8006171215	0.3 MT	0.3 MT	29.5	32.0	60.		0.	12.0L	15.63	640.	6.10		7.10	6.0
THFA8006171605	0.3 MT		32.0		40.					650.	7.10		7.15	5.6
THFA8011190851	0.3 MT		18.5	11.0	100.	45.0	12.			120.	6.20		7.75	10.5
THFA8011191455	0.4 MT	0.4 MT	21.5	18.5	20.	30.0	10.	24.0L	6.30	900.	8.30		7.85	9.5
THFZ8012091510			21.5						9.58	1220.	8.90		8.10	
THFZ8101131535			11.5					36.0L		1290.	10.10		8.50	
THFA8102040810	0.2 MT		11.0	6.0	30.	360.0	2.			1300.	5.80		7.90	10.0
THFA8102041440	0.3 MT	0.4 MT	15.0	13.0	5.	360.0	5.	30.0L		1400.	10.60		7.90	9.0
THFZ8103191030			19.5					24.0L	14.70	1150.	8.30		8.20	
THFZ8104091015			22.8					12.0L	12.60	1090.	6.50		7.80	
THFA8105061235	0.2 MT	0.2 MT	27.0	30.0	5.	150.0	5.	12.0L	10.17	1200.	8.10		8.10	8.0
THFZ8106091320			34.0					14.0L	1.74	980.	9.50		8.10	
THFZ8107301215			32.0					12.0L	2.35	1030.	5.00		7.50	
THFA8108190945				31.0	100.	180.0	3.		0.00					
BDCA7912040846	0.3 MT		17.0	15.0	50.		0.				7.80		7.40	4.3
BDCA7912041245	0.5 MT	1.3 MT	17.5	25.0	75.	45.0	5.	48.0			7.65		7.45	5.0
BDCA7912041526	0.5 MT		17.5	21.0	50.	45.0	11.				7.90		7.60	5.8
BDCA8002121045	0.5 MT		13.5	8.5	100.	360.0	1.		0.00	950.	6.70			15.0
BDCA8002121545	0.5 MT	0.8 MT	16.0	21.0	10.			30.0		915.	8.30		7.10	14.0
BDCA8006170825	0.5 MT		27.0		0.		0.			945.	6.00		7.35	6.0
BDCA8006171205	0.3 MT	0.3 MT	28.5	32.0	60.		0.	12.0L	4.21	940.	4.50		7.15	6.0
BDCA8006171615	0.3 MT		31.0		40.					940.	7.80		7.50	5.5
BDCA8011190845	0.3 MT		19.0	11.0	100.	45.0	12.		7.80	890.	4.90		7.35	11.0
BDCA8011191520	0.4 MT	0.4 MT	21.5	18.5	20.	30.0	10.	24.0L			10.70		7.90	9.5
BDCZ8012100855			18.0					14.0L		1090.	6.10		7.50	
BDCZ8101131600			10.5					17.0L		1050.	7.30		8.50	
BDCA8102040755	0.5 MT		11.5	6.0	30.	360.0	2.			1100.	6.40		7.60	10.0
BDCA8102041505	0.4 MT	0.4 MT	15.0	13.0	5.	360.0	5.	18.0L		1100.	6.10		7.90	7.5
BDCZ8103180945			18.0					15.0L	3.68	955.	9.90		8.20	
BDCZ8104091435			24.0					18.0L	3.81	1050.	8.40		8.00	
BDCA8105061440	0.4 MT	0.4 MT	31.0	30.0	5.	150.0	5.	18.0L	1.03	1200.	8.60		8.00	7.5

FIELD DATA SUMMARY

SAMPLE	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
BDCZ8106091350			34.0					15.0L	1.82	1040.	14.00		8.10	
BDCZ8107301315			33.0					60.0L	3.80	1070.	8.50		7.50	
BDCA8108191035	0.3 MT	0.3 MT	27.0	31.0	100.	180.0	3.	16.0L	3.80	900.	4.75		7.30	
HBIA7912040834	0.5 MT		16.5	15.0	50.		0.				5.40		7.10	4.8
HBIA7912041250	0.5 MT	1.5 MT	17.5	25.0	75.	45.0	5.	30.0			5.60		7.30	5.3
HBIA7912041536	0.5 MT		17.0	21.0	50.	45.0	11.				5.90		7.40	5.0
HBIA8002121035	0.5 MT		14.0	8.5	100.	360.0	1.			530.	7.70			15.0
HBIA8002121600	0.5 MT	1.3 MT	16.0	21.0	10.			48.0		530.	8.20		7.00	13.0
HBIA8006170815	0.5 MT		28.0		0.		0.			690.	5.70		7.20	6.0
HBIA8006171200	0.5 MT	0.9 MT	28.5	32.0	60.		0.	36.0L		700.	6.60		7.20	6.0
HBIA8006171625	0.5 MT		31.5		40.					710.	7.85		7.45	5.5
HBIA8011190836	0.5 MT		19.5	11.0	100.	45.0	12.			990.	4.80		7.40	10.5
HBIA8011191530	0.5 MT	0.5 MT	21.5	18.5	20.	30.0	10.	30.0		945.	4.60		7.85	9.0
HBIZ8012091215			19.5					16.0L		1110.	8.00		7.90	
HBIZ8101141230			9.0					30.0L		1220.	10.30		8.00	
HBIA8102040745	0.5 MT		12.0	6.0	30.	360.0	2.			1300.	5.95		7.90	9.5
HBIA8102041525	0.4 MT	0.4 MT	14.5	13.0	5.	360.0	5.	18.0L		1200.	11.00		7.95	8.5
HBIZ8103171250			19.5					34.0		1250.	8.90		8.20	
HBIZ8104071310			23.0							1120.	7.50		8.00	
HBIA8105051505	0.3 MT	0.3 MT	26.5	29.0	15.			14.0L		1100.	8.00		8.00	7.5
HBIZ8106091405			33.0					15.0L		1280.	9.10		8.10	
HBIZ8107301425			32.5					36.0		1380.	6.70		7.80	
HBIA8108181135	0.1 MT	0.1 MT	27.0	30.0	100.	135.0	7.	6.0L		1300.	6.00		7.80	
HBOA7912040824	0.5 MT		16.0	15.0	50.		0.				8.20		7.10	4.5
HBOA7912041304	0.5 MT	1.5 MT	17.0	25.0	75.	45.0	5.	36.0			8.25		7.30	5.0
HBOA7912041543	0.5 MT		17.5	21.0	50.	45.0	11.				8.70		7.50	5.8
HBOA8002121030	0.5 MT		13.0	8.5	100.	360.0	1.			445.	8.30			16.0
HBOA8002121615	0.5 MT	1.3 MT	15.0	21.0	10.			48.0		440.	9.00		6.90	13.0
HBOA8006170805	0.5 MT		27.0		0.		0.			640.	5.30		7.30	6.0
HBOA8006171150	0.5 MT	0.6 MT	28.0	32.0	60.		0.	24.0L		630.	6.20		7.20	6.0
HBOA8006171635	0.5 MT		30.5		40.					625.	8.10		7.50	5.6
HBOA8011190825	0.5 MT		18.5	11.0	100.	45.0	12.			710.	7.50		6.20	10.0
HBOA8011191540	0.5 MT	0.8 MT	20.5	18.5	20.	30.0	10.	36.0L		955.	5.00		8.25	8.0
HBOZ8012091200	1.0 FT		20.0					33.0L		1120.	8.10		8.20	
HBOZ8101141210			7.0					24.0L		1100.	11.20		8.20	
HBOA8102040740	0.5 MT		11.5	6.0	30.	360.0	2.			1200.	6.90		8.30	9.0
HBOA8102041545	0.5 MT	0.8 MT	14.5	13.0	5.	360.0	5.	36.0L		1300.	11.80		8.20	8.5
HBOZ8103171310			17.5					54.0		880.	9.30		8.50	
HBOZ8104071330			21.5					24.0		1140.			8.60	
USGS8104091545			24.5					36.0		1130.	9.30		8.50	
HBOA8105051520	0.5 MT	1.0 MT	26.0	29.0	15.			29.0L		1000.	11.00		9.00	5.5
HBOZ8106091420			31.5					13.0L		1150.	10.50		8.60	
HBOZ8107311435			33.0					36.0		1290.	6.70		8.20	
HBOA8108181145	0.5 MT	0.5 MT	25.5	30.0	100.	135.0	7.	18.0L		1250.	6.20		7.60	
JGSZ8012091650			19.0					33.0L		305.	3.80		6.80	
JGSZ8101141650			8.5					16.0L	7.50	132.	9.00		6.90	
JGSA8102040930	0.4 MT		11.5	6.0	30.	360.0	2.			20.	9.80		6.30	10.0
USGS8103091500			19.0											
JGSZ8103191600			21.0					6.0L	1.70	193.	9.80		7.60	
JGSZ8104091725			23.5					24.0	0.10	215.	9.10		8.80	

FIELD DATA SUMMARY

SAMPLE	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
JGMA7912040925	0.2 MT		15.5	15.0	50.		0.				3.20		5.10	5.8
JGMA7912041557	0.2 MT		18.7	21.0	50.	45.0	11.				3.10		5.10	6.0
JGMA8002120900			9.0	8.5	100.	360.0	1.			210.	8.30			
JGMA8002121645	0.3 MT	0.3 MT	15.5	21.0	10.			12.0		140.	5.90		6.10	12.5
JGMA8006170735	0.5 MT		19.0		0.		0.			350.	2.50			
JGMA8006171645			34.0		40.					270.	2.00			
JGMZ8101141530			10.5					10.0L		200.	6.40		6.60	
JGMA8102041625	0.1 MT	0.1 MT	9.5	13.0	5.	360.0	5.			240.	8.00		5.60	12.0
JGMZ8103191140			21.0					8.0L	0.18	210.	7.80		6.30	
HBMA8002120930			9.0	8.5	100.	360.0	1.			310.	4.30			
HBMA8002121710	0.3 MT	0.3 MT	18.5	21.0	10.			12.0		345.	6.10		6.40	6.0
SGIA7912040808	0.5 MT		15.5	15.0	50.		0.				7.40		6.90	4.5
SGIA7912041321	0.5 MT	1.0 MT	16.5	25.0	75.	45.0	5.	30.0			7.30		7.30	5.0
SGIA7912041610	0.5 MT		17.0	21.0	50.	45.0	11.				7.50		7.10	5.5
SGIA8002120755	0.5 MT		13.2	8.5	100.	360.0	1.			360.	7.70			18.0
SGIA8002121720	0.5 MT	1.0 MT	15.0	21.0	10.			42.0		340.	7.90		6.60	11.0
SGIA8006170725	0.5 MT		28.0		0.		0.			565.	6.20		7.30	6.0
SGIA8006171135	0.5 MT	1.0 MT	29.0	32.0	60.		0.	36.0L		560.	6.60		7.20	6.0
SGIA8006171655	0.5 MT		32.5		40.					570.	7.50		7.40	5.7
SGIA8011200821	0.5 MT		18.0	11.0	50.	45.0	12.			740.	7.40		7.95	8.0
SGIA8011201430	0.5 MT	0.8 MT	19.5	19.5	60.	45.0	10.	36.0L		840.	9.20		8.20	8.5
SGIZ8012091130			19.5					44.0L		1100.	7.80		7.90	
SGIZ8101131620			10.0					30.0L		866.	6.20		8.80	
SGIA8102040730	0.3 MT		12.0	6.0	30.	360.0	2.			1050.	7.80		8.00	9.5
SGIA8102041640	0.5 MT		14.0	13.0	5.	360.0	5.			1050.	11.40		8.10	8.0
SGIA8102050735	0.4 MT		12.0		0.		0.			1050.	10.40		8.10	10.0
SGIA8102051240	0.5 MT	1.2 MT	13.5	16.0	0.	55.0	5.	52.0L		1000.	11.00		7.80	9.5
SGIZ8103171335			19.0					50.0L		965.	9.80		8.40	
SGIZ8104071400			22.0					24.0L		1080.			8.10	
USGS8104091615			23.5					36.0		1090.	7.80		8.30	
SGIA8105051535	0.5 MT	1.5 MT	26.5	29.0	15.			51.0L		1000.	9.50		8.40	6.0
SGIZ8106101315			31.5					23.0L		1120.	7.30		8.40	
SGIZ8107301450			33.0					24.0L		1260.	8.40		8.50	
SGIA8108181200	0.3 MT	0.3 MT	27.5	30.0	100.	135.0	7.	12.0L		1200.	5.50		8.30	
SGOA7912040755	0.5 MT		15.5	15.0	50.		0.				8.80		6.90	4.5
SGOA7912041330	0.5 MT	2.0 MT	16.5	25.0	75.	45.0	5.	30.0			8.70		7.40	4.8
SGOA7912041619	0.5 MT		17.0	21.0	50.	45.0	11.				8.80		7.10	5.5
SGOA8002120744	0.5 MT		13.0	8.5	100.	360.0	1.			330.	8.80			22.0
SGOA8002121740	0.5 MT	1.3 MT	15.0	21.0	10.			36.0		330.	9.70		7.00	11.0
SGOA8006170715	0.5 MT		28.0		0.		0.			510.	6.10		7.30	5.9
SGOA8006171115	0.5 MT	0.5 MT	28.0	32.0	60.		0.			270.	6.40		7.25	6.0
SGOA8006171700	0.5 MT		32.5		40.					465.	7.60		7.60	5.5
SGOA8011200835	0.5 MT		17.5	11.0	50.	45.0	12.				8.65		8.10	8.0
SGOA8011201445	0.5 MT	1.0 MT	19.0	19.5	60.	45.0	10.	48.0L			9.30		6.10	9.0
SGOZ8012091115			19.5					50.0L		1070.	8.20		8.00	
SGOZ8101131650			9.5					42.0L		914.	6.20		8.80	
SGOA8102050750	0.5 MT		12.0		0.		0.			1000.	11.00		8.25	9.5
SGOA8102051255	0.5 MT	1.4 MT	13.0	16.0	0.	55.0	5.	60.0L		1000.	11.20		8.00	9.0
SGOZ8103171355			17.5					49.0L		795.	8.60		8.00	
SGOZ8104071430			22.5					60.0		860.			8.30	

FIELD DATA SUMMARY

SAMPLE	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
USGS8104091630			23.0					36.0		931.	8.10		8.30	
SGOA8105051550	0.5 MT	1.5 MT	26.0	29.0	15.			54.0L		1000.	8.40		8.10	6.3
SGOZ8106101345			30.5					44.0L		1180.	7.10		8.10	
SGOZ8107301500			32.0					36.0		1330.	8.40		8.70	
SGOA8108181210	0.5 MT	1.0 MT	26.5	30.0	100.	135.0	7.	36.0L		1200.	6.35		8.60	
USHA8011201500	0.5 MT	1.8 MT	20.5	19.5	60.	45.0	10.	66.0			8.90		8.10	8.5
USHA8102051535	0.5 MT	2.0 MT	14.5	16.0	0.	55.0	5.	76.0		970.	11.00		8.00	9.5
USHA8105051600	0.5 MT	1.5 MT	26.0	29.0	15.			60.0L		1000.	7.65		8.40	7.0
USHA8108181430	0.5 MT	1.3 MT	28.0	30.0	100.			49.0L		1200.	5.40		8.00	
USHZ8012091100			19.5					75.0L		1060.	8.00		7.80	
USHZ8101131710			10.0					65.0	80.00	880.	7.50		8.50	
USGS8103100750			19.5											
USHZ8103171405			19.5					64.0	110.00	800.	8.70		7.80	
USHZ8104071455			23.0					60.0	95.00	820.			7.90	
USGS8105051130			24.0						35.40	1010.	5.60		7.80	
USGS8105090930			22.0							875.	7.30		8.00	
USHZ8106090950			29.5					60.0L	60.00	1180.	6.00		7.90	
USGS8106301205			28.0											
USHZ8107301510			32.0					54.0L	12.00	1140.	6.60		8.20	
USGS8109011115			29.0						35.00	1060.	5.90		8.30	
LWEA8011200855	0.5 MT		20.0	11.0	50.	45.0	12.				7.50		7.70	8.5
LWEA8011201530	0.5 MT	2.3 MT	20.5	19.5	60.	45.0	10.	36.0			8.50		7.90	9.0
LWEZ8012091040			19.0					6.9		1020.	7.70		7.80	
LWEZ8101131230			9.3					91.0L		966.	8.50		8.50	
LWEA8102050810	0.5 MT		13.5		0.		0.			1000.	10.40		8.05	9.5
LWEA8102051400	0.5 MT	1.3 MT	14.5	16.0	0.	55.0	5.	57.0		950.	11.00		7.90	9.5
LWEZ8103171540			20.0					61.0		810.	8.30		7.70	
LWEZ8104071520			22.0					36.0		900.			8.00	
USGS8104090920			21.5							820.	7.20		7.80	
LWEA8105060945	0.5 MT	1.5 MT	25.0	30.0	5.	180.0	7.	57.0L		1100.	6.60		8.00	6.0
LWEZ8106090930			29.5					50.0L		1210.	5.50		7.60	
LWEZ8107291345			34.0					48.0L		1320.	6.40		7.50	
LWEA8108181415	0.5 MT	1.0 MT	28.0	30.0	100.			36.0L		1250.	8.00		7.70	
WCEA8102050955	0.5 MT		11.5		0.		0.	40.0L		1400.	6.10		7.15	11.0
WCEA8105060930	0.5 MT	0.8 MT	23.5	30.0	5.	180.0	7.	32.0L		2000.	0.40		7.10	8.0
WCEA8108181405	0.5 MT	0.5 MT	26.0	30.0	100.			19.0		1500.	1.80		6.80	
WCDA8011201010	0.4 MT		18.0	11.0	50.	45.0	12.				8.20		7.55	9.5
WCDA8102050930	0.5 MT		13.0		0.		0.	27.0L		1800.	10.20		7.70	10.5
WCDA8105060915	0.5 MT	0.5 MT	24.0	30.0	5.	180.0	7.	18.0L		2100.	5.65		7.40	8.5
WCCA8011200950	0.5 MT		19.0	11.0	50.	45.0	12.				4.70		7.35	9.0
WCCA8102050900	0.5 MT		13.5		0.		0.	48.0L		1300.	8.70		7.50	10.5
WCCA8105060900	0.5 MT	0.8 MT	24.5	30.0	5.	180.0	7.	36.0L		1400.	4.00		7.30	10.0
WCCA8108181345	0.5 MT	0.5 MT	27.0	30.0	100.			18.0L		1600.	6.45		7.60	
LWCA8011200906	0.5 MT		18.5	11.0	50.	45.0	12.				9.40		7.80	9.0
LWCA8011201545	0.5 MT	1.0 MT	20.0	19.5	60.	45.0	10.	24.0			9.20		7.90	9.0
LWCZ8012091020			19.0					51.0		773.	8.40		7.60	

