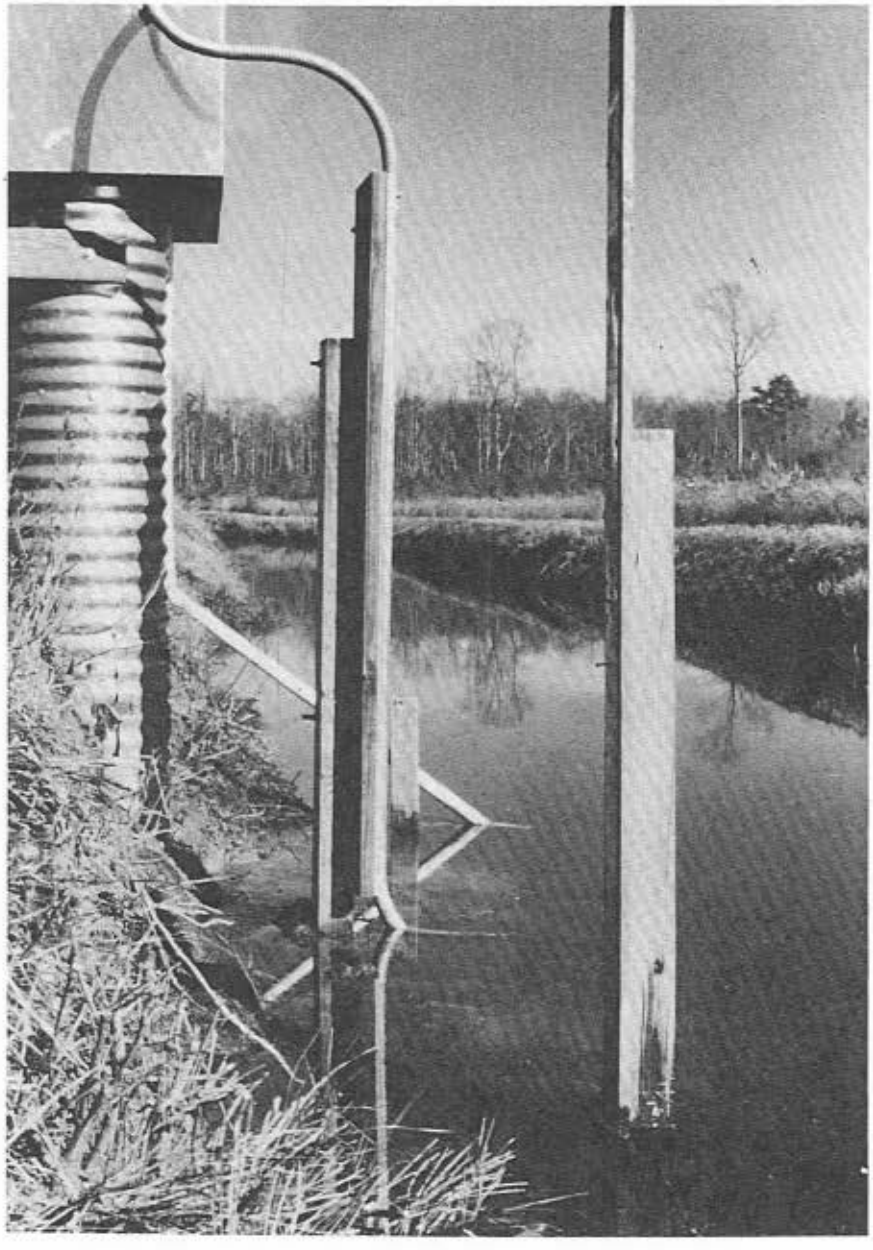
APES Report 93-10

HYDROLOGIC AND WATER-QUALITY DATA IN SELECTED AGRICULTURAL DRAINAGES IN BEAUFORT AND HYDE COUNTIES, NORTH CAROLINA, 1990-92

U.S. GEOLOGICAL SURVEY
Open-File Report 93-78



Prepared in cooperation with the

DIVISION OF ENVIRONMENTAL MANAGEMENT of the
NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH,
AND NATURAL RESOURCES

COVER PHOTOGRAPH: Data-collection site on agricultural drainage canal in Hyde County, North Carolina.

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By M.W. Treece, Jr.

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Albemarle-Pamlico Estuarine Study Report No. 93-10

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DIVISION OF ENVIRONMENTAL MANAGEMENT of the NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH, AND NATURAL RESOURCES

Raleigh, North Carolina

1993

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CONTENTS

ILLUSTRATIONS

ILLUSTRATIONS--Continued

TABLES

TABLES--Continued

TABLES--Continued

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ABSTRACT

An investigation began in 1988 to (1) quantify nutrient, sediment, and freshwater inflow in canals that collect drainage from cropland field ditches, (2) determine the effects of tide gates and flashboard risers on receiving-water quality, and (3) characterize the effects of drainage on the salinity regime of a tidal creek. Data were collected in three agricultural drainage canals in Hyde County, two agricultural drainage canals in Beaufort County, and in Campbell Creek, which receives drainage directly from the Beaufort County canals. Tide gates were tested at selected sites in Hyde County, and flashboard risers were tested at selected sites in Beaufort County.

Hydrologic and water-quality data are presented in this report for the period October 1990 through May 1992 and include (1) daily values of accumulated precipitation, (2) monthly water-level statistics, (3) daily mean values of discharge in the canals, (4) biweekly water-quality field measurements and sample analyses, (5) storm-event water-quality measurements and sample analyses, (6) continuous records of specific conductance in the canals, (7) vertical profiles of salinity in Campbell Creek, and (8) daily mean values of salinity in Campbell Creek. Data collected at these sites from May 1988 through September 1990 were published in a previous U.S. Geological Survey open-file report (Treece and Bales, 1992).

INTRODUCTION

Croplands in eastern North Carolina are typically drained by an array of small ditches that feed larger collector canals emptying into creeks or other receiving waters. Flashboard risers and tide gates are two primary types of water-control structures used in field ditches in North Carolina's coastal counties to manage this drainage. The crest elevation of flashboard risers may be changed at any time by removing or adding boards to the structure. Consequently, landowners may exert some control over drainage from ditches upstream of these structures. Tide gates, on the other hand, operate solely in response to the difference between the water levels upstream and downstream from the structure. According to the design used in the Coastal Plain, tide gates open and allow drainage from upstream fields when the upstream water level exceeds the downstream water level by more than 0.2 ft (R. Woolard, U.S. Soil Conservation Service, oral commun., 1989).

In response to the need for management of runoff from agricultural lands, the North Carolina Agricultural Cost Share Program (ACSP) was implemented in 1984 in selected counties in the Coastal Plain by the North Carolina Division of Soil and Water Conservation. The purpose of the ACSP is to reduce the input of agricultural nonpoint-source pollutants into the streams, lakes, and estuaries of the State through the application of best-management practices. The ACSP provides funding for the installation of flashboard risers in ditches and canals that drain agricultural lands. Tide gates, however, are not an approved best-management practice by the ACSP because the off-site benefits of tide gates have not been well documented.

In 1988, the U.S. Geological Survey (USGS), in cooperation with the North Carolina Department of Environment, Health, and Natural Resources, began an investigation to address issues concerning artificial drainage of cropland, water-control structures, and estuarine receiving-water quality. The objectives of the investigation were to (1) quantify nutrient and sediment concentrations, and freshwater inflow to canals that collect drainage from cropland ditches, (2) determine the effects of tide gates and flashboard risers on receiving-water quality, and (3) characterize the effects of drainage on the salinity regime of a tidal creek.

Study sites were established in two locations; tide-gate sites were located in Hyde County, and flashboard-riser sites were located in Beaufort County (fig. 1). These sites were on agricultural drainage canals that receive land-surface drainage from upland field ditches. Also, data were collected in Campbell Creek, which receives drainage from two Beaufort County canals.

A tide gate was installed in one of the Hyde County canals upstream of site H1 (fig. 2) in May 1988; tide gates were installed in the remaining Hyde County canals upstream of sites H2 and H3 in August 1990. State funds were appropriated for the installation of the tide gates. Tide gates were installed by the landowners with assistance from the Hyde County Soil and Water Conservation District.

A flashboard riser was installed in one of the Beaufort County canals upstream of site B1 (fig. 3) in July 1988; flashboard risers were installed in the remaining canals upstream of sites B2 and B3 in April 1991. Installation of flashboard risers was funded cooperatively by the landowner and the ACSP. Flashboard risers were installed by the landowners with assistance from the Beaufort County Soil and Water Conservation District.

Data collected from May 1988 through September 1990 were published in an open-file report by the U.S. Geological Survey (Treece and Bales, 1992). Data collection at site B1 was discontinued on September 30, 1990, because there were frequent periods of no flow in the canal and because the canal was subject to severe scouring during high-flow periods, which limited collection of meaningful data. Data collection continued at the other Hyde and Beaufort County sites through May 1, 1992.

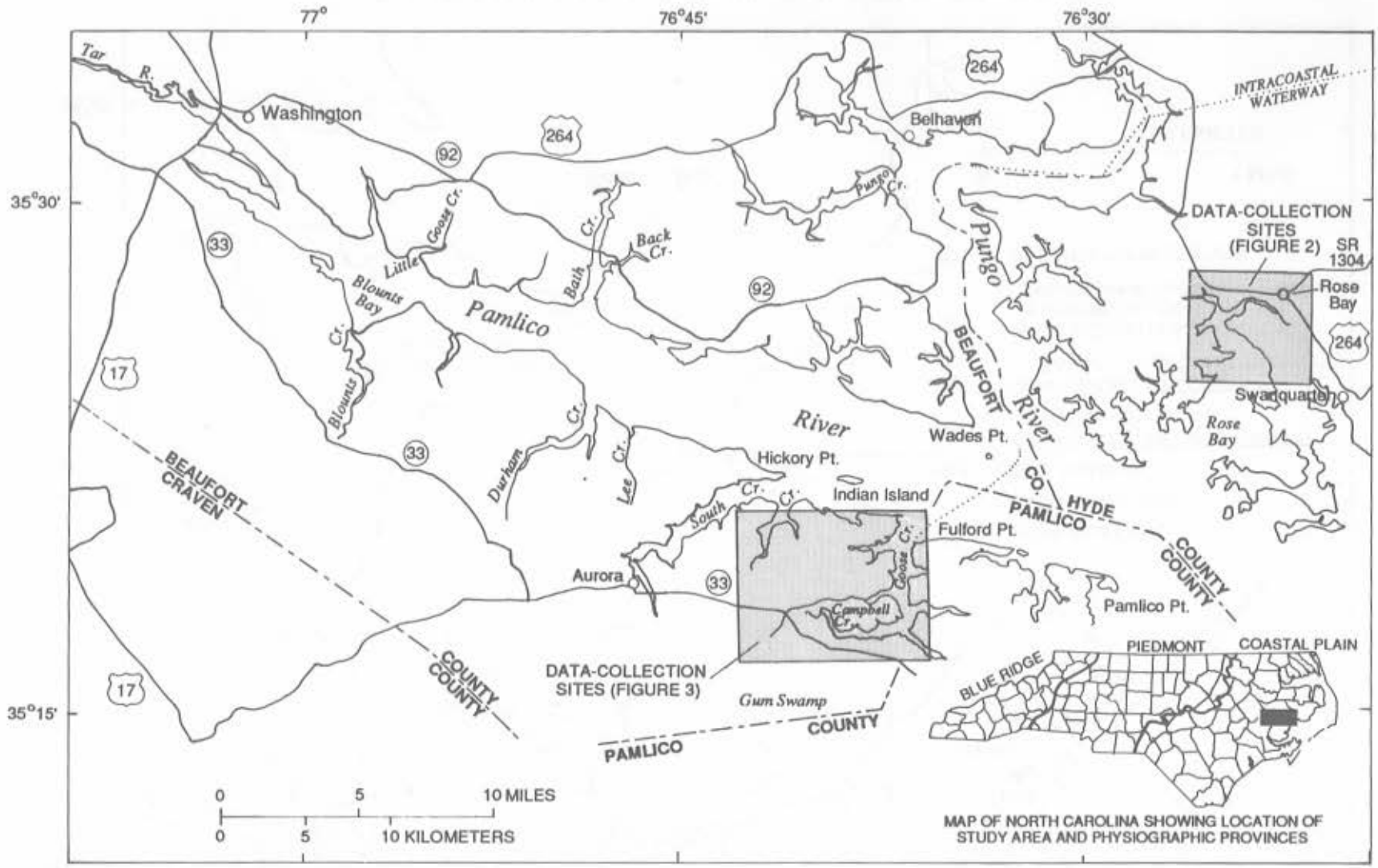


Figure 1.--General location of data-collection sites.