FIELD DATA SUMMARY

SAMPLE	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
LWCZ8101131210			7.9					14.0		852.	10.80		8.50	
LWCA8102050820	0.5 MT		12.5		0.		0.			900.	10.80		8.00	10.0
LWCA8102051340	0.5 MT	1.8 MT	13.5	16.0	0.	55.0	5.	55.0		870.	11.00		7.90	10.0
LWCZ8103171455			20.0					34.0		990.	8.70		8.30	
LWCZ8104090825			20.6					30.0		900.	8.20		7.80	
LWCA8105060825	0.5 MT	1.0 MT	24.5	30.0	5.	180.0	7.	52.0		1000.	8.30		8.10	8.0
LWCZ8106090835			27.5					40.0		1130.	6.80		7.90	
LWCZ8107290830			30.5					48.0L		1220.	6.00		7.90	
LWCA8108181310	0.5 MT	0.5 MT	26.5	30.0	100.			5.0		1250.	7.20		8.00	
LWWA8011200924	0.5 MT		19.5	11.0	50.	45.0	12.				6.50		7.10	9.0
LWWA8011201600	0.5 MT	1.0 MT	20.5	19.5	60.	45.0	10.	48.0L			7.50		7.30	9.0
LWWZ8012091000			19.0					54.0L		750.	6.50		6.90	
LWWZ8101131100			8.8					60.0L		794.	10.30		7.90	
LWWA8102050835	0.5 MT		13.0		0.		0.			860.	10.20		7.80	10.0
LWWA8102051315	0.5 MT	1.5 MT	14.0	16.0	0.	55.0	5.	63.0L		840.	11.40		7.60	10.0
LWWZ8103171510			19.5					58.0L		1000.	8.10		8.00	
LWWZ8104090900			21.0					60.0L		935.	6.10		7.60	
LWWA8105060840	0.5 MT	1.0 MT	25.0	30.0	5.	180.0	7.	51.0L		1100.	5.30		7.30	10.0
LWWZ8106090904			28.0					41.0L		1170.	4.80		7.50	
LWWZ8107291300			32.0					48.0L		1260.	5.60		7.40	
LWWA8108181320	0.5 MT	1.0 MT	27.5	30.0	100.			37.0L		1250.	7.70		7.60	
SNMA7912110853	0.5 MT		19.5	21.0	50.		0.			295.	3.50			14.0
SNMA7912111211	0.5 MT	1.5 MT	20.0	23.0	90.	90.0	10.	36.0		295.	3.70			8.5
SNMA7912111619	0.5 MT		20.5	22.5	90.	90.0	5.			295.	4.10			20.5
SNMA8002191425	0.5 MT	1.3 MT	16.0	21.0	20.	45.0	10.	36.0		350.	10.00		7.20	9.0
SNMA8002191612	0.5 MT		16.5		80.					350.	10.60			10.0
SNMA8006240900	0.5 MT		28.0		0.		0.			680.	6.90		7.80	5.5
SNMA8006241205	0.5 MT	0.7 MT	29.5	32.0	50.	225.0	12.	36.0L		650.	7.20		7.80	5.5
SNMA8006241610	0.5 MT		32.0	33.0	80.	270.0	10.			630.	8.70		8.15	5.1
SNMA8011110840	0.5 MT		22.0		100.	60.0	10.			800.	5.40		8.80	4.5
SNMA8011111335	0.3 MT	0.3 MT	23.0		100.	60.0	10.			1150.	11.80		7.40	5.0
SNMA8102100850	0.5 MT		17.5	21.0	30.	135.0	15.			850.	8.70		7.90	3.1
SNMA8102111020	0.5 MT	1.1 MT	20.5	19.0	70.	180.0	25.	48.0L		880.	8.30		7.70	9.5
SNMA8105071120	0.5 MT	0.8 MT	25.0	30.0	50.	150.0	7.	28.0L		1200.	7.60		9.30	6.0
SNMA8108191435	0.5 MT	0.8 MT	28.0	29.0	80.	220.0	5.			1400.	10.10		8.20	
NMOA7912110900	0.5 MT		20.0	21.0	50.		0.		23.30	420.	3.10			13.5
NMOA7912111203	0.5 MT	2.0 MT	20.5	23.0	90.	90.0	10.	36.0		400.	3.40			9.0
NMOA7912111625	0.5 MT		20.5	22.5	90.	90.0	5.			410.	3.60			16.0
NMOA8002191445	0.5 MT	1.3 MT	16.5	21.0	20.	45.0	10.	12.0		760.	9.30		7.30	10.0
NMOA8002191600	0.5 MT		16.5		80.				230.08	655.	8.80			11.5
NMOA8006240905	0.5 MT		29.0		0.		0.		12.48	1450.	5.10		7.30	5.6
NMOA8006241215	0.5 MT	1.2 MT	30.5	32.0	50.	225.0	12.	18.0		1450.	6.60		7.55	5.4
NMOA8006241605	0.5 MT		32.5	33.0	80.	270.0	10.			1500.	7.60		7.65	5.6
NMOA8011110847	0.5 MT		22.5		100.	60.0	10.		0.00	1600.	5.15		7.30	6.0
NMOA8011111350	0.5 MT	0.7 MT	23.0		100.	60.0	10.			1550.	7.30		7.40	7.0
NMOA8102100845	0.5 MT		18.0	21.0	30.	135.0	15.		149.60J	1300.	4.90		7.30	3.2
NMOA8102110940		1.0 MT	20.0	19.0	70.	180.0	25.	24.0		1200.	4.75		7.20	9.5
NMOA8105071015	0.5 MT	1.0 MT	25.0	30.0	50.	150.0	7.	40.0L	0.00	1700.	4.80		7.60	9.5
NMOA8108191400	0.5 MT	1.0 MT	29.0	29.0	80.	220.0	5.	36.0L	5.60	1500.	5.95		7.15	

FIELD DATA SUMMARY

SAMPLE	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
NNMA7912110917	0.5 MT		19.5	21.0	50.					295.	3.60			14.0
NNMA7912111217	0.5 MT	2.0 MT	20.0	23.0	90.	90.0	10.	36.0		295.	3.70			8.5
NNMA7912111636	0.5 MT		20.5	22.5	90.	90.0	5.			295.	4.20			16.0
NNMA8002191417	0.5 MT	1.6 MT	16.0	21.0	20.	45.0	10.	18.0		605.	9.80		7.30	10.0
NNMA8002191616	0.5 MT		16.5		80.					570.	9.50			10.0
NNMA8006240850	0.5 MT		28.5		0.		0.			1100.	6.10		7.45	5.5
NNMA8006241200	0.5 MT	0.5 MT	30.0	32.0	50.	225.0	12.	18.0		1200.	7.30		7.60	5.6
NNMA8006241620	0.5 MT		32.0	33.0	80.	270.0	10.			1110.	9.35		8.10	5.2
NNMA8011110830	0.5 MT		22.0		100.	60.0	10.			1550.	5.50		7.30	6.0
NNMA8011111400	0.5 MT	1.2 MT	22.5		100.	60.0	10.	14.0L		1500.	6.70		7.40	7.0
NNMA8102100835	0.5 MT		17.5	21.0	30.	135.0	15.			1200.	6.10		7.40	3.0
NNMA8102111040	0.5 MT	0.8 MT	20.5	19.0	70.	180.0	25.			1000.	7.45		7.50	9.5
NNMA8105071125	0.5 MT	2.8 MT	24.5	30.0	50.	150.0	7.	65.0L		1600.	4.20		8.00	9.0
NNMA8108191445	0.5 MT	1.5 MT	28.0	29.0	80.	220.0	5.	51.0L		1500.	6.30		7.00	
LWMA7912110936	0.5 MT		19.0	21.0	50.					295.	0.60			9.0
LWMA7912111225	0.4 MT	0.5 MT	19.5	23.0	90.	90.0	10.	18.0		295.	1.80			8.5
LWMA7912111642	0.5 MT		20.5	22.5	90.	90.0	5.			295.	3.30			14.0
LWMA8002191410	0.5 MT	0.5 MT	17.0	21.0	20.	45.0	10.			370.	10.40		7.20	9.5
LWMA8002191621	0.5 MT		17.5		80.					380.	10.20			9.5
LWMA8006240830			26.5		0.		0.			990.	0.30			
LWMA8006241640			31.0	33.0	80.	270.0	10.			1400.	0.90			
LWIA7912110845	0.5 MT		19.5	21.0	50.		0.			310.	3.50			15.0
LWIA7912111234	0.5 MT	2.0 MT	20.0	23.0	90.	90.0	10.	24.0		300.	3.90			9.0
LWIA7912111652	0.5 MT		20.5	22.5	90.	90.0	5.			300.	4.40			15.5
LWIA8002191350	0.5 MT	1.8 MT	15.5	21.0	20.	45.0	10.	36.0		360.	10.00		7.15	10.0
LWIA8002191628	0.5 MT		16.5		80.					440.	10.20			10.0
LWIA8006240810	0.5 MT		28.0		0.		0.			990.	7.80		8.20	4.2
LWIA8006241150	0.5 MT	0.8 MT	29.5	32.0	50.	225.0	12.	24.0		1050.	11.00		8.50	4.8
LWIA8006241645	0.5 MT		32.0	33.0	80.	270.0	10.			1050.	14.80		6.90	4.2
LWIA8011110821	0.5 MT		22.0		100.	60.0	10.			1250.	5.00		7.40	6.0
LWIA8011111412	0.5 MT	0.5 MT	22.5		100.	60.0	10.	6.0L		1250.	10.20		8.15	6.0
LWIA8102100830	0.5 MT		17.5	21.0	30.	135.0	15.			1050.	6.50		7.40	2.5
LWIA8102101100	0.5 MT	0.8 MT	21.0	19.0	70.	180.0	25.	33.0		1100.	7.30		7.50	9.5
LWIA8105071135	0.5 MT	1.0 MT	23.5	30.0	50.	150.0	7.	39.0L		1700.	7.00		8.50	7.5
LWIA8108191500	0.5 MT	0.8 MT	28.5	29.0	80.	220.0	5.	35.0		1500.	6.10		7.10	
CEWA7912111251	0.5 MT	0.8 MT	20.5	23.0	90.	90.0	10.	36.0L		2400.	4.90			9.8
CEWA7912111701	0.5 MT		21.0	22.5	90.	90.0	5.			2400.	7.40			15.0
CEWA8002191250	0.5 MT	0.5 MT	17.0	21.0	20.	45.0	10.	12.0L		1050.	7.00		6.95	7.5
CEWA8002191645	0.5 MT		18.5		80.				96.80	880.	7.40			9.5
CEWA8006240755	0.3 MT		27.0		0.		0.		3.16	2150.	3.50			
CEWA8006241130	0.3 MT	0.3 MT	31.0	32.0	50.	225.0	12.	12.0L		2780.	14.50			
CEWA8006241700	0.3 MT		33.0	33.0	80.	270.0	10.			2480.	15.40			
CEWA8011110805	0.2 MT		21.0		100.	60.0	10.		1.70	2300.	6.50			
CEWA8011111430	0.2 MT	0.2 MT	23.0		100.	60.0	10.	6.0L		2300.	12.00			
CEWA8102111115	0.3 MT	0.3 MT	24.5	19.0	70.	180.0	25.	12.0L	5.23	2900.	10.80		7.95	4.0
CEWA8105071215	0.1 MT	0.1 MT	30.0	30.0	50.	150.0	7.	4.0L	0.59	3500.	11.60		9.20	
CEWA8108191325				29.0	80.	220.0	5.		0.80					
LWDA7912110820	0.5 MT		19.5	21.0	50.		0.			75.	7.55			15.0
LWDA7912111302	0.5 MT	1.5 MT	20.0	23.0	90.	90.0	10.			315.	7.80			9.5

FIELD DATA SUMMARY

SAMPLE	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
LWOA7912111709	0.5 MT		20.0	22.5	90.	90.0	5.			335.	7.65			14.5
LWOA8002191223	0.5 MT	1.6 MT	15.0	21.0	20.	45.0	10.	24.0		375.	10.30		7.30	7.5
LWOA8002191655	0.5 MT		16.0		80.					370.	10.60			9.5
LWOA8006240735	0.5 MT		28.0		0.		0.			765.	5.90		7.20	6.1
LWOA8002241135	0.5 MT	0.7 MT	28.5	32.0	50.	225.0	12.	24.0		780.	7.20		7.35	6.0
LWOA8002241705	0.5 MT		30.5	33.0	80.	270.0	10.			770.	7.50		7.45	6.0
LWOA8011110745	0.5 MT		22.5		100.	60.0	10.			1250.	7.15		7.30	6.5
LWOA8011111445	0.4 MT	0.4 MT	23.0		100.	60.0	10.	30.0		1250.	3.90		7.25	6.5
LWOA8102100810	0.5 MT		17.5	21.0	30.	135.0	15.			1400.	8.70		8.00	2.5
LWOA8102111140	0.5 MT	0.8 MT	21.0	19.0	70.	180.0	25.	7.0		1300.	8.50		7.90	6.0
LWOA8105071235	0.5 MT	0.5 MT	25.0	30.0	50.	150.0	7.	17.0		1600.	9.80		8.30	7.0
LWOA8108191510	0.4 MT	0.4 MT	28.0	29.0	80.	220.0	5.	7.0		2200.	9.40		7.60	
SDCA7912180903	0.5 MT		17.5	11.0	0.	22.5	11.				7.80		6.20	10.0
SDCA7912181303	0.5 MT	3.4 MT	17.5	19.0	5.	360.0	15.	36.0			7.30		5.70	11.5
SDCB7912181304	1.0 MT		17.8								7.30			
SDCD7912181305	2.0 MT		17.8								7.20			
SDCF7912181306	3.0 MT		17.8								7.15			
SDCA7912181625	0.5 MT		18.0	17.0	15.	45.0	5.				7.40		6.10	12.0
SDCA8002191215	0.5 MT		15.5	21.0	20.	45.0	10.			730.	9.50			8.5
SDCA8002261355	0.5 MT	3.0 MT	19.0		0.	360.0				420.	7.50		6.85	12.0
SDCA8007010825			29.0		100.	360.0				1000.	5.00		7.10	7.5
SDCA8007011645	0.5 MT	2.0 MT	31.0	32.0	50.	135.0	9.	36.0		910.	6.70		7.40	6.6
SDCA8011121010	0.5 MT	1.6 MT	21.0	20.0	20.	45.0	15.	36.0		1300.	5.20		7.15	6.5
SDCA8011121305	0.5 MT		21.0	21.0	40.	45.0	20.	36.0		1300.	5.80		7.20	7.0
SDCA8102111200	0.5 MT	3.0 MT	21.0	19.0	70.	180.0	25.	24.0		1400.	8.15		7.95	5.5
SDCA8105071301	0.5 MT	3.0 MT	25.0	30.0	50.	150.0	7.	72.0		2000.	7.60		8.60	7.0
SDCA8108200950	0.5 MT	2.1 MT	27.5	30.0	80.	260.0	3.	48.0		2100.	4.50		7.40	
DDCA7912180908	0.5 MT		17.0	11.0	0.	22.5	11.				3.80		5.90	10.0
DDCA7912181250	0.5 MT	2.5 MT	17.8	19.0	5.	360.0	15.				4.00		5.50	14.5
DDCB7912181251	1.0 MT		17.8								3.80			
DDCC7912181252	1.5 MT		17.8								3.65			
DDCD7912181253	2.0 MT		17.8								3.60			
DDCA7912181635	0.5 MT		18.5	17.0	15.	45.0	5.						5.90	12.0
DDCA8002191200	0.5 MT		15.5	21.0	20.	45.0	10.		456.09	1500.	7.40			9.5
DDCA8002261302	0.5 MT	2.0 MT	18.5		0.	360.0			0.00	1300.	4.80		6.50	8.5
DDCA8007010830			28.0		100.	360.0			0.00	2600.	2.80		7.05	7.7
DDCA8007011650	0.5 MT	1.0 MT	32.0	32.0	50.	135.0	9.	36.0		2580.	9.10		7.65	6.3
DDCA8011121050	0.5 MT	1.0 MT	21.0	20.0	20.	45.0	15.	30.0	0.00	1700.	6.30		7.30	6.5
DDCA8011121313	0.5 MT		21.5	21.0	40.	45.0	20.			1950.	8.00		7.50	7.0
DDCA8102111230	0.5 MT	2.0 MT	21.5	19.0	70.	180.0	25.		61.00J	2700.	6.90		7.40	6.5
DDCA8105071310	0.5 MT	1.0 MT	26.0	30.0	50.	150.0	7.	34.0L		3000.	7.00		7.60	10.0
DDCA8108200920	0.5 MT	1.0 MT	27.0	30.0	80.	260.0	3.	40.0L	0.00	2700.	2.10		7.20	
NDCA7912180914	0.5 MT		17.5	11.0	0.	22.5	11.				7.10		6.00	10.5
NDCA7912181316	0.5 MT	2.3 MT	17.5	19.0	5.	360.0	15.	36.0			6.20		5.90	11.0
NDCA7912181645	0.5 MT		18.0	17.0	15.	45.0	5.				6.90		6.00	12.0
NDCA8002191210	0.5 MT		15.5	21.0	20.	45.0	10.			1140.	8.30			9.0
NDCA8002261248	0.5 MT	2.5 MT	19.0		0.	360.0				450.	7.20		6.40	8.0
NDCA8007010815			29.0		100.	360.0				1100.	3.95		6.90	7.6
NDCA8007011700	0.5 MT	1.8 MT	32.0	32.0	50.	135.0	9.	42.0		1200.	6.80		7.25	6.5
NDCA8011121100	0.4 MT	0.4 MT	21.0	20.0	20.	45.0	15.	30.0L		1800.	5.80		7.20	6.5