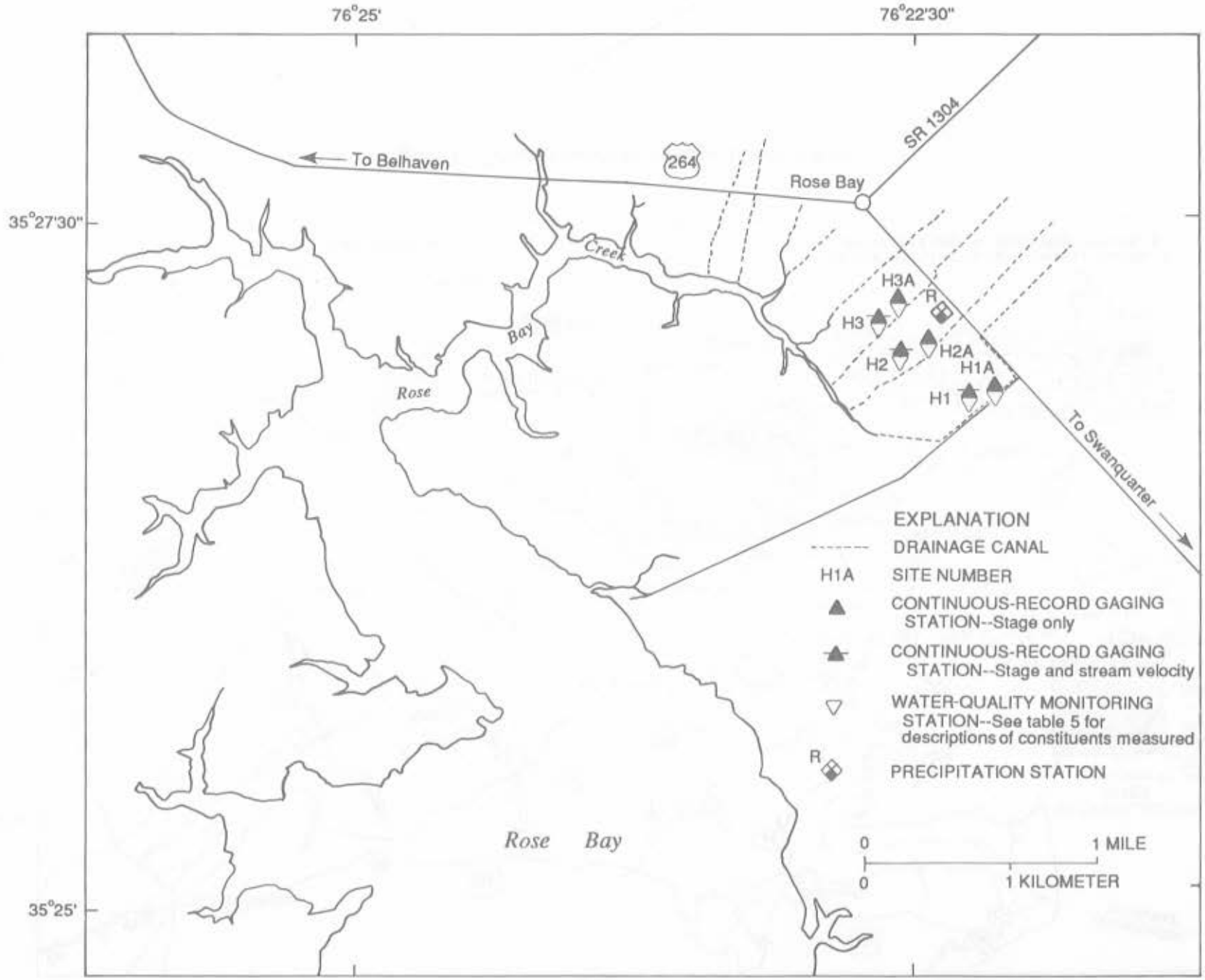


Figure 2.--Location of data-collection sites for Hyde County drainage canals.

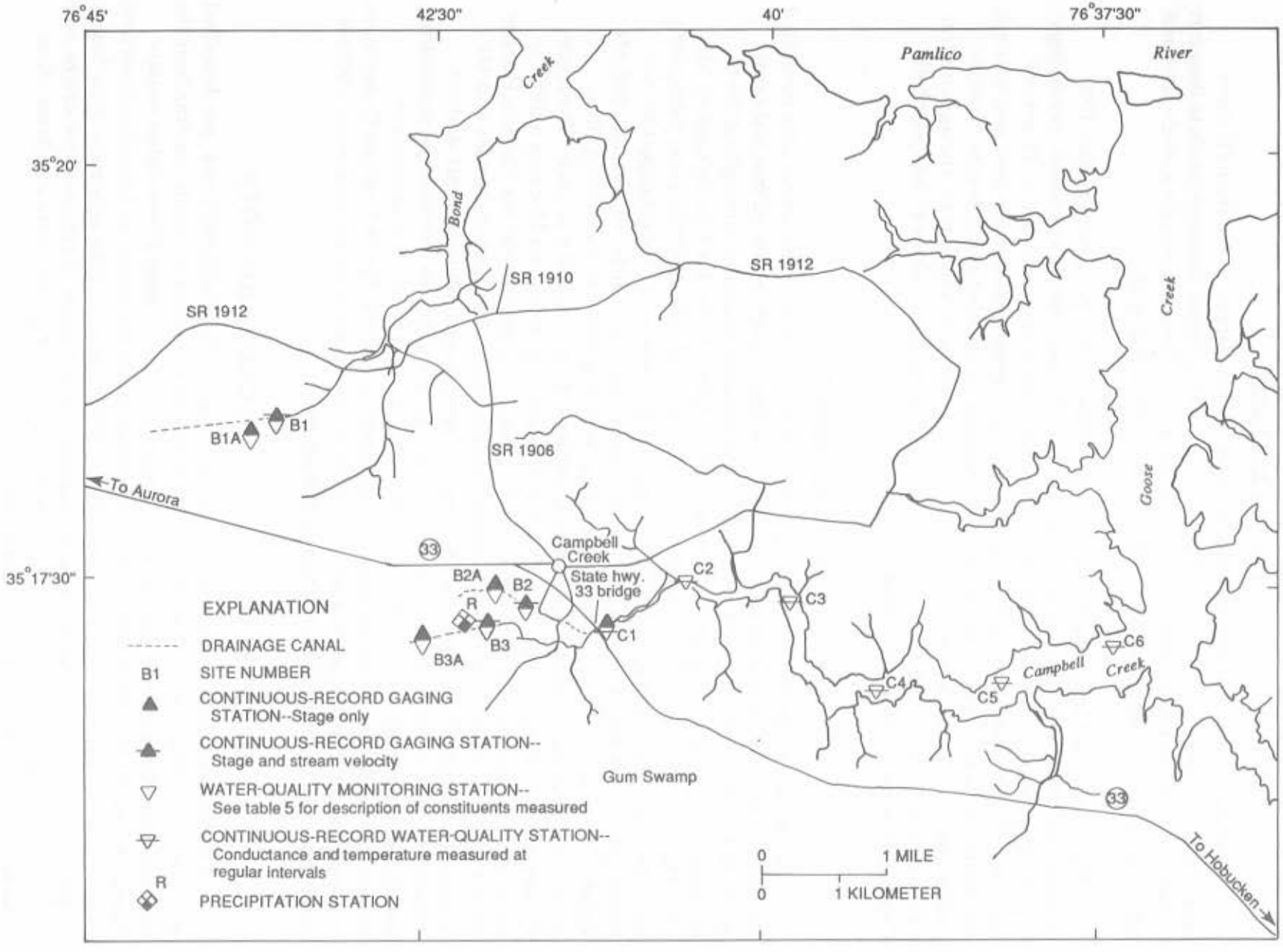


Figure 3.--Location of data-collection sites for Beaufort County drainage canals and Campbell Creek.

Purpose and Scope

This report provides hydrologic and water-quality data collected from (1) three agricultural drainage canals in Hyde County, (2) two agricultural drainage canals in Beaufort County, and (3) Campbell Creek, North Carolina (fig. 1). Descriptions of the study sites and data-collection procedures are followed by data tables and graphs.

Hydrologic and water-quality data are presented for the period of October 1990 through May 1992 when the tide gates and flashboard risers were in operation. Hydrologic data include precipitation, water-level, and stream-velocity data recorded at 15-minute intervals. Water-quality data include physical properties measured in the field and nutrient and sediment concentrations measured biweekly and for selected storm events. Specific conductance and water temperature were measured at regular intervals for the agricultural basins and daily at Campbell Creek sites. Specific-conductance values at the Campbell Creek sites were converted to salinity values.

Acknowledgments

The author gratefully acknowledges the cooperation of the landowners who permitted the study sites to be located on their property. The landowners provided free and open access to the property, farming-practice data, and valuable assistance throughout the investigation. Cooperating landowners are: Mr. Sydney Credle, Mr. Charlie Godley, Mr. David O'Neal, Mr. Hiram Paul, and Mr. Kelly Williams. Mr. David O'Neal was particularly instrumental in identifying Hyde County sites and in maintaining local support for the investigation. Mr. Rufus Croom, Mr. James T. Etheridge, Mr. Michael W. Harriett, and Mr. Rodney Woolard, of the U.S. Soil Conservation Service, assisted in identifying sites, developing and maintaining local contacts, and providing technical guidance. The Hyde County Soil and Water Conservation District was also responsible for blocking a ditch to hydraulically separate two of the basins. Mr. James R. Cummings and Ms. Patricia Hooper (North Carolina Division of Soil and Water Conservation), Ms. Elizabeth McGee and Mr. Jimmie R. Overton (North Carolina Division of Environmental Management), and Mr. Thomas W. Ellis (North Carolina Department of Agriculture) were instrumental in initiating and developing continuing support for the investigation. This study was begun in cooperation with the Albemarle-Pamlico Estuarine Study of the North Carolina Department of Environment, Health, and Natural Resources and has continued in cooperation with the Department's Division of Environmental Management.

STUDY BASINS AND DATA-COLLECTION SITES

The Hyde and Beaufort County study basins, including Campbell Creek, are described in this section. The study basins lie in the Coastal Plain Province of North Carolina near the mouth of the Pamlico River (fig. 1). The Pamlico River is a drowned river-valley estuary characterized by daily mean water-level fluctuations of less than a foot and salinities from near zero to about 20 ppt (parts per thousand) (Bales, 1990). Because of the proximity of the basins to the Pamlico River and Pamlico Sound, and because the bottom of the canal that drains each basin is near or below mean sea level, water level and water quality in the canals are often affected by downstream estuarine conditions.

The climate of the region is mild and moderately moist. The mean annual temperature is about 15.5 °C, and mean annual precipitation is about 52 in. (Hardy and Hardy, 1971). Variability in annual precipitation totals is large, ranging from 35 to 80 in., but average monthly precipitation is relatively uniform throughout the year, with slightly higher amounts typically occurring during the late summer months of July, August, and September. Evapotranspiration rates average about 34 in/yr (inches per year) and exhibit much less variability from year to year than precipitation (Wilder and others, 1978). Average wind speeds are about 10 mi/hr (miles per hour). Winds typically blow from south to southwest between April and August, and from north to northwest between September and February; there is no prevailing wind direction during March (Garrett and Bales, 1991).