F I E L D D A T A S U M M A R Y

S A M P L E	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
NDCA8011121320	0.4 MT		21.5	21.0	40.	45.0	20.			1650.	6.60		7.25	7.0
NDCA8102111315	0.5 MT	2.2 MT	20.5	19.0	70.	180.0	25.	36.0		1700.	8.25		7.70	6.5
NDCA8105071320	0.5 MT	1.5 MT	25.0	30.0	50.	150.0	7.	50.0		2000.	6.50		8.00	8.5
NDCA8108201000	0.5 MT	2.8 MT	27.5	30.0	80.	260.0	3.	72.0		3000.	3.55		7.30	
UNCA8011111510	0.1 MT	0.1 MT	23.0		100.	60.0	10.			2600.	10.40		8.10	
UNCA8108201015	0.1 MT	0.1 MT		30.0	80.	260.0	3.		0.10	2600.				
LPIA7912180845	0.5 MT		18.0	11.0	0.	22.5	11.				7.20		6.10	10.0
LPIA7912181330	0.5 MT	2.5 MT	18.0	19.0	5.	360.0	15.	36.0			7.30		5.80	11.5
LPIA7912181655	0.5 MT		18.0	17.0	15.	45.0	5.				7.20		6.10	12.0
LPIA8002191743	0.5 MT		16.5		80.					1200.	8.10			10.0
LPIA8002261226	0.5 MT	5.0 MT	19.0		0.	360.0				505.	7.00		6.50	7.5
LPIA8007010800			29.0		100.	360.0				1250.	4.15		7.00	7.6
LPIA8007011710	0.5 MT	0.6 MT	32.0	32.0	50.	135.0	9.	48.0		1500.	5.50		7.10	6.6
LPIA8011120955	0.5 MT	3.0 MT	21.0	20.0	20.	45.0	15.	72.0		1500.	7.90		7.20	6.5
LPIA8011121335	0.5 MT		22.0	21.0	40.	45.0	20.			1450.	9.35		7.90	7.0
LPIA8102111340	0.5 MT	3.0 MT	20.5	19.0	70.	180.0	25.	60.0		1700.	7.80		7.60	6.5
LPIA8105071420	0.5 MT	2.0 MT	25.0	30.0	50.	150.0	7.	62.0		2400.	6.80		7.80	6.0
LPIA8105121705	0.5 MT	1.8 MT	27.0	29.0	0.	135.0	10.			2600.	8.90		8.10	8.0
LPIA8108201030	0.5 MT	2.8 MT	28.0	30.0	80.	260.0	3.	48.0		2500.	3.50		7.40	
LPIA8108261730	0.5 MT		29.5	30.0	80.	45.0	7.				4.90			
LPIA8108270800	0.5 MT		28.5	29.0	100.	90.0	1.				2.20			
LPSA7912180930	0.5 MT		17.0	11.0	0.	22.5	11.				8.40		7.70	9.5
LPSA7912181420	0.5 MT	2.0 MT	17.5	19.0	5.	360.0	15.				8.40		6.60	11.5
LPSA7912181705	0.5 MT		17.5	17.0	15.	45.0	5.				8.90		6.70	10.5
LPSA8002261147	0.5 MT	1.8 MT	18.0		0.	360.0				580.	9.00		6.80	6.5
LPSA8007010750			27.5		100.	360.0				1300.	8.35		7.50	7.5
LPSA8007011715	0.5 MT	1.0 MT	31.5	32.0	50.	135.0	9.			1200.	14.00		9.30	4.2
LPSA8011120935	0.3 MT	0.3 MT	20.0	20.0	20.	45.0	15.	6.0		1500.	8.20		7.60	6.5
LPSA8011121355	0.5 MT		21.0	21.0	40.	45.0	20.			1500.	8.60		7.70	6.5
LPSA8105070910	0.5 MT	1.0 MT	24.0	30.0	50.	150.0	7.	36.0		3000.			8.90	9.0
LPSA8108200900	0.5 MT	1.0 MT	26.5	30.0	80.	260.0	3.	22.0		3100.	7.20		8.40	
LPSA8108260940	0.2 MT			30.0	80.	45.0	7.				6.00			
LPSB8108260941	0.8 MT										5.70			
LPSA8108261150	0.2 MT		29.5	30.0	80.	45.0	7.				7.10			
LPSA8108261430	0.5 MT		29.0	30.0	80.	45.0	7.				8.50			
LPSA8108261805	0.5 MT		29.0	30.0	80.	45.0	7.				7.40			
LPSA8108262010	0.5 MT		29.0	30.0	80.	45.0	7.				7.10			
LPSA8108262210	0.5 MT		28.5	30.0	80.	45.0	7.				7.00			
LPSA8108270005	0.5 MT		28.5	29.0	100.	90.0	1.				7.30			
LPSA8108270200	0.5 MT		28.0	29.0	100.	90.0	1.				6.30			
LPSA8108270410	0.5 MT		28.0	29.0	100.	90.0	1.				6.20			
LPSA8108270610	0.5 MT		28.0	29.0	100.	90.0	1.				6.10			
LPSA8108270835	0.5 MT		27.5	29.0	100.	90.0	1.				6.40			
RLCA7912180840	0.5 MT		16.0	11.0	0.	22.5	11.				7.90		6.50	9.5
RLCA7912181359	0.5 MT	1.0 MT	17.0	19.0	5.	360.0	15.	18.0			8.10		6.50	11.5
RLCA7912181605	0.5 MT		17.5	17.0	15.	45.0	5.				8.10		6.60	11.5
RLCA8002261208	0.5 MT	1.0 MT	18.0		0.	360.0				1400.	7.80		6.60	7.0
RLCA8007011600	0.5 MT	1.0 MT	34.0	32.0	50.	135.0	9.			3100.	13.00			
RLCA8011121445	0.1 MT		23.0	21.0	40.	45.0	20.			2250.	9.00		7.80	6.5

FIELD DATA SUMMARY

SAMPLE	SAMPLE DEPTH 3/98 FT/MT	STREAM DEPTH 97/198 FT/MT	WATER TEMP 10 DEG C	AIR TEMP 20 DEG C	CLOUD COVER 32 %	WIND DIR 36 DEG	WIND SPEED 35 MPH	SECCHI 77 IN	FLOW 61 CFS	COND 94/95 UMHOS/CM	DO 299/300 MG/L	SALINITY 480 PPTH	PH 400 STD UNIT	ORP 90 MV
RLCA8102111405	0.5 MT	0.5 MT	22.0	19.0	70.	180.0	25.	3.0		2100.	8.25		7.90	7.0
RLCA8105070930	0.1 MT	0.1 MT	22.5	30.0	50.	150.0	7.	2.5		4100.	8.00		9.10	5.1
RLCX8105121715	0.4 MT	0.4 MT	28.0	29.0	0.	135.0	10.	5.0		4100.	18.80		9.90	4.0
RLCA8105281535	0.5 MT		34.0	31.0	50.	90.0	10.			5600.	2.70		7.80	
RLCA8108201040	0.1 MT	0.1 MT	27.5	30.0	80.	260.0	3.			2900.	8.70		8.40	
RLCA8108261745	0.2 MT		29.5	30.0	80.	45.0	7.				7.40			
RLCX8108261755	0.2 MT		29.5	30.0	80.	45.0	7.				9.30			
RLCA8108270745	0.1 MT		25.0	29.0	100.	90.0	1.				2.00			
LPMA7912180816	0.5 MT		14.5	11.0	0.	22.5	11.				1.45		4.90	10.0
LPMA7912181440	0.5 MT	1.0 MT	16.5	19.0	5.	360.0	15.				7.75		5.50	11.0
LPMA7912181715	0.5 MT		16.5	17.0	15.	45.0	5.				3.90		5.20	11.0
LPMA8002261121	0.5 MT	0.5 MT	16.0		0.	360.0				345.	4.00		5.85	7.5
LPMA8007010930	0.3 MT		27.5		100.	360.0				1920.	2.50			
LPMA8007011500	0.5 MT	0.5 MT	35.0	32.0	50.	135.0	9.			2200.	11.40			
LPMA8011120915	0.2 MT	0.2 MT	18.0	20.0	20.	45.0	15.			1750.	8.80			
LPMA8102110845	0.2 MT	0.2 MT	19.5	19.0	70.	180.0	25.	12.0		1400.	5.40		5.90	8.0
LPMA8105071400	0.3 MT	0.3 MT	28.0	30.0	50.	150.0	7.			3100.	7.10		7.40	7.5
LPMA8108201100	0.1 MT	0.1 MT	29.0	30.0	80.	260.0	3.			4350.	7.30		7.60	
LPMA8108261715	0.1 MT		29.0	30.0	80.	45.0	7.				8.60			
LPMA8108270825	0.1 MT		25.0	29.0	100.	90.0	1.				4.50			
LPOA7912180752	0.5 MT		17.0	11.0	0.	22.5	11.				8.00		6.20	8.5
LPOA7912181500	0.5 MT	1.5 MT	17.8	19.0	5.	360.0	15.				8.50		6.60	10.5
LPOA7912181730	0.5 MT		18.0	17.0	15.	45.0	5.				8.30		6.65	10.5
LPOA8002191755	0.5 MT		16.5		80.					480.	10.70			9.0
LPOA8002261048	0.5 MT	1.4 MT	18.0		0.	360.0				645.	8.60		6.90	10.0
LPOA8007010715			28.0		100.	360.0				1100.	8.50		8.50	5.9
LPOA8007011730	0.5 MT	1.0 MT	32.5	32.0	50.	135.0	9.			1100.	10.90		9.10	4.5
LPOA8011120847	0.5 MT	0.5 MT	19.0	20.0	20.	45.0	15.	24.0		1500.	7.60		7.60	6.5
LPOA8011121426	0.5 MT		21.0	21.0	40.	45.0	20.			1300.	9.50		8.00	6.0
LPOA8102110815	0.5 MT	0.8 MT	20.0	19.0	70.	180.0	25.	12.0		2200.	8.00		7.60	8.0
LPOA8105071440	0.5 MT	0.8 MT	25.0	30.0	50.	150.0	7.	29.0L		2500.	11.20		9.10	5.0
LPOA8105121730	0.5 MT	1.0 MT	26.5	29.0	0.	135.0	10.	39.0		2500.	6.60		9.20	6.0
LPOA8105281605	0.5 MT		29.0	31.0	50.	90.0	10.			2950.	11.00		9.10	
LPOA8108201140	0.5 MT	0.6 MT	27.0	30.0	80.	260.0	3.	20.0L		3500.	5.40		7.20	
LPOA8108270810	0.5 MT		27.0	29.0	100.	90.0	1.				2.80			
TCOA8011120830	0.2 MT	0.2 MT	20.5	20.0	20.	45.0	15.	12.0L		60.	5.80		7.10	7.0
TCOA8011121420	0.5 MT		22.0	21.0	40.	45.0	20.			1300.	7.60		7.40	6.5
TCOA8102110800	0.5 MT	0.6 MT	19.0	19.0	70.	180.0	25.	30.0		1700.	6.40		7.00	9.5
TCOA8105071500	0.5 MT	1.0 MT	25.0	30.0	50.	150.0	7.	39.0L		2500.	5.50		7.80	8.5
TCOA8105121745	0.5 MT	1.8 MT	27.0	29.0	0.	135.0	10.	54.0		2600.	6.10		8.60	6.0
TCOX8105121755	0.5 MT	1.0 MT	28.0	29.0	0.	135.0	10.	33.0L		2800.	4.60		9.40	6.0
TCOX8105281620	0.5 MT		30.0	31.0	50.	90.0	10.			2950.	8.30		9.00	
TCOA8108201155	0.5 MT	2.0 MT	27.5	30.0	80.	260.0	3.	20.0		3400.	3.60		6.60	

LABORATORY DATA SUMMARY (MINERALS AND BIOLOGICAL)

SAMPLE	TURB 76 NTU	ALK 410 MG/L	HARD 900 MG/L	COLOR 80/81 PT-CO	SULFATE 945 MG/L	CHLORIDE 940/941 MG/L	FLUORIDE 950 MG/L	BOD 310 MG/L	RES DISS 70300 MG/L	RES SUS 530 MG/L	SULFIDE 745 MG/L	TOC 680 MG/L	CHL A 32210 UG/L	PHEO A 32223 UG/L
FDMA7911271447	0.8	27.0	35.6	180.	0.0	25.0		1.7					7.79	0.00
FDMA7911271124						25.0					0.5			
FDMA8002051555	0.7	17.0	47.5	90.	0.3	40.0		0.9	128.	0.2			1.05	1.23
FDMA8006101614	3.7	34.0	59.4	120.	5.8	57.5		8.1	180.	8.6			18.55	5.80
FDMA8008051600	5.2	21.0	71.3	120.	1.0	95.0		11.2	277.	18.0			250.79	1.26
FDMA8012181515	1.4	21.8	46.0	100.	0.0	72.0			230.	4.2			6.10	7.11
FDMA8102031430		58.7	56.0	120.	2.6	87.5		4.6	349.	3.2			7.36	4.17
FDMA8105041450	7.2	40.4	68.0	140.	2.3	85.0		13.3		14.0			188.32	8.13
FDMA8108171500	3.9	160.0	72.0	80.	14.0	72.0		6.5	440.	0.9			107.30	27.30
BCMA7911271139											0.3			
BCMA7911271458	1.2	37.0	48.0	180.	6.0	35.0		1.3					5.42	0.00
BCMA8002051610	5.2	31.0	59.4	100.	5.2	37.5		0.6	154.	16.3			3.81	4.09
BCMA8006101630	5.0	38.0	59.4	110.	8.0	45.0		2.0	152.	3.8			27.42	14.67
BCMA8008051610	2.4	25.0	43.6	90.	7.6	45.0		3.2	154.	2.3			12.11	6.49
BCLA7911271213	1.6										0.2			
BCLA7911271510	1.6	36.0	54.0	160.	7.0	32.5		1.2						
BCLA8002051619	7.4	30.0	55.4	100.	4.7	37.5		0.8	147.	18.9			4.02	10.37
BCLA8006101639	2.6	39.0	55.4	110.	4.5	45.0		0.8	152.	1.2			2.76	1.49
BCLA8008051615	2.8	25.0	43.6	80.	8.0	42.5		2.2	150.	4.9			12.32	8.95
BCLA8012181530	5.6	30.6	40.0	120.	7.0	48.0			158.	13.6			9.58	5.82
BCLA8102031510		16.5	52.0	140.	7.8	50.0		2.3	220.	11.0			15.64	8.66
BCLA8105041707	3.3	25.9	120.0	100.	17.2	62.5		3.5		1.0			4.62	3.31
BCLA8108171350	4.1	5.2	74.0	70.	17.0	69.0		2.5	250.	12.0			8.50	5.50
BCCA7911271320											0.4			
BCCA7911271612	1.3	35.0	50.0	160.	5.0	30.0		1.5					2.40	1.41
BCCA8002051654	0.5	24.5	39.6	90.	0.7	25.0		1.0	109.	0.7			0.54	0.57
BCCA8006101709	2.1	37.0	59.4	120.	7.0	42.5		1.4	155.	3.6			6.46	1.76
BCCA8008051645	0.9	23.0	31.7	200.	1.0	20.0		0.7	316.	1.7			0.81	0.86
BCCA8012181630	0.7	14.0	60.0	150.	0.0	23.3			133.	0.6			1.19	1.14
BCCA8102031635		36.6	40.0	140.	1.5	28.0		1.7	137.	0.4			1.37	2.90
BCCA8105041730	3.5	23.8	46.0	150.	0.8	38.0		6.0		14.0			18.00	18.66
LMSA7911271300											0.3			
LMSA7911271547	1.4	37.0	48.0	160.	7.0	35.0		1.2					2.21	0.00
LMSA8002051642	1.3	63.0	119.0	100.	15.7	77.5		0.4	269.	2.4			4.43	3.85
LMSA8006101657	2.5	38.0	63.4	110.	9.4	45.0		0.2	157.	0.0			2.18	1.01
LMSA8008051635	2.1	26.0	47.5	90.	7.6	42.5		2.0	155.	2.9			14.98	1.17
LMSA8012181610	5.5	62.4	100.0	120.	19.6	62.0			251.	14.6			4.19	3.92
LMSA8102031610		17.0	44.0	90.	8.8	47.5		2.4	201.	23.0			9.76	7.37
LMSA8105041700	3.2	26.9	50.0	100.	19.2	68.0		5.0		2.0			9.32	3.98
LMSA8108171420	6.7	110.0	50.0	90.	32.0	83.0		2.4	450.	34.0			18.90	9.60
ZZCA7911271234											0.3			
ZZCA7911271537	0.9	80.0	105.9	100.	7.0	57.5		1.2					4.62	0.00
ZZCA8002051635	2.1	73.0	127.0	80.	20.7	95.0		1.2	297.	2.2			3.76	3.59
ZZCA8006101653	2.4	37.0	59.4	110.	6.5	45.0		0.5	155.	1.5			3.61	0.27
ZZCA8008051630	1.9	27.0	47.5	90.	8.0	47.5		2.8	187.	3.4			22.51	3.63
ZZCA8012181600	5.6	65.5	110.0	140.	19.2	65.0			256.	17.5			5.50	3.67
ZZCA8102031555		17.0	60.0	80.	9.4	50.0		2.4	214.	23.4			9.89	4.83
ZZCA8105041650	3.2	28.9	68.0	100.	19.2	65.0		4.9		4.0			9.68	3.54
ZZCA8108171415	6.4	110.0	87.0	80.	33.0	84.0		2.3	430.	27.0			11.70	7.40