Hyde County Basins

The three Hyde County study basins, located near the community of Rose Bay, are drained by adjacent, parallel drainage canals (fig. 2). The data-collection sites are all less than 2,000 ft from the confluence of the drainage canals with Rose Bay Creek, a tidal creek draining to Rose Bay. The basins range in size from 70 to 140 acres (table 1) and are characterized by highly productive mineral soils, which are used to grow winter wheat and soybeans in rotation (R. Woolard, U.S. Soil Conservation Service, oral commun., 1988). All runoff within each basin is by way of surface drainage to ditches and subsequently to the canals in which the data-collection installations are located. The canals at sites H2 and H3 are about 13 ft wide at the top and about 4 ft deep. The drainage canal at site H1 is about 9 ft wide and 2 ft deep but was not as well maintained as at sites H2 and H3.

Data were collected downstream from tide gates at sites H1, H2, and H3 to determine nutrient and sediment concentrations and to quantify the effects of tide gates on downstream receiving-water quality. In July 1988, a tide gate was placed in the canal about 100 ft upstream of site H1. The tide gate was installed by the landowner, with assistance from the Hyde County Soil and Water Conservation District. Following more than 2 years of data collection at sites H1, H1A, H2 and H3, tide gates were installed in the canals upstream of sites H2 and H3 in August 1990. Gages were then installed at sites H2A and H3A (fig. 2) about 15 ft upstream of the tide gates to record water levels at 15-minute intervals. Specific conductance was also measured biweekly upstream of the tide gates at sites H1A, H2A, and H3A. Data were collected for about 2 additional years at all six sites.

Beaufort County Basins

The two Beaufort County agricultural basins are located near the community of Campbell Creek, 5 mi east of Aurora (fig. 3) and about 20 mi southwest of the Hyde County basins. The basins are similar in size to the Hyde County basins (table 1). Soils within the basins are loams and fine sandy loams. The basins are used exclusively for row crops (corn, milo, soybeans, potatoes, and winter wheat). All runoff within each basin is by way of surface drainage, but there is a more extensive network of surface-drainage ditches in the Beaufort County basins than in the Hyde County basins (fig. 2).

Initially, data were collected in an agricultural drainage canal (site B1) that drains into Bond Creek (fig. 3). The support structure for flashboard risers was installed in the canal

upstream of site B1 in 1989 by the landowner in cooperation with the Beaufort County Soil and Water Conservation District. However, meaningful data were scarce because of several limiting physical factors, such as frequent and prolonged periods of dry canal conditions and an unstable channel. Therefore, data collection was discontinued at this site September 30, 1990.

Table 1.--*Description of data-collection sites*

Site number (figs. 2 and 3)	USGS station number[1]	County	Latitude	Longitude	Approximate drainage area (acres)	Description
H1	0208458600	Hyde	35°26'44"	76°22'25"	70	Drainage canal, 100 ft downstream from tide gate
H1A	0208458600	Hyde	35°26'48"	76°22'18"	70	Drainage canal, 15 ft upstream of tide gate
H2	0208458700	Hyde	35°26'57"	76°22'37"	140	Drainage canal, 90 ft downstream from tide gate
H2A	0208458700	Hyde	35°26'59"	76°22'34"	140	Drainage canal, 15 ft upstream of tide gate
H3	0208458800	Hyde	35°27'01"	76°22'49"	104	Drainage canal, 800 ft downstream from tide gate
H3A	0208458800	Hyde	35°27'06"	76°22'43"	104	Drainage canal, 15 ft upstream of tide gate
B1	0208455130	Beaufort	35°18'41"	76°43'28"	93	Drainage canal, 100 ft downstream from flashboard riser. No data collected during the period covered by this report
B1A	0208455130	Beaufort	35°18'44"	76°43'35"	93	Drainage canal, 75 ft upstream of flashboard riser. No data collected during the period covered by this report
B2	0208455143	Beaufort	35°17'20"	76°41'45"	47	Drainage canal, 150 ft downstream from flashboard riser
B2A	0208455143	Beaufort	35°17'23"	76°41'46"	47	Drainage canal, 15 ft upstream of flashboard riser
B3	0208455141	Beaufort	35°17'10"	76°41'50"	68	Drainage canal, 600 ft downstream from flashboard riser
B3A	0208455141	Beaufort	35°17'08"	76°41'50"	68	Drainage canal, 45 ft upstream of flashboard riser
C1	0208455145	Beaufort	35°17'13"	76°41'13"	5,120	Receiving stream for sites B2 and B3
C2	0208455165	Beaufort	35°17'30"	76°40'33"	6,342	Receiving stream, downstream from site C1
C3	0208455175	Beaufort	35°17'25"	76°39'48"	7,501	Receiving stream, downstream from site C2
C4	0208455195	Beaufort	35°16'55"	76°39'12"	9,306	Receiving stream, downstream from site C3
C5	0208455205	Beaufort	35°17'00"	76°38'12"	10,835	Receiving stream, downstream from site C4
C6	0208455220	Beaufort	35°17'12"	76°37'23"	12,755	Receiving stream, downstream from site C5 at mouth of Goose Creek

[1]U.S. Geological Survey downstream order identification number.

Sites B2 and B3 (fig. 3) are on adjacent canals that drain directly to Campbell Creek. Sites B2 and B3 are about 2,000 ft upstream of Campbell Creek. The area between the data-collection sites and Campbell Creek is forested, and no additional ditches or canals drain to the two canals

between the data-collection sites and Campbell Creek. The canals at sites B2 and B3 are each about 12 ft wide. At site B2, the canal is 3 ft deep; at site B3, the canal is 4 ft deep.

Data were collected downstream from flashboard risers at sites B2 and B3 and in Campbell Creek at site C1 to determine nutrient and sediment concentrations and to quantify the effects of flashboard risers on downstream receiving-water quality. Following about 3 years of data collection at sites B2 and B3, flashboard risers were installed in the canals upstream of sites B2 and B3 in April 1991. The flashboard risers were installed by landowners with assistance from the Beaufort County Soil and Water Conservation District. Gages were then installed at sites B2A and B3A (fig. 3) upstream of flashboard risers where water levels were recorded at 15-minute intervals and specific conductance was measured biweekly. Site B2A was placed about 15 ft upstream of riser, and site B3A was placed about 45 ft upstream of riser. Data collection at sites B2, B2A, B3, and B3A continued until May 1992.

Campbell Creek Data-Collection Sites

Upstream of the State Highway 33 bridge, Campbell Creek drains a 5,120-acre (8-mi ^{2}) wetland area known as Gum Swamp (fig. 1, table 1). There is very little agricultural land in the Campbell Creek watershed upstream of the State Highway 33 bridge. With the exception of the canals that drain sites B2 and B3, only one other agricultural drainage canal is known to drain to Campbell Creek upstream of the State Highway 33 bridge.

Between the State Highway 33 bridge and the confluence of Campbell Creek with Goose Creek (fig. 3), an additional 7,610 acres (11.9 mi ^{2}) drain to Campbell Creek, comprising a total drainage area of 12,700 acres (19.9 mi ^{2}) for the entire Campbell Creek watershed. The distance along the axis of the creek from the State Highway 33 bridge to the mouth of the creek is about 5 mi. Land use in the lower part of the Campbell Creek basin is a mixture of agriculture (primarily row crops) and forested wetlands.

Data were collected in Campbell Creek to (1) characterize the salinity regime of the tidal creek, including the effects of freshwater drainage and effects of flashboard risers on salinity, and (2) evaluate the effects of flashboard risers on receiving-water nutrient concentrations. Data were collected at six sites (C1-C6) on Campbell Creek (fig. 3). A continuous-recording gaging station (C1) was located on the right bank at the State Highway 33 bridge to record water levels, specific conductance, and water temperature at 15-minute intervals. Specific conductance and water temperature were measured at 30-minute intervals at sites C2-C6, which were placed equidistantly along a longitudinal axis from C1 to the mouth of Campbell Creek.

Additional data are available that were collected as part of another investigation in Goose Creek, 3.5 mi downstream from the confluence with Campbell Creek (Garrett and Bales, 1991; Garrett, 1992) (fig. 3). Water level, specific conductance, water temperature, and dissolved-oxygen concentrations were recorded at 15-minute intervals. Although not presented in this report, these data may be useful in characterizing the salinity regime of Campbell Creek.

HYDROLOGIC DATA

Hydrologic records collected at the Hyde and Beaufort County sites and in Campbell Creek are summarized in table 2. Hyde County site locations are shown in figure 2; the Beaufort County and Campbell Creek site locations are shown in figure 3.

Table 2.-- *Hydrologic data-collection network*
[--, no data]

Site (figs. 2 and 3)	Measurement type and time interval (in minutes)			Discharge	Period of record
	Precipitation	Water level	Stream velocity		
H1	--	15	15	Periodically	May 1988-April 1992
H1A	--	15	--	--	October 1988-April 1992
H2	15	15	15	Periodically	May 1988-April 1992
H2A	15	15	--	--	October 1990-April 1992
H3	--	15	15	Periodically	May 1988-April 1992
H3A	--	15	--	--	December 1990-April 1992
B2	--	15	15	Periodically	May 1988-April 1992
B2A	--	15	--	--	June 1991-April 1992
B3	15	15	15	Periodically	May 1988-April 1992
B3A	15	15	--	--	May 1991-April 1992
C1	--	15	--	--	May 1988-April 1992

Precipitation

Precipitation was recorded at 15-minute intervals at sites H2 and B3 (table 2). Precipitation data from the National Weather Service station at New Holland, 12 mi east of site H2, were used to compare precipitation measurements at site H2 with long-term averages and to estimate missing daily precipitation values at this site. Likewise, data from the National Weather Service station at New Bern, about 25 mi southwest of site B3, were used to compare precipitation measurements at site B3 with long-term averages and to estimate missing daily precipitation values at this site (table 3). A comparison of observed precipitation and long-term average values indicates that the period from October 1990 through April 1992 was drier than normal (table 3).

Water Levels

Water levels were recorded at 15-minute intervals at each site in the five drainage canals and at Campbell Creek (site C1) (table 2). All water levels were referenced to sea level, and datums were checked annually.

The relation of water levels upstream (sites H1A, H2A, and H3A) and downstream (sites H1, H2, and H3) during tide-gate operation is shown in figures 4-6. The relation of water levels upstream (sites B2A and B3A) and downstream (sites B2 and B3) during operation of flashboard risers is shown in figures 7 and 8. The relation of water levels at sites B2 and B3 and in Campbell Creek (site C1), which receives drainage from the canals on which sites B2 and B3 are located, is presented in figures 9 and 10.

Table 3.--*Precipitation at sites H2 and B3, October 1990-April 1992, and long-term average precipitation at nearby National Weather Service stations*

		Precipitation, in inches							
Year	Month	Observed at site H2	Long-term average at New Holland	Difference	Cumulative difference	Observed at site B3	Long-term average at New Bern	Difference	Cumulative difference
1990	October	4.48	3.90	+0.58	+0.58	6.19	3.39	+2.80	+2.80
	November	2.65[a]	3.70	-1.05	-.47	4.92	3.08	+1.84	+4.64
	December	2.10	3.35	-1.25	-1.72	1.98[b]	3.69	-1.71	+2.93
1991	January	6.24	4.20	+2.04	+.32	7.68[b]	4.01	+3.67	+6.60
	February	.64	3.87	-3.23	-2.91	2.38	3.97	-1.59	+5.01
	March	6.78	3.61	+3.17	+.26	3.41	3.62	-.21	+4.80
	April	2.78	3.31	-.53	-.27	5.93	2.98	+2.95	+7.75
	May	.87[a]	4.21	-3.34	-3.61	3.46	4.41	-.95	+6.80
	June	3.22	4.37	-1.15	-4.76	5.47	5.13	+.34	+7.14
	July	5.96	6.04	-.08	-4.84	5.59	6.75	-1.16	+5.98
	August	6.77	6.36	+.41	-4.43	4.44	6.33	-1.89	+4.09
	September	3.28	5.62	-2.34	-6.77	3.79	5.75	-1.96	+2.13
	October	2.06	3.90	-1.84	-8.61	3.42	3.39	+.03	+2.16
	November	2.17	3.70	-1.53	-10.14	1.52	3.08	-1.56	+.60
	December	4.14	3.35	+.79	-9.35	3.19	3.69	-.50	+.10
1992	January	3.17	4.20	-1.03	-10.38	6.95	4.01	+2.94	+3.04
	February	1.75	3.87	-2.12	-12.5	.76	3.97	-3.21	-.12
	March	3.36	3.61	-.25	-12.75	3.48	3.62	-.14	-.26
	April	1.78	3.31	-1.53	-14.28	.59	2.98	-2.39	-2.65

[a]Monthly total includes some daily values estimated from New Holland observations.
[b]Monthly total includes some daily values estimated from New Bern observations.