LABORATORY DATA SUMMARY (MINERALS AND BIOLOGICAL)

SAMPLE	TURB 76 NTU	ALK 410 MG/L	HARD 900 MG/L	COLOR 80/81 PT-CO	SULFATE 945 MG/L	CHLORIDE 940/941 MG/L	FLUORIDE 950 MG/L	BOD 310 MG/L	RES DISS 70300 MG/L	RES SUS 530 MG/L	SULFIDE 745 MG/L	TOC 680 MG/L	CHL A 32218 UG/L	PHEO A 32223 UG/L
LMNA7911271250											0.8			
LMNA7911271520	1.6	35.0	52.0	160.	7.0	35.0		1.1					1.30	0.00
LMNA8002051630	1.9	55.0	95.0	120.	14.2	67.5		1.2	233.	2.6				2.16
LMNA8006101649	2.4	39.0	63.4	110.	7.4	45.0		0.6	162.	1.4			4.22	0.75
LMNA8008051620	2.1	28.0	51.4	80.	8.0	50.0		3.3	168.	5.0			50.30	3.80
LMNA8012181550	2.1	22.9	56.0	140.	9.8	52.0			186.	3.6			2.74	1.95
LMNA8102031535		30.9	72.0	140.	16.6	75.0		2.7	275.	7.3			8.22	12.08
LMNA8105041640	2.4	36.2	120.0	90.	22.2	70.0		5.4		2.0			7.94	11.86
LMNA8108171405	1.7	69.0	80.0	70.	28.0	75.0		2.6	350.	1.0			15.60	6.20
WFEA8011201126	1.6	121.0	304.0	160.	100.0	220.0			731.	8.4			6.53	3.31
WFEZ8012100933	1.0	175.0	320.0		79.0	200.0	0.60	0.9	688.				2.20	1.47
WFEZ8101141345	1.0	135.0	340.0		100.0	220.0	0.60		722.				3.57	2.35
WFEA8102041250		144.0	328.0	40.	83.2	225.0		2.4	844.	1.5			3.98	3.10
WFEZ8103170935	4.0	148.0	370.0		120.0	240.0	0.60	1.1	752.					
WFEZ8104070850	1.0	228.0	450.0		160.0	280.0	0.60	1.0	945.					
WFEA8105061125	3.0	89.0	380.0	60.	176.0	310.0		2.4		7.0			6.33	2.81
WFEZ8106091100	1.0	143.0	410.0		150.0	290.0	0.70	1.2	886.				61.00	7.00
WFEZ8107300900	1.0	145.0	300.0		140.0	270.0	0.60	1.0	840.				7.20	10.80
WFEA8108180930	1.5	140.0	380.0	40.	110.0	270.0		2.5	950.	1.1			17.40	2.80
WFNA8011201150	1.4	140.0	268.0	90.	70.0	158.0			582.	4.4			2.43	3.20
WFNZ8012100950	2.0	266.0	280.0		8.4	51.0	0.60	0.2	457.				11.84	3.20
WFNZ8101141405	2.0	308.0	310.0		7.3	45.0	0.50		475.				0.79	0.85
WFNA8102041310		204.0	314.0	0.						11.7			32.84	3.34
WFNZ8103171010	3.0	257.0	320.0		21.0	81.0	0.50	2.4	507.					
WFNZ8104070945	4.0	251.0	290.0		12.0	64.0	0.60	2.5	493.					
WFNA8105061135	4.4	118.0	300.0	100.	20.0	153.0		9.1		5.0			49.01	0.00
WFNZ8106091120	1.0	113.0	360.0		140.0	280.0	0.70	1.4	832.				77.00	19.00
WFNZ8107300935	1.0	127.0	300.0	50.	80.0	230.0	0.60	4.1	695.				12.00	4.60
WFNA8108180950	2.0	140.0	380.0	35.	110.0	285.0		2.7	1020.	8.6			18.00	9.00
SMEA8011201205	1.6	120.0	312.0	140.	86.8	220.0			729.	9.3			14.51	4.97
SMEZ8012091010	2.0	155.0	320.0		73.0	190.0	0.40	1.3	662.				4.30	1.84
SMEZ8101141430	1.0	167.0	340.0		93.0	200.0	0.50		685.				11.98	5.01
SMEA8102041355		136.0	288.0	60.	71.6	200.0		2.4	740.	6.7				2.61
SMEZ8103171030	3.0	168.0	290.0	60.	54.0	160.0	0.50	1.8	603.					
SMEZ8104071030	2.0	131.0	390.0	35.	140.0	270.0	0.60	1.0	863.					
SMEA8105051435	0.7	83.0	290.0	60.	169.0	315.0		2.2		2.0			1.74	0.27
SMEZ8106091140	1.0	146.0	410.0	50.	150.0	290.0	0.70	1.2	850.				11.00	4.40
SMEZ8107301000	2.0	124.0	280.0	50.	72.0	200.0	0.50	1.5	846.				23.40	8.30
SMEA8108180910	4.2	110.0	370.0	40.	130.0	285.0		2.9	880.	24.0			14.90	4.10
TMCA8011201215	2.8	123.0	316.0	60.	107.0	233.0			734.	3.0			2.99	1.42
TMCZ8012101026	1.0	89.0	120.0		19.0	48.0	0.60	1.3	266.					
TMCZ8101141440	1.0	102.0	160.0		34.0	80.0	0.40		361.				2.51	1.12
TMCA8102041335		122.0	200.0	70.	36.8	115.0		2.4	423.	6.1			4.58	2.21
TMCZ8103171050	4.0	115.0	200.0	80.	51.0	110.0	0.40	0.9	440.					
TMCZ8104071045	1.0	98.0	260.0	55.	83.0	170.0	0.50	0.7	569.					
TMCA8105051445	1.7	83.0	240.0	50.	152.0	295.0		2.8		2.0			4.11	4.18
TMCZ8106091210	1.0	66.0	350.0	60.	160.0	330.0	0.70	1.1	850.				3.40	3.00
TMCZ8107301020	1.0	135.0	360.0	30.	130.0	250.0	0.60	1.1	783.				15.90	2.80
TMCA8108181010	2.3	130.0	300.0	60.	80.0	240.0		2.0	790.	2.2			19.40	4.60

LABORATORY DATA SUMMARY (MINERALS AND BIOLOGICAL)

SAMPLE	TURB 76 NTU	ALK 410 MG/L	HARD 900 MG/L	COLOR 80/81 PT-CO	SULFATE 945 MG/L	CHLORIDE 940/941 MG/L	FLUORIDE 950 MG/L	BOD 310 MG/L	RES DISS 70300 MG/L	RES SUS 530 MG/L	SULFIDE 745 MG/L	TOC 680 MG/L	CHL A 32210 UG/L	PHEO A 32223 UG/L
SMOA7912041517	1.0	53.0	87.1	140.	10.5	65.0		2.2	246.	2.0			2.95	0.00
SMOA8002121530	1.1	96.0	150.0	125.	6.2	80.0			347.	3.4			10.18	7.68
SMOA8006171555	2.8	159.0	261.4	80.	24.0	135.0		2.8	560.	3.2			4.33	0.48
SMOA8011191510	1.1	129.0	342.0	90.	114.0	235.0			695.	5.0			25.28	4.49
SMOZ8012091450	1.0	160.0	290.0		75.0	180.0	0.60	1.7	631.					
SMOZ8101131515	0.0	153.0	340.0		110.0	220.0	0.60		695.				4.75	0.77
SMOA8102041420		152.0	348.0	35.	92.8	242.0		1.8	770.	2.9			5.99	5.10
SMOZ8103191045	1.0	157.0	340.0	55.	84.0	200.0	0.50	1.1	652.					
SMOZ8104091335	1.0	137.0	390.0	50.	130.0	260.0	0.60	1.2	859.					
SMOA8105061400	4.3	91.1	370.0	45.	160.0	310.0		2.6		17.0			5.15	4.11
SMOZ8106091305	2.0	128.0	400.0	50.	150.0	290.0	0.70	0.9	856.				6.60	4.40
SMOZ8107301400	2.0	131.0	380.0	35.	150.0	280.0	0.60	0.9	829.				4.70	4.50
SMOA8108190930	1.4	135.0	350.0	35.	120.0	280.0		1.2	1020.	9.7			7.60	1.80
CFOA8011191415	1.6	255.8	362.0	60.	26.7	181.0			763.	3.4			14.26	3.23
CFOZ8012101105	1.0	216.0	340.0		34.0	180.0	0.70	1.3	704.				5.20	1.97
CFOZ8101141300	1.0	235.0	390.0		71.0	240.0	0.60		838.				5.22	2.88
CFOA8102041205		284.3	384.0	45.	47.6	220.0		2.4	844.	0.4			3.83	2.72
CFOZ8103171135	1.0	266.0	410.0	60.	47.0	180.0	0.60	1.7	741.					
CFOZ8104071140	1.0	279.0	380.0	50.	180.0	82.0	0.70	0.8	804.					
CFOA8105051400	2.5	290.0	420.0	50.	36.5	198.0		3.9		3.0			8.65	4.51
CFOZ8106091245	1.0	220.0	330.0	70.	40.0	170.0	0.80	1.5	722.					
CFOZ8107301105	1.0	210.0	340.0	50.	57.0	190.0	0.80	1.1	764.				24.00	12.00
CFOA8108181035	2.3	190.0	340.0	60.	50.0	200.0		2.1	780.	2.9			23.90	6.40
THFA8002121510	0.9	75.0	146.0	125.	18.0	92.5			369.	1.9			2.79	0.13
THFA8006171605		142.0	205.9	120.	50.0	162.0		2.7	481.	1.1			19.40	3.92
THFA8011191455	1.3	251.6	348.0	80.	24.6	176.0			712.	14.6			13.57	6.47
THFZ8012091510	0.0	253.0	370.0		39.0	210.0	0.80	1.1	722.				3.25	2.24
THFZ8101131535	0.0	227.0	390.0		82.0	260.0	0.50		895.				5.85	2.65
THFA8102041440		288.0	416.0	50.	31.6	220.0		3.2	906.	1.3			5.14	1.79
THFZ8103191030	2.0	239.0	390.0	55.	45.0	190.0	0.60	2.0	763.					
THFZ8104091015	1.0	274.0	380.0	60.	43.0	180.0	0.70	1.4	805.					
THFA8105061235	1.3	269.0	300.0	70.	47.0	198.0				3.0			4.40	3.51
THFZ8106091320	3.0	210.0	340.0	80.	42.0	180.0	0.80	2.0	696.				25.00	6.10
THFZ8107301215	3.0	190.0	330.0	50.	53.0	170.0	0.80	1.7	751.				52.00	0.00
THFA8108190945	3.2	140.0	360.0	45.	120.0	280.0		1.1	880.	14.0			3.60	2.40
BDCA7912041526	1.9	155.0	293.0	50.	76.0	172.0		2.0	578.	4.0			4.50	3.13
BDCA8002121545	1.6	168.0	297.0	60.	16.2	150.0			579.	2.2			1.99	3.37
BDCA8006171615	5.7	123.0	289.1	40.	93.0	212.0		2.0	604.	6.8			8.68	1.42
BDCA8011191520	0.6	148.0	312.0	50.	85.6	198.0			670.	0.9			2.22	1.01
BDCZ8012100855	0.0	156.0	310.0		90.0	190.0	0.60	0.3	662.				1.19	1.14
BDCZ8101131600	1.0	163.0	320.0		92.0	190.0	0.50		662.				0.56	0.93
BDCA8102041505		152.0	314.0	30.	72.0	203.0		2.5	741.	3.2			3.03	2.77
BDCZ8103180945	1.0	143.0	300.0	40.	72.0	170.0	0.60	0.5	613.					
BDCZ8104091435	1.0	143.0	350.0	30.	93.0	210.0	0.60	0.6	698.					
BDCA8105061440	4.0	120.0	320.0	45.	107.0	235.0		2.9		14.0			6.84	6.15
BDCZ8106091350	1.0	157.0	330.0	50.	73.0	200.0	0.60	0.9	726.				5.80	3.20
BDCZ8107301315	3.0	131.0	300.0	20.	76.0	190.0	0.60	0.6	652.				5.40	4.80
BDCA8108191035	1.5	140.0	300.0	45.	66.0	200.0		0.8	660.	7.4			2.60	0.80
HBIA7912041536	1.1	57.0	93.1	180.	12.5	65.0		1.8	254.	5.9			3.00	0.51
HBIA8002121600	1.0	82.0	154.0	125.	28.5	100.0			370.	4.8			5.22	1.16

LABORATORY DATA SUMMARY (MINERALS AND BIOLOGICAL)

SAMPLE	TURB 76 NTU	ALK 410 MG/L	HARD 900 MG/L	COLOR 80/81 PT-CO	SULFATE 945 MG/L	CHLORIDE 940/941 MG/L	FLUORIDE 950 MG/L	BOD 310 MG/L	RES DISS 70300 MG/L	RES SUS 530 MG/L	SULFIDE 745 MG/L	TOC 680 MG/L	CHL A 32210 UG/L	PHEO A 32223 UG/L
HBIA8006171625	2.6	136.0	221.8	90.	34.4	148.0		2.6	511.	4.5			11.14	0.99
HBIA8011191530	2.4	150.0	326.0	50.	98.4	218.0			715.	25.3			14.84	26.46
HBIZ8012091215	1.0	185.0	350.0		61.0	200.0	0.60	1.2					4.09	2.38
HBIZ8101141230	0.0	203.0	370.0		86.0	230.0	0.60		771.				5.78	3.36
HBIA8102041525		190.0	338.0	25.	83.2	230.0		2.5	731.	3.3			5.22	2.88
HBIZ8103171250	3.0	225.0	380.0	55.	68.0	200.0	0.60	1.1	759.					
HBIZ8104071310	2.0	223.0	350.0	45.	67.0	190.0	0.70	0.8	804.					
HBIA8105051505	2.3	203.0	390.0	70.	76.0	225.0		3.3		5.0			5.58	4.48
HBIZ8106091405	1.0	141.0	370.0	50.	130.0	260.0	0.70	1.0	794.				16.00	6.20
HBIZ8107301425	1.0	144.0	360.0	35.	110.0	240.0	0.60	0.7	775.				2.00	0.10
HBIA8108181135	5.6	130.0	360.0	35.	110.0	260.0		1.6	980.	26.0			24.80	16.50
HBOA7912041543	1.0	61.0	99.0	180.	13.5	90.0		1.8	274.	1.8			2.30	1.65
HBOA8002121615	1.1	74.0	119.0	125.	18.0	50.0			300.	3.3			6.43	5.84
HBOA8006171635	6.4	104.0	182.4	90.	36.4	138.0		2.4	456.	4.6			6.65	3.50
HBOA8011191540	0.9	174.0	334.0	60.	77.6	220.0			427.	1.2			4.56	2.67
HBOZ8012091200	0.0	145.0	320.0		76.0	210.0	0.60	1.5	695.				1.66	0.98
HBOZ8101141210	1.0	198.0	340.0		75.0	200.0	0.60		719.				2.11	2.19
HBOA8102041545		185.0	346.0	50.	66.4	233.0		2.5	810.	1.2			2.08	0.83
HBOZ8103171310	1.0	187.0	350.0	65.	65.0	190.0	0.60	1.3	686.					
HBOZ8104071330	1.0	166.0	340.0	45.	90.0	220.0	0.60	0.8	781.					
HBOA8105051520	0.5	76.6	370.0	70.	78.0	235.0		2.8		1.0			1.33	2.34
HBOZ8106091420	1.0	76.0	300.0	70.	110.0	270.0	0.70	0.9	768.				6.30	5.60
HBOZ8107311435	1.0	112.0	330.0	40.	120.0	260.0	0.70	1.0	777.				1.90	
HBOA8108181145	1.1	110.0	320.0	45.	88.0	260.0		1.3	790.	1.3			6.30	2.80
JGSZ8012091650	0.0	20.0	96.0		52.0	46.0	0.40	1.2	277.					
JGSZ8101141650	0.0	28.0	63.0		13.0	41.0	0.30		1.				0.56	0.03
JGSA8102040930		29.9	44.0	140.	4.2	43.5		2.4	179.	0.3			2.08	0.83
JGSZ8103191600	1.0	33.0	59.0		1.1	38.0	1.00	-0.1	163.					
JGSZ8104091725	1.0	36.0	59.0		1.6	44.0	0.30	-0.2	220.					
JGMA7912041557	1.8	20.0	39.6	160.	1.5	25.0		2.2	139.	10.8			5.34	5.53
JGMA8002121645	0.5	14.0	35.6	150.	0.3	35.0			133.	4.5			2.36	4.05
JGMA8006171645		29.0	43.6	350.	3.0	65.0		10.0					92.39	45.44
JGMZ8101141530	0.0	13.0	63.0		23.0	50.0	0.40		234.				0.54	0.03
JGMA8102041625		21.0	262.0	160.	5.8	52.5		1.7	208.	3.2			1.35	0.00
JGMZ8103191140	2.0	21.0	53.0	220.	17.0	46.0	0.20	1.2	189.					
HBMA8002121710	1.0	36.0	75.2	150.	9.7	70.0			224.	24.4			27.17	19.11
SGIA7912041610	1.4	57.0	97.0	180.	13.0	65.0		2.3	261.	1.9			2.32	1.66
SGIA8002121720	0.9	53.0	87.1	150.	13.2	65.0			240.	4.9			3.99	4.43
SGIA8006171655	2.6	93.0	170.3	90.	32.2	120.0		1.7	428.	2.6			5.13	2.24
SGIA8011201430	0.9	170.0	334.0	50.	80.0	223.0			726.	3.6			3.27	1.79
SGIZ8012091130	0.0	157.0	310.0		79.0	210.0	0.60	0.8	671.					
SGIZ8101131620	0.0	148.0	290.0		64.0	160.0	0.60		593.				1.31	0.88
SGIA8102051240		148.0	304.0	100.	63.2	195.0		1.9	750.	1.8			1.02	0.77
SGIZ8103171335	1.0	141.0	280.0	120.	53.0	160.0	0.50	1.0	585.					
SGIZ8104071400	1.0	159.0	300.0	55.	87.0	210.0	0.60	0.8	803.					
SGIA8105051535	1.7	95.2	330.0	70.	82.0	240.0		3.2		7.0			2.10	1.47
SGIZ8106101315	1.0	75.0	280.0	60.	85.0	260.0	0.80	1.3	794.				6.50	5.00
SGIZ8107301450	1.0	102.0	330.0	45.	120.0	260.0	0.80	0.6	796.				83.00	11.70
SGIA8108181200	2.3	110.0	290.0	80.	93.0	270.0		1.4	840.	2.4			14.50	21.10

LABORATORY DATA SUMMARY (MINERALS AND BIOLOGICAL)

SAMPLE	TURB 76 NTU	ALK 410 MG/L	HARD 900 MG/L	COLOR 80/81 PT-CO	SULFATE 945 MG/L	CHLORIDE 940/941 MG/L	FLUORIDE 950 MG/L	BOD 310 MG/L	RES DISS 70300 MG/L	RES SUS 530 MG/L	SULFIDE 745 MG/L	TOC 680 MG/L	CHL A 32210 UG/L	PHEO A 32223 UG/L
SGOA7912041619	0.9	51.0	87.1	160.	11.0	65.0		1.8	237.	1.0			1.22	1.60
SGOA8002121740	0.8	51.0	95.0	150.	13.2	62.5			242.	6.0			9.09	5.81
SGOA8006171700	2.1	86.0	158.4	80.	28.5	110.0		2.1	386.	1.3			8.84	0.69
SGOA8011201445	0.9	137.0	256.0	70.	43.2	173.0			583.	2.8			1.14	1.87
SGOZ8012091115	0.0	132.0	300.0		66.0	200.0	0.50	0.7	670.				1.10	0.00
SGOZ8101131650	0.0	142.0	280.0		72.0	180.0	0.60		630.				1.45	1.97
SGOA8102051255		146.0	248.0	60.	52.8	182.0		2.1	561.	0.9			0.91	0.13
SGOZ8103171355	1.0	101.0	190.0	120.	42.0	13.0	0.40	0.9	492.					
SGOZ8104071430	1.0	135.0	260.0	80.	57.0	160.0	0.50	1.3	644.					
SGOA8105051550	1.0	136.0	280.0	80.	86.0	228.0		2.6		0.3			2.51	2.49
SGOZ8106101345	1.0	98.0	300.0	60.	86.0	280.0	0.80	1.1	826.				6.80	4.90
SGOZ8107301500	1.0	82.0	300.0	55.	93.0	300.0	0.80	1.0	824.				46.60	7.90
SGOA8108181210	0.9	79.0	270.0	70.	75.0	290.0		1.2	830.	0.3			2.50	3.10
USHA8011201500	0.8	132.0	234.0	80.	38.4	163.0			583.	2.6			2.08	1.74
USHA8102051535		147.0	237.0	150.	44.8	182.5			657.	1.2			1.69	2.23
USHA8105051600	1.1	141.0	260.0	70.	72.0	220.0		2.4		1.0			2.44	2.51
USHA8108181430	0.7	81.0	260.0	60.	76.0	290.0		1.1	900.	0.4			6.10	6.68
USHZ8012091100	0.0	157.0	290.0		69.0	200.0	0.60	1.2	637.					
USHZ8101131710	0.0	139.0	280.0		71.0	180.0	0.60		612.				1.39	1.07
USHZ8103171405	1.0	99.0	210.0		46.0	140.0	0.40	0.9	497.					
USHZ8104071455	1.0	125.0	260.0		54.0	160.0	0.50	0.8	591.					
USGS8105051130	1.0	139.0	310.0	60.	75.0	220.0	0.60		780.			22.00		
USHZ8106090950	1.0	98.0	300.0		86.0	270.0	0.80	1.1	822.				2.70	3.50
USHZ8107301510	1.0	82.0	300.0	55.	97.0	290.0	0.80		753.				2.60	1.00
USGS8109011115		90.0	260.0	40.	91.0	230.0	0.60		670.			13.00		
LWEA8011201530	0.6	130.0	236.0	120.	40.0	161.0			565.	2.4			1.96	2.14
LWEZ8012091040	0.0	144.0	270.0		60.0	190.0	0.60	1.1	626.					
LWEZ8101131230	0.0	135.0	280.0		72.0	190.0	0.50		607.					
LWEA8102051400		130.0	242.0	50.	42.4	190.0		1.9	663.	1.4			2.57	1.57
LWEZ8103171540	1.0	102.0	220.0	120.	49.0	140.0	0.40	1.0	511.					
LWEZ8104071520	0.1	100.0	250.0	70.	66.0	190.0	0.50	0.6	604.					
LWEA8105060945	1.3	137.0	360.0	80.	76.0	220.0		2.1		3.0			2.58	3.31
LWEZ8106090930	1.0	107.0	310.0	60.	87.0	270.0	1.00	1.0	828.					
LWEZ8107291345	1.0	85.0	310.0	45.	98.0	300.0	0.80	1.2	823.				2.70	2.40
LWEA8108181415	2.4	170.0	310.0	70.	75.0	370.0		2.3	1080.	1.1			3.10	5.10
WCEA8102050955		132.0	272.0	100.	48.0	238.0			733.	1.0			3.77	3.18
WCEA8105060930	0.9	224.0	280.0	70.	107.0	425.0		3.6		2.0			5.95	5.56
WCEA8108181405	2.4	170.0	430.0	70.	60.0	370.0		2.3	1080.	1.1			0.20	0.00
WCDA8011201010	1.0	128.0	472.0	30.	60.5	460.0			1038.	10.4			2.10	1.74
WCDA8102050930		122.0	388.0	60.	104.0	372.0			1262.	2.0			0.93	1.04
WCDA8105060915	1.6	104.0	400.0	60.	155.0	515.0		2.5		5.0			3.62	2.91
WCCA8011200950	1.6	124.0	278.0	30.	62.8	210.0			681.	11.1			2.38	3.92
WCCA8102050900		155.0	346.0	45.	82.4	262.0			571.	1.5			1.16	0.96
WCCA8105060900	2.6	153.0	360.0	50.	115.0	295.0		2.8		7.0			5.19	4.91
WCCA8108181345	1.7	130.0	420.0	35.	120.0	370.0		1.1	1150.	1.5			25.90	11.10
LWCA8011201545	2.9	60.3	178.0	70.	34.6	163.0			509.	11.0			3.59	3.71
LWCZ8012091020	0.0	52.0	180.0		46.0	160.0	1.00	1.2	499.				3.82	0.64

LABORATORY DATA SUMMARY (MINERALS AND BIOLOGICAL)

SAMPLE	TURB 76 NTU	ALK 410 MG/L	HARD 900 MG/L	COLOR 80/81 PT-CO	SULFATE 945 MG/L	CHLORIDE 940/941 MG/L	FLUORIDE 950 MG/L	BOD 310 MG/L	RES DISS 70300 MG/L	RES SUS 530 MG/L	SULFIDE 745 MG/L	TOC 680 MG/L	CHL A 32210 UG/L	PHEO A 32223 UG/L
LWCZ8101131210	6.0	76.0	210.0		58.0	180.0	0.40		544.				7.88	3.74
LWCA8102051340		87.0	212.0	35.	42.4	185.0		2.0	607.	3.3			2.79	1.68
LWCZ8103171455	4.0	101.0	250.0	65.	65.0	180.0	0.40	0.9	587.					
LWCZ8104090825	2.0	102.0	250.0	70.	67.0	190.0	0.50	0.6	412.					
LWCA8105060825	1.9	95.2	230.0	80.	76.0	215.0				4.0			3.33	2.21
LWCZ8106090835	2.0	116.0	300.0	60.	81.0	250.0	0.60	1.2	772.				3.80	1.40
LWCZ8107290830	1.0	108.0	320.0	40.	83.0	270.0	0.70	0.7	828.				4.40	4.10
LWCA8108181310	7.3	97.0	310.0	50.	70.0	300.0		0.8	940.	22.0			9.00	4.90
LWWA8011201600	0.7	55.6	163.0	70.	33.1	166.0			472.	3.8			2.32	1.04
LWWZ8012091000	0.0	51.0	170.0		51.0	160.0	0.50	0.8	484.				0.01	6.81
LWWZ8101131100	0.0	72.0	200.0		54.0	170.0	0.50		536.					
LWWA8102051315		82.0	192.0	30.	40.8	185.0		1.8	546.	1.3			1.35	1.79
LWWZ8103171510	1.0	92.0	250.0	50.	64.0	190.0	0.40	0.4	588.					
LWWZ8104090900	1.0	107.0	250.0	70.	66.0	190.0	0.50	0.7	644.					
LWWA8105060840	2.0	112.0	200.0	90.	72.0	215.0		2.0		4.0			4.08	3.04
LWWZ8106090904	1.0	143.0	310.0	60.	80.0	250.0	0.60	1.3	760.				9.80	6.80
LWWZ8107291300	2.0	112.0	320.0	40.	82.0	270.0	0.60	1.2	793.				2.90	3.70
LWWA8108181320	1.5	110.0	310.0	50.	72.0	320.0		0.6	630.	0.6			5.90	5.50
SNMA7912111619	0.9	45.0	59.4	180.	8.7	57.5		5.2	244.	7.6			1.14	1.42
SNMA8002191425	2.4	47.0	95.0	110.	1.0	70.0		0.8	247.	0.0			6.88	7.96
SNMA8006241610	1.8	74.0	166.0	80.	27.0	145.0		2.6	476.	5.7			3.14	1.60
SNMA8011111335	1.6	57.1	232.0	50.	64.4	282.0			759.	30.1			1.51	0.16
SNMA8102111020	1.2	80.3	196.0	60.	60.0	195.0		1.6	606.	5.4			2.35	1.38
SNMA8105071120	2.2	53.8	240.0	60.	94.0	298.0		2.0		6.0			6.42	1.76
SNMA8108191435	1.1	84.0	290.0	50.	84.0	390.0		1.1	1120.	8.9			9.80	0.00
NMOA7912111625	1.6	61.0	103.0	140.	12.9	80.0		5.6	300.	12.0			5.39	0.00
NMOA8002191445	27.5	103.0	194.0	70.	4.0	165.0		3.3	456.	102.0			37.41	33.87
NMOA8006241605	9.5	110.0	304.0	40.	85.0	350.0		3.6	875.	36.0			29.27	7.90
NMOA8011111350	2.4	119.9	332.0	40.	97.0	358.0			959.	28.2			1.72	0.08
NMOA8102110940	4.8	97.8	288.0	120.	97.0	255.0		2.6	813.	18.2			10.56	4.33
NMOA8105071015	1.6	108.0	360.0	40.	119.0	415.0		1.0		2.0			2.44	3.07
NMOA8108191400	2.3	140.0	330.0	50.	72.0	380.0		1.6	1100.	11.0			10.20	1.50
NNMA7912111636	1.1	45.0	83.2	160.	9.5	60.0		5.6	238.	7.4			1.43	1.98
NNMA8002191417	7.8	84.0	154.4	90.	1.0	130.0		2.2	385.	15.8			16.59	27.88
NNMA8006241620	4.6	82.0	238.0	65.	56.0	260.0		3.6	667.	10.5			21.77	10.32
NNMA8011111400	1.7	113.8	320.0	35.	86.0	341.0			880.	24.7			2.61	1.57
NNMA8102111040	3.6	81.9	294.0	60.	59.0	190.0		1.2	648.	16.1			7.75	4.46
NNMA8105071125	1.6	91.1	350.0	50.	111.0	385.0		1.8		2.0			3.02	2.87
NNMA8108191445	1.0	120.0	420.0	45.	84.0	390.0		1.1	1110.	7.2			5.90	0.00
LWMA7912111642	1.6	43.0	79.2	160.	5.2	60.0		5.2	257.	25.8			5.72	0.45
LWMA8002191410	6.5	52.0	106.9	120.	1.0	75.0		2.1	235.	35.2			31.96	28.60
LWMA8006241640		84.0	356.0	250.	199.0	268.0		4.9	988.				0.46	0.75
LWIA7912111652	1.2	45.0	79.2	160.	9.7	60.0		5.0	250.	10.3			1.66	0.53
LWIA8002191350	2.6	56.0	83.2	110.	1.0	75.0		1.7	259.	0.8			9.81	3.74
LWIA8006241645	9.2	85.0	218.0	70.	56.0	250.0		7.4	669.	10.3			71.68	0.00
LWIA8011111412	1.3	85.0	256.0	50.	71.0	290.0			723.	27.5			1.16	0.00
LWIA8102101100	3.8	101.0	250.0	80.	74.0	228.0		3.0	693.	14.1			10.21	3.58
LWIA8105071135	3.8	86.9	310.0	50.	119.0	415.0		3.6		15.0			2.38	1.41

LABORATORY DATA SUMMARY (MINERALS AND BIOLOGICAL)