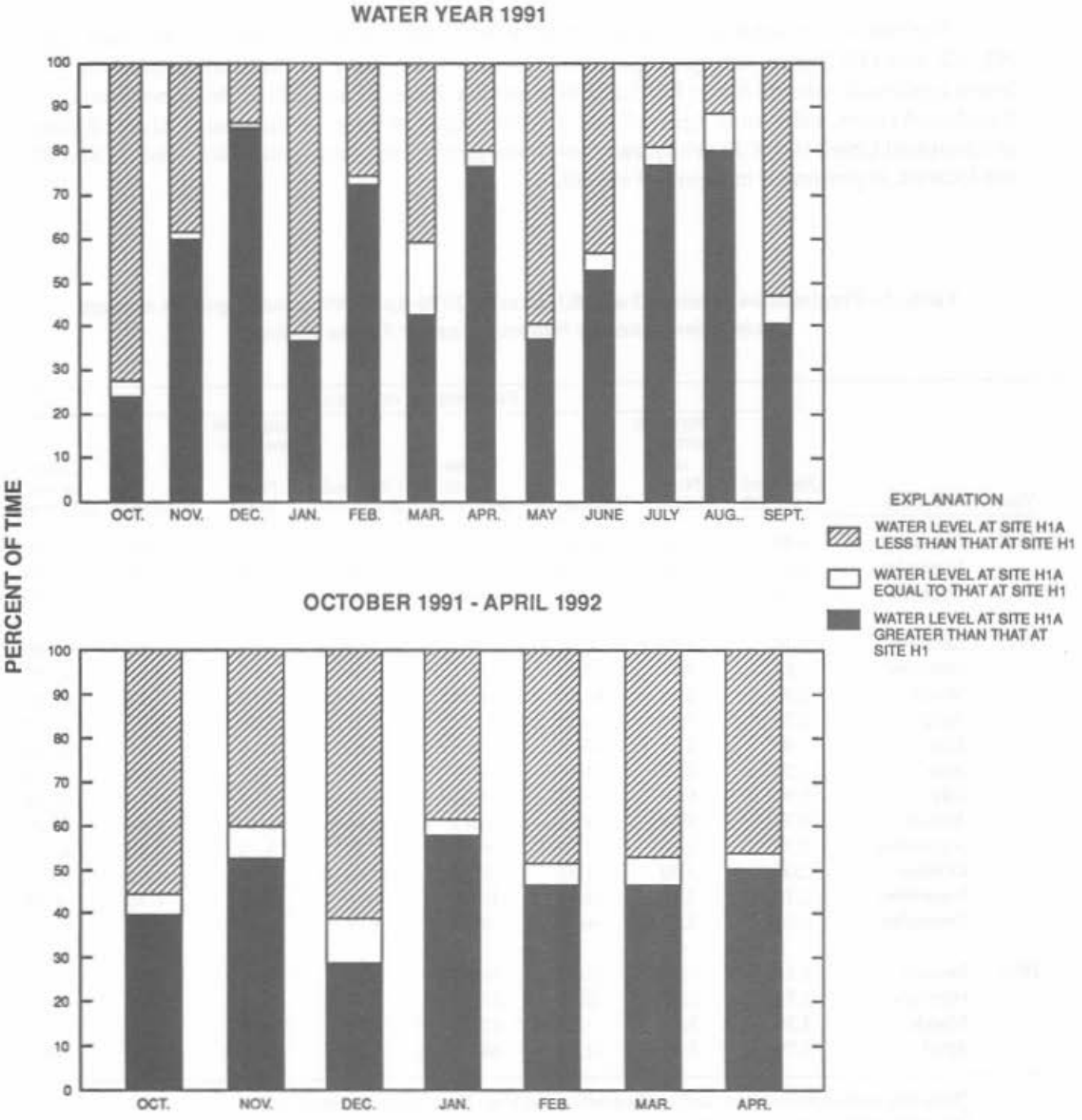


Figure 4.--Relation of water levels in drainage canal upstream (site H1A) and downstream (site H1) from tide gate.