SAMPLE	TURB 76 NTU	ALK 410 MG/L	HARD 900 MG/L	COLOR 80/81 PT-CO	SULFATE 945 MG/L	CHLORIDE 940/941 MG/L	FLUORIDE 950 MG/L	BOD 310 MG/L	RES DISS 70300 MG/L	RES SUS 530 MG/L	SULFIDE 745 MG/L	TOC 680 MG/L	CHL A 32210 UG/L	PHEO A 32223 UG/L
LWIA8108191500	2.8	130.0	315.0	50.	80.0	390.0			1060.	13.0			38.00	2.20
CEWA7912111701	1.2	126.0	448.0	60.	130.0	645.0		5.7	1540.	10.0				
CEWA8002191250	19.4	56.0	202.0	90.	3.0	345.0		4.7	689.	86.2			25.06	41.38
CEWA8006241700	1.1	82.0	420.0	50.	114.0	668.0			1357.	3.7			3.09	3.42
CEWA8011111430	1.2	123.7	512.0		133.0	747.0			1870.	1.2			1.14	0.00
CEWA8102111115	6.8	126.0	424.0	80.	145.0	785.0		3.2	1927.	36.7			11.95	7.67
CEWA8105071215	3.2	84.9	450.0	45.	147.0	770.0		3.4		10.0			4.87	3.69
CEWA8108191325	2.1	110.0	470.0	80.	98.0	680.0			1600.	9.9			2.30	0.30
LWOA7912111709	1.5	45.0	95.0	160.	10.6	67.5		5.2	236.	5.8			1.87	1.55
LWOA8002191223	4.2	49.0	95.0	100.	1.0	82.5		1.4	257.	5.4			6.42	7.22
LWOA8002241705	19.2	63.0	166.0	60.	40.0	185.0		3.2	547.	58.8			31.78	38.06
LWOA8011111445	4.6	28.8	220.0	100.	75.0	315.0			783.	39.4			7.17	8.34
LWOA8102111140	33.6	90.6	200.0	60.	80.0	300.0		3.2	929.	9.2			16.41	10.42
LWOA8105071235	7.3	82.8	220.0	40.	105.0	380.0		3.6		25.0			10.59	5.24
LWOA8108191510	6.0	72.0	390.0	60.	110.0	640.0		1.4					37.50	19.60
SDCA7912181625	0.7	46.0	83.2	150.	12.5	67.5		0.4	243.	0.7			1.72	0.00
SDCA8002261355	2.2	43.0	104.9	130.	51.5	92.5		0.8	258.	1.1			2.29	0.74
SDCA8007011645	1.7	61.0	186.0	80.	44.0	212.0			526.	2.6			22.56	3.18
SDCA8011121010	1.6	100.0	460.0	80.	112.0	672.0			1618.	11.8			4.58	3.58
SDCA8102111200	4.5	84.5	452.0	70.	87.0	340.0		2.4	959.	7.7			6.35	4.03
SDCA8105071301	1.8	82.8	490.0	40.	123.0	480.0		2.8		3.0			5.83	0.74
SDCA8108200950	1.2	89.0	450.0	50.	120.0	640.0			1920.	7.9			20.30	1.50
DDCA7912181635	1.2	66.5	242.0	150.	40.0	275.0			685.	3.7			10.64	2.24
DDCA8002261302	2.6	53.5	281.2	188.	68.5	285.0		1.6	738.	3.3			8.95	5.61
DDCA8007011650	1.7	123.0	467.0	80.	118.0	665.0			1436.	2.3			29.94	3.47
DDCA8011121050	1.3	115.4	524.0	50.	142.0	747.0			1525.	6.0			7.33	2.80
DDCA8102111230	5.6	107.0	484.0	70.	166.0	690.0		3.2	1856.	19.2			19.95	8.23
DDCA8105071310	2.0	104.0	450.0	30.	169.0	760.0		2.6		7.0			13.73	4.12
DDCA8108200920	0.6	110.0	460.0	50.	180.0	700.0			2250.	23.0			5.50	5.50
NDCA7912181645	0.7	49.5	99.0	125.	19.0	82.5		0.6	328.	0.7			1.99	0.64
NDCA8002261248	1.6	43.0	110.9	113.	56.0	92.5		1.0	300.	1.2			2.91	4.59
NDCA8007011700	3.1	64.0	198.0	80.	50.0	250.0			646.	1.9			14.73	4.89
NDCA8011121100	1.7	101.0	476.0	100.	135.0	697.0			1460.	11.6			10.79	11.79
NDCA8102111315	4.1	90.6	410.0	70.	107.0	405.0		3.0	1214.	11.2			6.18	5.48
NDCA8105071320	1.7	80.7	420.0	25.	137.0	500.0		1.9		3.0			3.95	4.01
NDCA8108201000	0.8	100.0	470.0	50.	120.0	460.0			1650.	8.0			6.50	5.40
UNCA8011111510	3.3	105.7	428.0	70.	114.0	797.0			1547.	30.3			1.75	3.71
LPIA7912181655	0.8	47.5	97.0	150.	16.0	80.0		0.4	277.	2.2			0.77	0.40
LPIA8002261226	1.8	45.0	118.8	125.	78.0	107.5		1.0	310.	1.5			2.19	4.50
LPIA8007011710	2.2	74.0	289.0	80.	72.0	365.0			863.	2.0			5.85	1.74
LPIA8011120955	0.8	75.9	380.0	80.	106.0	572.0			1156.	10.0				
LPIA8102111340	1.8	92.7	350.0	60.	105.0	400.0		2.2	1178.	6.1			2.76	2.86
LPIA8105071420	1.6	86.9	370.0	45.	132.0	620.0		1.6		5.0			3.75	2.34
LPIA8108201030	2.5	100.0	440.0	60.	110.0	720.0		2.1	1610.	11.0			32.20	4.00
LPSA7912181705	2.0	44.5	93.1	150.	15.1	87.5		0.6	278.	8.6			3.58	3.63
LPSA8002261147	8.1	46.0	150.5	138.	77.5	125.0		1.5	381.	38.8			13.03	10.53

LABORATORY DATA SUMMARY (MINERALS AND BIOLOGICAL)

SAMPLE	TURB 76 NTU	ALK 410 MG/L	HARD 900 MG/L	COLOR 80/81 PT-CO	SULFATE 945 MG/L	CHLORIDE 940/941 MG/L	FLUORIDE 950 MG/L	BOD 310 MG/L	RES DISS 70300 MG/L	RES SUS 530 MG/L	SULFIDE 745 MG/L	TOC 680 MG/L	CHL A 32210 UG/L	PHEO A 32223 UG/L
LPSA8007011715	8.5	106.0	432.0	65.	61.0	285.0			652.	18.8			102.68	4.01
LPSA8011120935	6.1	55.1	374.0	70.	120.0	547.0			1121.	84.0			21.22	6.47
LPSA8105070910	6.3	91.1	470.0	45.	167.0	592.0				20.0			29.71	3.42
LPSA8108200900	4.6	72.0	560.0	80.	140.0	860.0			1660.	26.0			34.74	9.39
RLCA7912181605	2.1	55.0	216.0	175.	57.5	298.0		1.8	735.	6.0			19.49	0.00
RLCA8002261208	5.3	49.5	261.4	175.	52.0	360.0		3.0	757.	16.8			28.21	22.99
RLCA8007011600	16.2	65.0	234.0	80.	130.0	610.0			1303.	10.9			68.50	5.29
RLCA8011121445	9.5	122.2	528.0	140.	152.0	722.0			1597.	31.2			16.43	11.36
RLCA8102111405	37.2	83.4	456.0	60.	124.0	515.0		4.8	1509.	233.9			57.36	30.66
RLCA8105070930	102.0	91.1	640.0	240.	172.0	1150.0		7.2		75.0			391.04	0.00
RLCX8105070940													603.45	0.00
RLCA8108201040	68.0	130.0	560.0	70.	140.0	800.0		8.4	1830.	320.0			258.30	5.50
LPMA7912181715	4.5	24.0	67.3	200.	1.5	110.0		2.4	298.	58.2			43.67	39.00
LPMA8002261121	1.4	17.0	45.5	175.	2.0	92.5		1.2	238.	0.6			3.25	5.88
LPMA8007011500	2.2	34.0	253.0	225.	56.0	458.0			990.	3.8			74.62	6.18
LPMA8011120915	6.0	29.1	448.0	180.	262.0	547.0			1372.	14.5			50.59	12.91
LPMA8102110845	9.6	12.4	268.0	150.	151.0	285.0		3.0	933.	43.1			44.91	32.98
LPMA8105071400	3.2	58.0	320.0	120.	294.0	800.0		5.4		64.0			23.78	17.51
LPMA8108201100	23.0	120.0	750.0	100.	180.0	1100.0		7.4	2880.				48.50	10.70
LPOA7912181730	1.0	44.0	93.1	150.	16.2	90.0		0.4	298.	5.2			1.25	1.34
LPOA8002261048	2.7	48.0	138.6	120.	83.5	140.0		1.0	346.	5.0			8.47	15.86
LPOA8007011730	13.0	63.0	214.0	80.	67.0	260.0			641.	29.1			63.32	9.03
LPOA8011120847	3.7	61.3	372.0	60.	116.0	530.0			1341.	15.4			5.92	3.55
LPOA8102110815	9.0	68.0	364.0	50.	140.0	540.0		2.4	1382.	33.2			21.12	10.74
LPOA8105071440	1.5	66.2	380.0	30.	202.0	600.0		2.0		4.0			2.69	2.17
LPOA8108201140	5.1	70.0	570.0	40.	160.0	950.0		1.5	2330.	32.0			5.70	5.00
TCOA8011120830	2.5	63.4	364.0	70.	116.0	512.0			1236.	30.4			5.68	4.99
TCOA8102110800	3.2	46.4	256.0	80.	108.0	345.0		2.4	944.	7.8			4.33	3.66
TCOA8105071500	2.1	84.9	330.0	45.	200.0	610.0				7.0			11.92	0.00
TCOX8105121755	2.4	72.4	40.0	60.	178.0	715.0		3.5		4.0			1.50	2.57
TCOA8108201155	3.3	74.0	590.0	50.	190.0	960.0		2.8	2220.	17.0			41.20	0.00

LABORATORY DATA SUMMARY (NUTRIENTS AND METALS)

SAMPLE	P ORTHO 70507 MG/L	P TOTAL 665 MG/L	TKN 625 MG/L	NH3N 610 MG/L	NOX 630 MG/L	NITRATE 620 MG/L	POT 935 MG/L	MAG 925 MG/L	IRON 1046 U G/L	CALCIUM 915 MG/L	SODIUM 930 MG/L	SR 1080 UG/L	VOL RES 535 %	MOIST 495 %
FDMA7911271124	0.010	0.029					2.60	2.78	260.00	11.81	15.04			
FDMA8002051200			1.300	0.180		0.110	1.68	3.25	100.00	6.84	21.33			
FDMA8002051555	0.003	0.014												
FDMA8006101140	0.700	0.390		0.080	0.010K									
FDMA8008051600	0.130	0.300	1.000	0.010	0.010K									
FDMA8012181515	0.030	0.092		0.087	0.011		4.40	17.00	100.00	19.00	91.00			
FDMA8102031430	0.259	0.350	6.550	0.555	0.007									
FDMA8105041450	0.046	0.165			0.028		2.20	8.00	600.00	19.00	32.00			
FDMA8108171500	0.110	0.210			0.020									
BCMA7911271139	0.050	0.080					2.08	3.63	350.00	10.69	21.33			
BCMA8002051230			1.400	0.120		0.380	2.43	4.15	0.47	11.81	21.17			
BCMA8002051610	0.080	0.097												
BCMA8006101150	0.020	0.110		0.070	0.010K									
BCMA8008051610	0.070	0.110	3.400	0.120	0.010K									
BCLA7911271213	0.065	0.095					2.12	3.72	400.00	12.93	22.58			
BCLA8002051300			0.840	0.110		0.340	2.41	3.89	440.00	11.97	20.70			
BCLA8002051619	0.112	0.114												
BCLA8006101205	0.020	0.050		0.010K	0.010K									
BCLA8008051615	0.080	0.110	0.850	0.010	0.010K									
BCLA8012181530	0.099	0.173		0.093	0.054		2.20	4.00	400.00	10.00	24.00			
BCLA8102031510	0.102	0.175	2.480	0.115	0.106									
BCLA8105041707	0.021	0.076			0.065		2.90	6.50	200.00	14.00	20.00			
BCLA8108171350	0.140	0.180			0.010									
BCCA7911271320		0.100					2.03	3.08	580.00	15.02	15.67			
BCCA8002051425			1.300	0.120		0.100	0.54	2.13	180.00	10.21	12.37			
BCCA8002051654	0.017	0.024												
BCCA8006101305	0.030	0.060		0.020	0.010K									
BCCA8008051645	0.100	0.120	0.870	0.030	0.060									
BCCA8012181630	0.017	0.052		0.084	0.018		0.40	2.80	200.00	16.00	13.00			
BCCA8102031635	0.005	0.015	1.520	0.100	0.007									
BCCA8105041730	0.047	0.159			0.010K		0.20	3.30	1000.00	12.00	9.00			
LMSA7911271300		0.092					2.12	3.85	370.00	15.02	22.58			
LMSA8002051400			1.000	0.090		0.080	3.32	7.49	150.00	26.73	46.46			
LMSA8002051642	0.021	0.033												
LMSA8006101245	0.020	0.040		0.010K	0.010K									
LMSA8008051635	0.070	0.100	0.870	0.010K	0.020									
LMSA8012181610	0.058	0.115		0.096	0.090		3.90	8.10	300.00	32.00	32.00			
LMSA8102031610	0.091	0.125	1.700	0.066	0.116									
LMSA8105041700	0.020	0.072			0.043		2.90	6.50	200.00	14.00	19.00			
LMSA8108171420	0.090	0.160			0.020									
ZZCA7911271234		0.028					3.74	6.85	160.00	27.05	26.51			
ZZCA8002051345			1.000	0.080		0.040	3.51	8.65	80.00	26.57	52.43			
ZZCA8002051635	0.005	0.016												
ZZCA8006101235	0.030	0.080		0.010K	0.010K									
ZZCA8008051630	0.070	0.100	0.970	0.010K	0.050									
ZZCA8012181600	0.041	0.113		0.073	0.086		3.90	7.70	300.00	32.00	31.00			
ZZCA8102031555	0.083	0.125	8.500	0.090	0.110									
ZZCA8105041650	0.015	0.080			0.038		3.00	7.00	100.00	15.00	20.00			
ZZCA8108171415	0.090	0.140			0.020									

LABORATORY DATA SUMMARY (NUTRIENTS AND METALS)

SAMPLE	P ORTHO 70507 MG/L	P TOTAL 665 MG/L	TKN 625 MG/L	NH3N 610 MG/L	NOX 630 MG/L	NITRATE 620 MG/L	POT 935 MG/L	MAG 925 MG/L	IRON 1046 U G/L	CALCIUM 915 MG/L	SODIUM 930 MG/L	SR 1080 UG/L	VOL RES 535 %	MOIST 495 %
LMNA7911271250		0.068					2.94	4.71	340.00	19.51	22.27			
LMNA8002051325			1.000	0.100		0.120	3.43	7.41	120.00	25.12	44.89			
LMNA8002051630	0.034	0.050												
LMNA8006101225	0.030	0.050		0.010K	0.010K									
LMNA8008051620	0.060	0.100	1.040	0.010K	0.030									
LMNA8012181550	0.069	0.130		0.076	0.064		2.50	6.10	200.00	15.00	25.00			
LMNA8102031535	0.052	0.090	2.300	0.485	0.088									
LMNA8105041640	0.010K	0.063			0.011		3.30	7.50	100.00	18.00	25.00			
LMNA8108171405	0.080	0.110			0.020									
WFEA8011201126	0.580	0.670		0.245	0.200		10.00	36.00	400.00	66.00	100.00			
WFEZ8012100933	0.040	0.070	0.850	0.050	0.150	0.140	3.80	26.00	30.00	84.00	90.00	6300.00		
WFEZ8101141345	0.000	0.010	0.770	0.030	0.020	0.020	4.30	30.00	100.00	83.00	100.00	8700.00		
WFEA8102041250	0.020	0.051	0.900	0.022	0.178									
WFEZ8103170935	0.020	0.020	0.850	0.000	0.010	0.010	3.80	34.00	80.00	88.00	110.00	$10000.		
WFEZ8104070850	0.010	0.040	0.820	0.030	0.000	0.000	5.10	44.00	70.00	100.00	150.00	$14000.		
WFEA8105061125	0.010K	0.039			0.010K		4.00	38.00	100.00	48.00	86.00			
WFEZ8106091100	0.020	0.040	0.540	0.040	0.000	0.000	6.20	44.00	90.00	84.00	140.00	$13000.		
WFEZ8107300900	0.010	0.020	0.480	0.000	0.000	0.000	5.20	20.00	120.00	82.00	120.00	$13000.		
WFEA8108180930	0.020	0.070			0.020									
WFNA8011201150	0.010K	0.047		0.660	0.484		2.90	26.00	300.00	62.00	66.00			
WFNZ8012100950	0.030	0.040	1.630	0.030	0.010	0.000	1.40	9.50	30.00	96.00	29.00	1500.00		
WFNZ8101141405	0.000	0.000	1.460	0.060	0.000	0.000	1.30	8.00	750.00	110.00	27.00	1500.00		
WFNA8102041310	0.013	0.037	9.400	0.100	0.010									
WFNZ8103171010	0.000	0.010	1.600	0.000	0.010	0.010	1.40	11.00	370.00	110.00	40.00	2500.00		
WFNZ8104070945	0.010	0.060	0.980	0.020	0.000	0.000	0.70	10.00	1300.00	96.00	37.00	7800.00		
WFNA8105061135	0.018	0.131			0.010K		0.70	20.00	400.00	42.00	89.00			
WFNZ8106091120	0.010	0.050	1.830	0.030	0.000	0.000	4.60	38.00	280.00	76.00	130.00	9600.00		
WFNZ8107300935	0.020	0.050	1.320	0.020	0.010	0.010	4.90	30.00	450.00	68.00	110.00	7600.00		
WFNA8108180950	0.010	0.050			0.020									
SMEA8011201205	0.528	0.660		0.277	0.314		12.00	39.00	500.00	74.00	110.00			
SMEZ8012091010	0.050	0.070	1.030	0.040	0.060	0.050	3.60	26.00	50.00	84.00	84.00	6200.00		
SMEZ8101141430	0.000	0.020	1.020	0.020	0.000	0.000	4.00	28.00	10.00	85.00	81.00	7500.00		
SMEA8102041355	0.013	0.040	2.600	0.055	0.072									
SMEZ8103171030	0.000	0.040	1.200	0.000	0.010	0.010	3.10	22.00	90.00	78.00	75.00	6000.00		
SMEZ8104071030	0.010	0.030	0.950	0.020	0.000	0.000	4.40	37.00	70.00	88.00	140.00	$12000.		
SMEA8105051435	0.010K	0.019			0.010K		4.10	38.00	20.00	46.00	150.00			
SMEZ8106091140	0.010	0.030	0.660	0.020	0.000	0.000	5.90	44.00	100.00	84.00	140.00	$13000.		
SMEZ8107301000	0.020	0.090	2.520	0.020	0.030	0.020	4.50	24.00	510.00	68.00	91.00	6200.00		
SMEA8108180910	0.020	0.040			0.010									
TMCA8011201215	0.016	0.058		1.540	0.279		4.30	34.00	100.00	62.00	110.00			
TMCZ8012101026	0.030	0.040	1.000	0.060	0.020	0.000	2.20	5.80	90.00	38.00	23.00	980.00		
TMCZ8101141440	0.010	0.010	0.940	0.020	0.000	0.000	6.90	9.50	200.00	48.00	36.00	2200.00		
TMCA8102041335	0.007	0.038	1.450	0.015	0.005									
TMCZ8103171050	0.000	0.020	1.100	0.000	0.010	0.010	2.60	15.00	140.00	53.00	58.00	3900.00		
TMCZ8104071045	0.010	0.030	1.020	0.020	0.000	0.000	2.60	23.00	110.00	64.00	82.00	5900.00		
TMCA8105051445	0.010K	0.034			0.010K		3.30	35.00	100.00	45.00	140.00			
TMCZ8106091210	0.000	0.030	0.850	0.030	0.000	0.000	4.90	44.00	70.00	64.00	150.00	$10000.		
TMCZ8107301020	0.020	0.070	0.760	0.020	0.000	0.000	5.00	39.00	200.00	76.00	120.00	$12000.		
TMCA8108181010	0.010	0.050			0.010									

LABORATORY DATA SUMMARY (NUTRIENTS AND METALS)

SAMPLE	P ORTHO 70507 MG/L	P TOTAL 665 MG/L	TKN 625 MG/L	NH3N 610 MG/L	NOX 630 MG/L	NITRATE 620 MG/L	POT 935 MG/L	MAG 925 MG/L	IRON 1046 UG/L	CALCIUM 915 MG/L	SODIUM 930 MG/L	SR 1080 UG/L	VOL RES 535 %	MOIST 495 %
SMOA7912041230	0.026	0.044					2.83	6.42	290.00	21.11	18.97			
SMOA8002121530	0.018	0.046	1.400	0.130		0.060	2.03	8.35	270.00	42.28	38.29			
SMOA8006171225	0.080	0.120		0.020K	0.010K									
SMOA8011191510	0.023	0.083		0.320	0.416		7.10	35.00	100.00	73.00	110.00			
SMOZ8012091450	0.070	0.080	0.930	0.010	0.080	0.070	4.20	26.00	20.00	72.00	80.00	6200.00		
SMOZ8101131515	0.000	0.020	0.800	0.020	0.000	0.000	4.40	30.00	30.00	82.00	99.00	9000.00		
SMOA8102041420	0.005	0.033	1.980	0.040	0.005									
SMOZ8103191045	0.000	0.020	0.980	0.000	0.010	0.010	3.60	28.00	60.00	88.00	89.00	7800.00		
SMOZ8104091335	0.020	0.020	0.870	0.040	0.000	0.000	4.30	37.00	30.00	88.00	130.00	$11000.		
SMOA8105061400	0.010K	0.039			0.010K		3.80	37.00	100.00	50.00	160.00			
SMOZ8106091305	0.000	0.030	0.690	0.030	0.000	0.000	6.10	44.00	30.00	80.00	140.00	$13000.		
SMOZ8107301400	0.010	0.060	0.260	0.040	0.000	0.000	5.50	39.00	120.00	80.00	130.00	$13000.		
SMOA8108190930	0.010K	0.030			0.010									
CFOA8011191415	0.010K	0.038		0.105	0.126		3.40	24.00	100.00	99.00	97.00			
CFOZ8012101105	0.010	0.020	0.990	0.020	0.190	0.180	3.40	21.00	30.00	100.00	80.00	2300.00		
CFOZ8101141300	0.000	0.010	1.230	0.030	0.860	0.850	4.70	26.00	100.00	110.00	110.00	3800.00		
CFOA8102041205	0.002	0.022	3.070	0.095	0.342									
CFOZ8103171135	0.000	0.010	1.200	0.000	0.120	0.110	3.70	20.00	50.00	130.00	80.00	2600.00		
CFOZ8104071140	0.010	0.020	1.240	0.040	0.120	0.110	3.40	20.00	50.00	120.00	92.00	2100.00		
CFOA8105051400	0.010K	0.039			0.100		3.10	20.00	100.00	79.00	86.00			
CFOZ8106091245	0.010	0.040	1.790	0.090	0.080	0.070	3.50	20.00	40.00	100.00	76.00	2000.00		
CFOZ8107301105	0.000	0.010	1.850	0.050	0.070	0.060	3.50	22.00	60.00	100.00	83.00	2200.00		
CFOA8108181035	0.020	0.050			0.010									
THFA8002121510	0.008	0.028	1.400	0.140		0.080	2.83	11.13	140.00	39.08	50.86			
THFA8006171215	0.030	0.060		0.020K	0.010K									
THFA8011191455	0.013	0.055		0.058	0.097		3.90	27.00	100.00	107.00	110.00			
THFZ8012091510	0.010	0.020	0.920	0.020	0.140	0.130	3.60	23.00	40.00	110.00	96.00	2800.00		
THFZ8101131535	0.000	0.010	1.330	0.030	0.750	0.740	5.10	27.00	120.00	110.00	120.00	3900.00		
THFA8102041440	0.003	0.025	1.020	0.093	0.282									
THFZ8103191030	0.000	0.020	1.100	0.000	0.080	0.080	3.70	20.00	40.00	120.00	82.00	2600.00		
THFZ8104091015	0.000	0.020	1.140	0.040	0.100	0.090	3.50	20.00	40.00	120.00	96.00	2100.00		
THFA8105061235	0.010K	0.032			0.086		2.90	23.00	100.00	80.00	95.00			
THFZ8106091320	0.020	0.080	2.650	0.050	0.040	0.030	3.60	21.00	150.00	100.00	80.00	2100.00		
THFZ8107301215	0.020	0.060	2.970	0.170	0.060	0.050	3.40	21.00	120.00	97.00	77.00	2200.00		
THFA8108190945	0.010K	0.030			0.010									
BDCA7912041245	0.012	0.031					3.37	21.42	210.00	56.72	91.71			
BDCA8002121545	0.006	0.025	0.700	0.320		0.050	3.30	17.99	260.00	85.59	79.14			
BDCA8006171205	0.010	0.030		0.020K	0.010K									
BDCA8011191520	0.010K	0.029		0.035	0.005		5.50	31.00	100.00	76.00	110.00			
BDCZ8012100855	0.000	0.010	0.390	0.020	0.000	0.000	4.00	24.00	10.00	80.00	88.00	7800.00		
BDCZ8101131600	0.010	0.010	0.650	0.010	0.000	0.000	3.90	22.00	120.00	90.00	82.00	7600.00		
BDCA8102041505	0.003	0.020	0.440	0.016	0.006									
BDCZ8103180945	0.000	0.010	0.550	0.000	0.010	0.010	3.30	19.00	50.00	84.00	76.00	5800.00		
BDCZ8104091435	0.000	0.020	0.650	0.020	0.000	0.000	3.50	26.00	90.00	92.00	110.00	8800.00		
BDCA8105061440	0.010K	0.046			0.010K		3.80	26.00	200.00	55.00	100.00			
BDCZ8106091350	0.000	0.030	1.030	0.030	0.000	0.000	3.00	18.00	120.00	100.00	88.00	4400.00		
BDCZ8107301315	0.000	0.010	0.830	0.050	0.000	0.000	2.30	23.00	250.00	78.00	87.00	8400.00		
BDCA8108191035	0.010K	0.030			0.010K									
HBIA7912041250	0.030	0.047					3.05	7.28	300.00	29.45	38.29			
HBIA8002121600	0.010	0.035	1.400	0.260		0.080	2.64	11.13	190.00	42.28	54.00			

LABORATORY DATA SUMMARY (NUTRIENTS AND METALS)

SAMPLE	P ORTHO 70507 MG/L	P TOTAL 665 MG/L	TKN 625 MG/L	NH3N 610 MG/L	NOX 630 MG/L	NITRATE 620 MG/L	POT 935 MG/L	MAG 925 MG/L	IRON 1046 UG/L	CALCIUM 915 MG/L	SODIUM 930 MG/L	SR 1080 UG/L	VOL RES 535 %	MOIST 495 %
HBIA8006171200	0.030	0.060		0.020K	0.010K									
HBIA8011191530	0.029	0.087		0.225	0.340		5.20	33.00	200.00	72.00	100.00			
HBIZ8012091215	0.030	0.030	0.850	0.020	0.090	0.080	3.60	25.00	30.00	96.00	92.00	5100.00		
HBIZ8101141230	0.010	0.020	1.000	0.030	0.320	0.310	4.60	27.00	20.00	100.00	100.00	6000.00		
HBIA8102041525	0.003	0.033	0.630	0.010K	0.061									
HBIZ8103171250	0.000	0.030	1.700	0.000	0.010	0.010	3.80	24.00	70.00	110.00	88.00	4900.00		
HBIZ8104071310	0.020	0.020	1.230	0.030	0.040	0.040	3.60	24.00	50.00	100.00	100.00	4800.00		
HBIA8105051505	0.010K	0.035			0.010K		3.50	27.00	40.00	67.00	93.00			
HBIZ8106091405	0.000	0.020	0.770	0.030	0.000	0.000	5.10	36.00	40.00	84.00	120.00	$10000.		
HBIZ8107301425	0.010	0.060	1.050	0.050	0.030	0.020	4.60	34.00	110.00	84.00	110.00	$10000.		
HBIA8108181135	0.020	0.070			0.010									
HBOA7912041304	0.032	0.052					3.03	7.71	230.00	29.45	38.61			
HBOA8002121615	0.012	0.037	1.200	0.160		0.110	2.43	8.35	170.00	34.26	43.79			
HBOA8006171150	0.020	0.050		0.020K	0.010K									
HBOA8011191540	0.010K	0.043		0.105	0.014		4.50	32.00	100.00	77.00	100.00			
HBOZ8012091200	0.020	0.020	0.770	0.010	0.020	0.010	5.20	28.00	50.00	80.00	96.00	6300.00		
HBOZ8101141210	0.010	0.010	1.030	0.030	0.020	0.020	4.80	24.00	20.00	93.00	86.00	5500.00		
HBOA8102041545	0.002	0.019	1.100	0.064	0.010									
HBOZ8103171310	0.000	0.020	1.300	0.000	0.010	0.010	4.00	22.00	20.00	100.00	85.00	4800.00		
HBOZ8104071330	0.010	0.020	0.970	0.020	0.000	0.000	3.60	28.00	20.00	88.00	110.00	6400.00		
HBOA8105051520	0.010K	0.042			0.010K		2.60	26.00	100.00	37.00	100.00			
HBOZ8106091420	0.000	0.010	1.020	0.030	0.010	0.000	4.60	34.00	40.00	60.00	120.00	6400.00		
HBOZ8107311435	0.000	0.000	0.890	0.010	0.000	0.000	4.90	36.00	130.00	70.00	120.00	9800.00		
HBOA8108181145	0.010K	0.050			0.010K									
JGSZ8012091650	0.040	0.040	1.210	0.010	0.010	0.000	0.90	4.50	250.00	31.00	21.00	150.00		
JGSZ8101141650	0.010	0.010	1.120	0.020	0.000	0.000	0.40	3.10		20.00	18.00	260.00		
JGSA8102040930	0.003	0.023	1.250	0.040	0.003									
JGSZ8103191600	0.000	0.020	1.000	0.000	0.010	0.010	0.90	2.80		19.00	15.00	160.00		
JGSZ8104091725	0.010	0.030	1.330	0.030	0.000	0.000	0.50	2.30		20.00	20.00	60.00		
JGMA7912041557	0.012	0.037					0.20	1.71	850.00		13.42	11.90		
JGMA8002121645	0.006	0.022	1.200	0.160		0.050	1.03	1.79	90.00		10.21	15.67		
JGMA8006171645	0.170	0.340		5.800	0.010									
JGMZ8101141530	0.000	0.010	1.630	0.030	0.080	0.070	0.20	3.20	40.00		20.00	20.00	190.00	
JGMA8102041625	0.003	0.030	2.550	0.038	0.005									
JGMZ8103191140	0.000	0.020	1.710	0.010	0.010	0.010	1.50	2.50	80.00		17.00	20.00	120.00	
HBMA8002121710	0.019	0.086	3.200	0.240		0.050	1.46	5.78	130.00	22.24	36.72			
SGIA7912041321	0.030	0.050					2.77	6.85	250.00	25.77	35.94			
SGIA8002121720	0.013	0.031	1.000	0.140		0.070	1.80	5.99	160.00	26.25	33.58			
SGIA8006171135	0.020	0.050		0.020K	0.010K									
SGIA8011201430	0.010K	0.034		0.047	0.002		4.70	27.00	40.00	62.00	110.00			
SGIZ8012091130	0.020	0.020	0.850	0.010	0.010	0.010	5.20	27.00	20.00	76.00	92.00	5700.00		
SGIZ8101131620	0.010	0.010	0.034	0.020	0.000	0.000	3.70	20.00	120.00	79.00	70.00	4700.00		
SGIA8102051240	0.002	0.016	1.310	0.034	0.010									
SGIZ8103171335	0.000	0.010	1.200	0.000	0.010	0.010	3.40	18.00	86.00	80.00	69.00	3800.00		
SGIZ8104071400	0.000	0.020	1.020	0.020	0.000	0.000	3.60	26.00	20.00	76.00	110.00	6100.00		
SGIA8105051535	0.010K	0.042			0.010K		2.90	23.00	100.00	37.00	91.00			
SGIZ8106101315	0.000	0.020	1.530	0.030	0.000	0.000	4.30	30.00	30.00	60.00	120.00	4800.00		
SGIZ8107301450	0.000	0.000	1.200	0.000	0.000	0.000	4.90	36.00	140.00	68.00	120.00	9000.00		
SGIA8108181200	0.010K	0.050			0.010K									

LABORATORY DATA SUMMARY (NUTRIENTS AND METALS)

SAMPLE	P ORTHO 70507 MG/L	P TOTAL 665 MG/L	TKN 625 MG/L	NH3N 610 MG/L	NOX 630 MG/L	NITRATE 620 MG/L	POT 935 MG/L	MAG 925 MG/L	IRON 1046 UG/L	CALCIUM 915 MG/L	SODIUM 930 MG/L	SR 1080 UG/L	VOL RES 535 %	MOIST 495 %
SGOA7912041330	0.035	0.056					2.65	6.21	270.00	23.04	33.58			
SGOA8002121740	0.010	0.030	1.200	0.120		0.040	1.83	5.99	150.00	26.25	34.21			
SGOA8006171115	0.030	0.060		0.020K	0.010K									
SGOA8011201445	0.010K	0.031		0.030	0.039		5.50	37.00	100.00	83.00	82.00			
SGOZ8012091115	0.020	0.020	0.850	0.020	0.020	0.010	4.80	27.00	40.00	72.00	92.00	5600.00		
SGOZ8101131650	0.000	0.010	0.950	0.020	0.000	0.000	4.80	22.00	140.00	75.00	79.00	5400.00		
SGOA8102051255	0.002	0.016	2.200	0.123	0.010									
SGOZ8103171355	0.000	0.010	1.500	0.000	0.010	0.010	3.50	14.00	60.00	52.00	61.00	3200.00		
SGOZ8104071430	0.000	0.020	1.320	0.020	0.000	0.000	3.40	18.00	30.00	72.00	78.00	4000.00		
SGOA8105051550	0.010K	0.020			0.010K		2.90	25.00	30.00	56.00	96.00			
SGOZ8106101345	0.000	0.020	1.230	0.030	0.020	0.010	3.10	28.00	50.00	72.00	120.00	4800.00		
SGOZ8107301500	0.000	0.000	1.410	0.010	0.040	0.040	4.30	33.00	100.00	64.00	130.00	5800.00		
SGOA8108181210	0.010K	0.030			0.030									
USHA8011201500	0.010K	0.034		0.046	0.035		4.40	24.00	40.00	63.00	79.00			
USHA8102051535	0.002	0.018	2.570	0.118	0.007									
USHA8105051600	0.010K	0.025			0.010K		3.00	24.00	30.00	57.00	96.00			
USHA8108181430	0.010K	0.040			0.020									
USHZ8012091100	0.010	0.020	0.800	0.020	0.020	0.020	4.50	26.00	10.00	72.00	93.00	5200.00		
USHZ8101131710	0.000	0.010	0.880	0.020	0.000	0.000	4.60	22.00		74.00	76.00	5200.00		
USHZ8103171405	0.000	0.020	1.310	0.010	0.010	0.010	3.60	14.00		58.00	62.00	3100.00		
USHZ8104071455	0.010	0.020	1.320	0.020	0.000	0.000	3.40	17.00		74.00	71.00	3700.00		
USGS8105051130	0.010	0.020	1.110	0.010	0.000	0.000	3.10	25.00	30.00	80.00	96.00	4800.00		
USHZ8106090950	0.000	0.020	1.240	0.040	0.010	0.000	3.00	28.00		72.00	120.00	4800.00		
USHZ8107301510	0.010	0.060	1.540	0.040	0.020	0.010	5.10	33.00		64.00	130.00	6200.00		
USGS8109011115	0.010	0.030	0.820	0.020	0.020	0.020	3.40	29.00		55.00	100.00	6700.00		
LWEA8011201530	0.010K	0.031		0.300	0.005		4.30	23.00	40.00	60.00	70.00			
LWEZ8012091040	0.010	0.020	0.860	0.020	0.000	0.000	3.60	24.00	40.00	68.00	88.00	4900.00		
LWEZ8101131230	0.000	0.010	0.900	0.020	0.000	0.000	4.70	23.00	80.00	73.00	82.00	5200.00		
LWEA8102051400	0.002	0.018	1.950	0.043	0.010									
LWEZ8103171540	0.000	0.020	1.300	0.000	0.020	0.020	3.70	14.00	70.00	62.00	62.00	3200.00		
LWEZ8104071520	0.020	0.020	1.320	0.020	0.000	0.000	3.90	19.00	80.00	66.00	96.00	3700.00		
LWEA8105060945	0.010K	0.035			0.010K		2.40	20.00	100.00	47.00	84.00			
LWEZ8106090930	0.010	0.020	1.360	0.060	0.010	0.010	3.00	28.00	50.00	76.00	120.00	4800.00		
LWEZ8107291345	0.000	0.000	1.210	0.010	0.010	0.010	4.60	33.00	70.00	69.00	130.00	5400.00		
LWEA8108181415	0.010	0.040			0.020									
WCEA8102050955	0.004	0.024	0.780	0.060	0.167									
WCEA8105060930	0.016	0.042			0.010K		5.40	30.00	100.00	91.00	200.00			
WCEA8108181405	0.010	0.040			0.010K									
WCDA8011201010	0.010K	0.030		0.067	0.005		4.90	51.00	100.00	92.00	220.00			
WCDA8102050930	0.003	0.020	1.220	0.081	0.023									
WCDA8105060915	0.010K	0.025			0.010K		3.60	37.00	20.00	74.00	230.00			
WCCA8011200950	0.023	0.047		0.105	0.042		3.70	24.00	100.00	82.00	110.00			
WCCA8102050900	0.003	0.019	16.100	0.108	0.023									
WCCA8105060900	0.010K	0.035			0.010		3.60	25.00	100.00	67.00	160.00			
WCCA8108181345	0.010K	0.030			0.010K									
LWCA8011201545	0.030			0.058	0.034		3.20	16.00	200.00	40.00	76.00			
LWCZ8012091020	0.030	0.030	1.120	0.020	0.030	0.020	3.70	17.00	30.00	42.00	75.00	2300.00		

LABORATORY DATA SUMMARY (NUTRIENTS AND METALS)

SAMPLE	P ORTHO 70507 MG/L	P TOTAL 665 MG/L	TKN 625 MG/L	NH3N 610 MG/L	NOX 630 MG/L	NITRATE 620 MG/L	POT 935 MG/L	MAG 925 MG/L	IRON 1046 U G/L	CALCIUM 915 MG/L	SODIUM 930 MG/L	SR 1080 UG/L	VOL RES 535 %	MOIST 495 %
LWCZ8101131210	0.000	0.040	2.030	0.030	0.010	0.010	3.90	18.00	340.00	54.00	79.00	3200.00		
LWCA8102051340	0.007	0.030	2.140	0.043	0.023									
LWCZ8103171455	0.000	0.020	1.200	0.000	0.010	0.010	4.30	19.00	70.00	68.00	84.00	3500.00		
LWCZ8104090825	0.020	0.020	1.230	0.030	0.030	0.030	4.20	19.00	60.00	68.00	92.00	3600.00		
LWCA8105060825	0.010K	0.034			0.012		4.00	22.00	100.00	48.00	100.00			
LWCZ8106090835	0.010	0.040	1.550	0.050	0.010	0.000	4.90	24.00	100.00	80.00	120.00	4000.00		
LWCZ8107290830	0.010	0.060	1.630	0.030	0.000	0.000	4.90	27.00	140.00	82.00	120.00	4400.00		
LWCA8108181310	0.030	0.080			0.030									
LWWA8011201600	0.010	0.045		0.066	0.015		3.20	17.00	100.00	42.00	63.00			
LWWZ8012091000	0.020	0.020	1.140	0.040	0.030	0.020	3.30	16.00	60.00	41.00	74.00	2100.00		
LWWZ8101131100	0.000	0.020	0.970	0.030	0.010	0.010	3.70	17.00	200.00	49.00	78.00	2700.00		
LWWA8102051315	0.005	0.023	2.040	0.100	0.017									
LWWZ8103171510	0.000	0.010	0.950	0.000	0.020	0.020	4.30	20.00	50.00	66.00	85.00	3800.00		
LWWZ8104090900	0.010	0.020	1.270	0.070	0.040	0.030	4.30	19.00	100.00	68.00	96.00	3700.00		
LWWA8105060840	0.015	0.045			0.012		3.80	22.00	100.00	49.00	100.00			
LWWZ8106090904	0.010	0.040	1.510	0.110	0.020	0.010	4.00	24.00	110.00	84.00	110.00	4000.00		
LWWZ8107291300	0.000	0.010	1.300	0.000	0.000	0.000	3.80	26.00	140.00	84.00	120.00	4400.00		
LWWA8108181320	0.010	0.060			0.010									
SNMA7912111211		0.040					2.31	5.13	270.00	20.63	28.24			
SNMA7912111619	0.022													
SNMA8002191425	0.098	0.110												
SNMA8002191612			1.200	0.100		0.060	2.03	7.28	270.00	27.85	35.94			
SNMA8006241205	0.010	0.050		0.060	0.020									
SNMA8011111335	0.007	0.043		0.015	0.006		1.30	24.00	100.00	62.00	110.00			
SNMA8102111020	0.010K	0.027	3.050	0.057	0.005									
SNMA8105071120	0.010K	0.033			0.010K		2.40	24.00	100.00	44.00	160.00			
SNMA8108191435	0.010K	0.020			0.010K									
NMOA7912111203		0.062					2.25	6.21	240.00	28.65	43.01			
NMOA7912111625	0.039													
NMOA8002191445	0.325	0.440												
NMOA8002191600			2.300	0.100		0.030	4.25	9.89	760.00	53.51	71.29			
NMOA8006241215	0.040	0.070		0.020	0.020									
NMOA8011111350	0.012	0.052		0.040	0.005		5.30	35.00	100.00	77.00	200.00			
NMOA8102110940	0.368	0.475	11.000	0.077	0.023									
NMOA8105071015	0.010K	0.033			0.010K		3.90	32.00	30.00	53.00	200.00			
NMOA8108191400	0.010	0.060			0.030									
NNMA7912111217		0.040					2.42	5.35	290.00	22.24	32.01			
NNMA7912111636	0.023													
NNMA8002191417	0.130	0.160												
NNMA8002191616			1.300	0.110		0.050	3.21	9.42	370.00	43.73	58.72			
NNMA8006241200	0.030	0.070		0.080	0.020									
NNMA8011111400	0.000	0.040		0.000	0.006		6.20	38.00	100.00	91.00	210.00			
NNMA8102111040	0.027	0.068	2.840	0.045	0.005									
NNMA8105071125	0.012	0.033			0.010K		3.70	30.00	30.00	50.00	200.00			
NNMA8108191445	0.010K	0.030			0.010K									
LWMA7912111225		0.063					2.16	5.18	310.00	19.03	27.30			
LWMA7912111642	0.033													
LWMA8002191410	0.060	0.106												
LWMA8002191621			7.500	0.140		0.160	2.31	7.15	500.00	31.86	41.44			

LABORATORY DATA SUMMARY (NUTRIENTS AND METALS)

SAMPLE	P ORTHO 70507 MG/L	P TOTAL 665 MG/L	TKN 625 MG/L	NH3N 610 MG/L	NOX 630 MG/L	NITRATE 620 MG/L	POT 935 MG/L	MAG 925 MG/L	IRON 1046 UG/L	CALCIUM 915 MG/L	SODIUM 930 MG/L	SR 1080 UG/L	VOL RES 535 %	MOIST 495 %
LWMA8006241640	0.250	0.300		8.000	0.030									
LWIA7912111234		0.040					2.25	5.61	260.00	20.63	29.18			
LWIA7912111652	0.022													
LWIA8002191350	0.037	0.053												
LWIA8002191628			1.000	0.240		0.020	2.48	7.49	200.00	34.75	46.93			
LWIA8006241150	0.030	0.070		0.020	0.020									
LWIA8011111412	0.007	0.025		0.000	0.006		4.40	32.00	100.00	50.00	180.00			
LWIA8102101100	0.195	0.235	2.650	0.027	0.005									
LWIA8105071135	0.010K	0.065			0.010K		4.40	32.00	100.00	51.00	210.00			
LWIA8108191500	0.010	0.080			0.010									
CEWA7912111251		0.027					9.22	38.02	130.00	108.84	297.72			
CEWA7912111701	0.012													
CEWA8002191250	0.250	0.380												
CEWA8002191645			2.000	0.650		0.710	5.09	17.35	830.00	41.48	123.13			
CEWA8006241130	0.020	0.040		0.010K	0.020									
CEWA8011111430	0.032	0.034		0.067	0.005		12.00	56.00	100.00	310.00	310.00			
CEWA8102111115	0.105	0.175	3.000L	0.059	0.006									
CEWA8105071215	0.022	0.065			0.010K		6.10	39.00	100.00	70.00	340.00			
CEWA8108191325	0.070	0.110			0.010									
LWOA7912111302		0.035					2.37	5.35	280.00	22.40	38.29			
LWOA7912111709	0.020													
LWOA8002191223	0.117	0.127												
LWOA8002191655			1.300	0.090		0.070	2.35	7.11	200.00	27.05	38.14			
LWOA8002241135	0.030	0.130		0.010K	0.030									
LWOA8011111445	0.039	0.098		0.090	0.034		5.80	35.00	500.00	45.00	230.00			
LWOA8102111140	0.083	0.220	35.500	0.072	0.024									
LWOA8105071235	0.038	0.050			0.010K		4.30	28.00	200.00	54.00	160.00			
LWOA8108191510	0.050	0.160			0.020									
SDCA7912181303		0.037					2.39	6.85	290.00	25.44	38.29			
SDCA7912181625	0.025													
SDCA8002261355	0.065	0.092	0.900	0.160		0.020	2.48	8.01	190.00	30.58	43.01			
SDCA8007011645	0.030	0.070		0.010K	0.010K									
SDCA8011121010	0.028	0.064		0.044	0.034		8.20	50.00	100.00	80.00	330.00			
SDCA8102111200	0.020	0.060	34.400	0.093	0.024									
SDCA8105071301	0.017	0.088			0.010K		5.00	32.00	100.00	55.00	220.00			
SDCA8108200950	0.040	0.080			0.030									
DDCA7912181250		0.092					4.02	23.18	450.00	49.66	155.34			
DDCA7912181635	0.065													
DDCA8002261302	0.157	0.210	2.000	0.380		0.040	4.65	26.13	640.00	75.96	148.27			
DDCA8007011650	0.080	0.110		0.010K	0.010K									
DDCA8011121050	0.014	0.060		0.040	0.034		8.50	51.00	40.00	79.00	370.00			
DDCA8102111230	0.100	0.153	1.250	0.062	0.270									
DDCA8105071310	0.013	0.046			0.010K		7.60	42.00	40.00	63.00	360.00			
DDCA8108200920	0.050	0.090			0.010									
NDCA7912181316		0.040					2.61	9.42	290.00	31.06	56.20			
NDCA7912181645	0.026													
NDCA8002261248	0.064	0.090	1.300	0.240		0.040	2.71	7.92	230.00	30.26	47.72			
NDCA8007011700	0.040	0.080		0.050	0.010K									

LABORATORY DATA SUMMARY (NUTRIENTS AND METALS)

SAMPLE	P ORTHO 70507 MG/L	P TOTAL 665 MG/L	TKN 625 MG/L	NH3N 610 MG/L	NOX 630 MG/L	NITRATE 620 MG/L	POT 935 MG/L	MAG 925 MG/L	IRON 1046 UG/L	CALCIUM 915 MG/L	SODIUM 930 MG/L	SR 1080 UG/L	VOL RES 535 %	MOIST 495 %
NDCA8011121100	0.037	0.084		0.079	0.037		8.60	54.00	100.00	66.00	300.00			
NDCA8102111315	0.036	0.071	1.200	0.046	0.082									
NDCA8105071320	0.018	0.042			0.010K		5.40	33.00	100.00	57.00	260.00			
NDCA8108201000	0.050	0.090			0.020									
UNCA8011111510	0.013	0.050		0.000	0.005		10.00	55.00	200.00	68.00	420.00			
LPIA7912181330		0.040					2.25	8.01	300.00	25.44	45.36			
LPIA7912181655	0.026													
LPIA8002261226	0.078	0.104	1.500	0.180		0.040	3.17	9.29	200.00	34.91	55.58			
LPIA8007011710	0.040	0.070		0.090	0.020									
LPIA8011120955	0.010	0.042		0.025	0.029		7.10	42.00	100.00	72.00	290.00			
LPIA8102111340	0.040	0.065	1.790	0.060	0.102									
LPIA8105071420	0.042	0.046			0.010K		6.20	37.00	100.00	59.00	350.00			
LPIA8108201030	0.060	0.120			0.030									
LPSA7912181420		0.059					2.43	7.28	650.00	24.64	43.16			
LPSA7912181705	0.033													
LPSA8002261147	0.108	0.160	1.700	0.110		0.080	3.05	10.71	660.00	36.35	66.57			
LPSA8007011715	0.060	0.130		0.010K	0.010K									
LPSA8011120935	0.117	0.178		0.072	0.004		7.00	42.00	1100.00	80.00	290.00			
LPSA8105070910	0.027	0.085			0.010K		6.10	38.00	300.00	71.00	380.00			
LPSA8108200900	0.020	0.100			0.010K									
RLCA7912181359		0.097					4.42	21.63	610.00	46.29	143.56			
RLCA7912181605	0.054													
RLCA8002261208	0.080	0.146	1.900	0.210		0.050	4.20	27.85	490.00	63.61	183.82			
RLCA8007011600	0.140	0.250		0.010K	0.010K									
RLCA8011121445	0.157	0.212		0.042	0.021		12.00	60.00	3800.00	103.00	320.00			
RLCA8102111405	0.205	0.416	4.800	0.055	0.058									
RLCA8105070930	0.301	1.100			0.010K		11.00	36.00	1700.00	120.00	500.00			
RLCA8108201040	0.180	0.620			0.010K									
LPMA7912181440		0.062					2.62	9.51	370.00	22.24	74.43			
LPMA7912181715	0.014													
LPMA8002261121	0.004	0.016	1.300	0.110		0.060	1.34	5.22	290.00	16.94	48.82			
LPMA8007011500	0.060	0.150		0.300	0.030									
LPMA8011120915	0.064	0.131		0.300	0.168		2.10	47.00	300.00	87.00	250.00			
LPMA8102110845	0.030	0.088	15.200	0.111	0.163									
LPMA8105071400	0.073	0.139			0.010K		5.50	35.00	600.00	82.00	460.00			
LPMA8108201100	0.040	0.200			0.010K									
LPOA7912181500		0.048					2.60	7.49	300.00	24.64	38.29			
LPOA7912181730	0.033													
LPOA8002261048	0.034	0.063	1.500	0.120		0.110	3.34	11.35	240.00	37.47	73.64			
LPOA8007011730	0.090	0.150		0.010K	0.010K									
LPOA8011120847	0.028	0.063		0.065	0.013		6.80	41.00	400.00	80.00	290.00			
LPOA8102110815	0.033	0.097	1.350	0.017	0.027									
LPOA8105071440	0.010K	0.029			0.010K		6.10	38.00	100.00	68.00	350.00			
LPOA8108201140	0.020	0.080			0.060									
TCOA8011120830	0.037	0.107		0.228	0.070		7.10	41.00	300.00	72.00	270.00			
TCOA8102110800	0.023	0.058	3.030	0.197	0.127									
TCOA8105071500	0.018	0.066			0.010K		6.60	39.00	100.00	68.00	370.00			

LABORATORY DATA SUMMARY (NUTRIENTS AND METALS)

SAMPLE	P ORTHO 70507 MG/L	P TOTAL 665 MG/L	TKN 625 MG/L	NH3N 610 MG/L	NOX 630 MG/L	NITRATE 620 MG/L	POT 935 MG/L	MAG 925 MG/L	IRON 1046 UG/L	CALCIUM 915 MG/L	SODIUM 930 MG/L	SR. 1080 UG/L	VOL RES 535 %	MOIST 495 %
TCOX8105121755	0.018	0.055			0.021		6.80	41.00	100.00	67.00	380.00			
TCOA8108201155	0.010	0.080			0.010K									