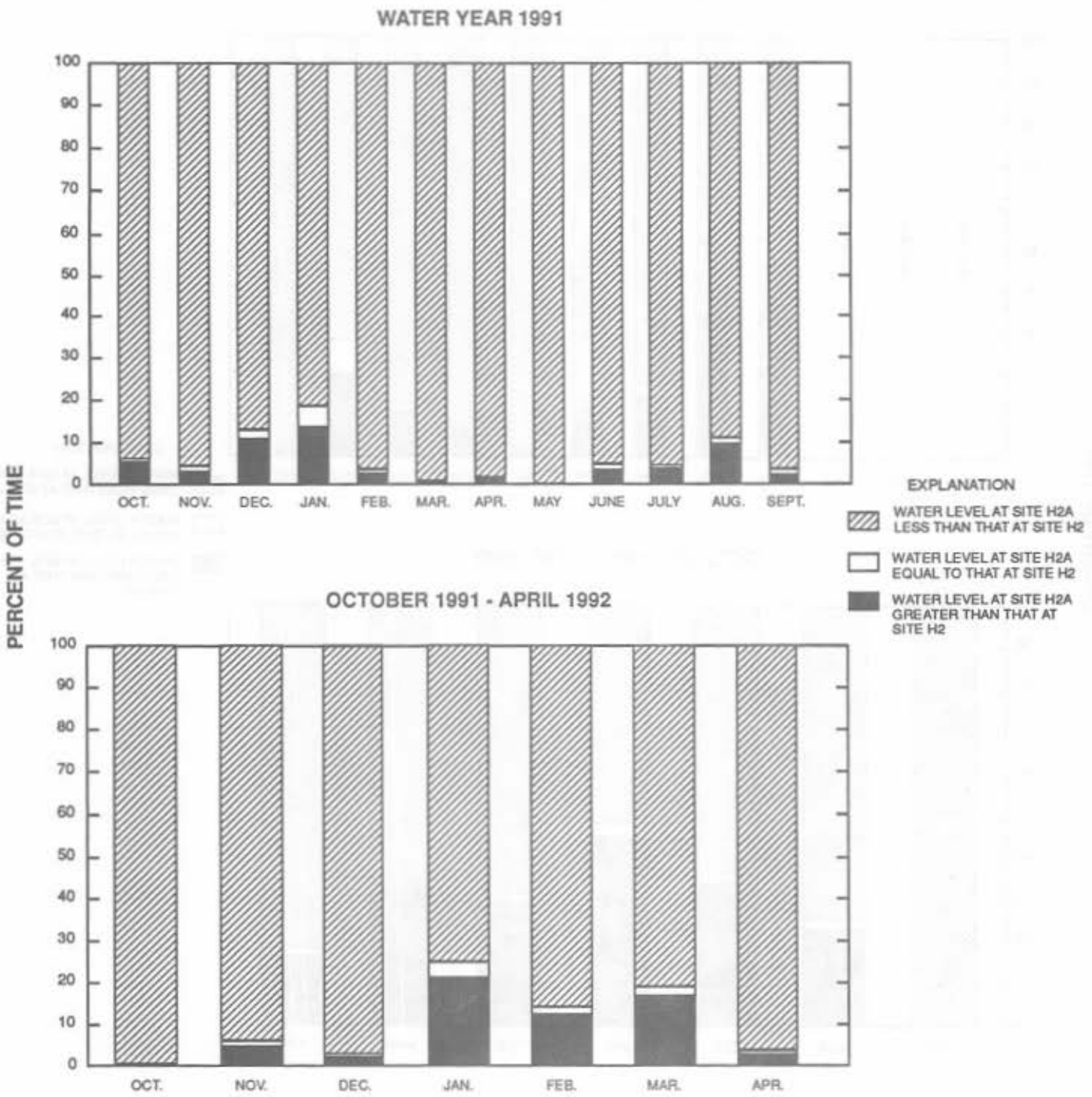


Figure 5.--Relation of water levels in drainage canal upstream (site H2A) and downstream (site H2) from tide gate.

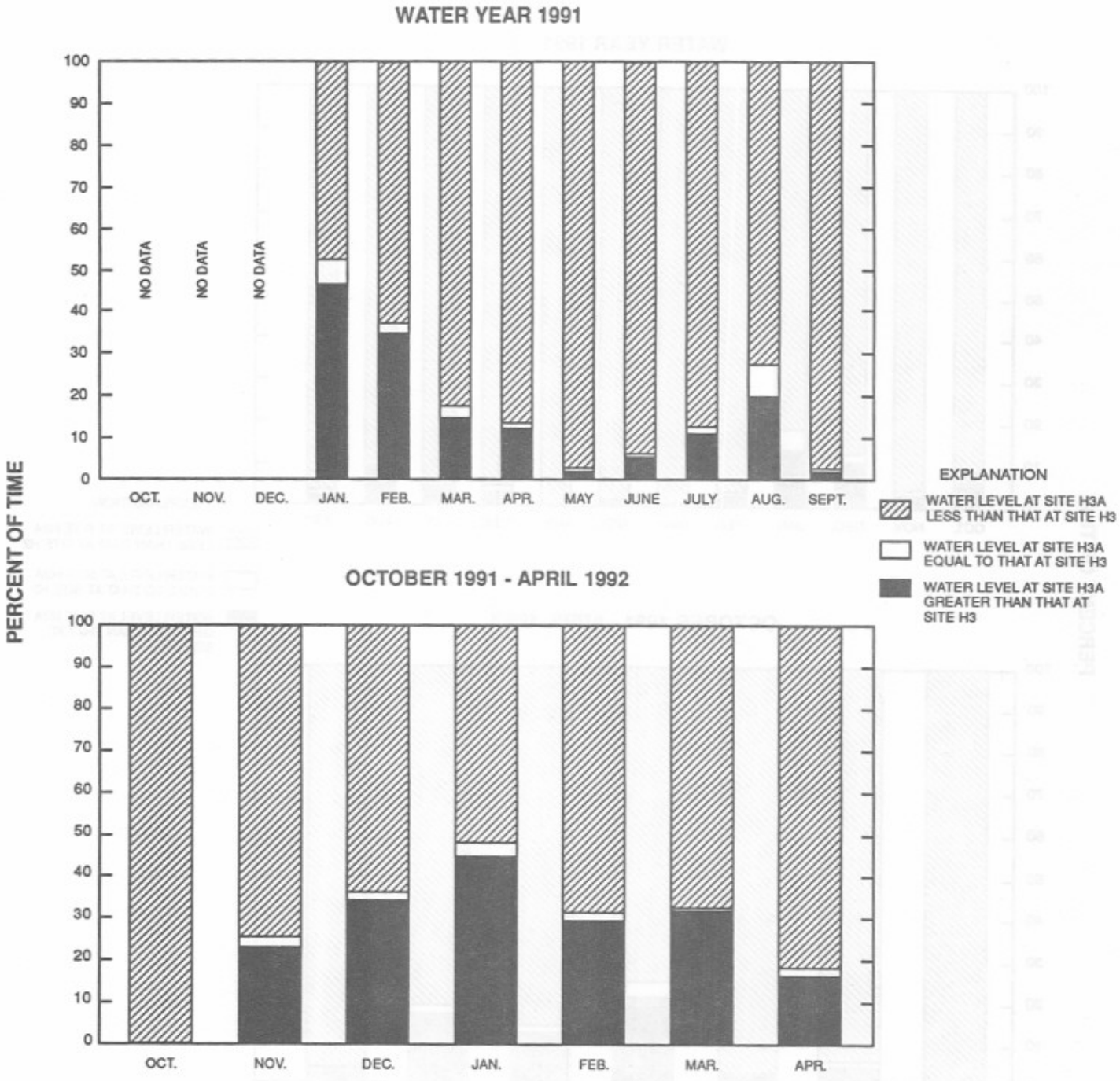


Figure 6.--Relation of water levels in drainage canal upstream (site H3A) and downstream (site H3) from tide gate.

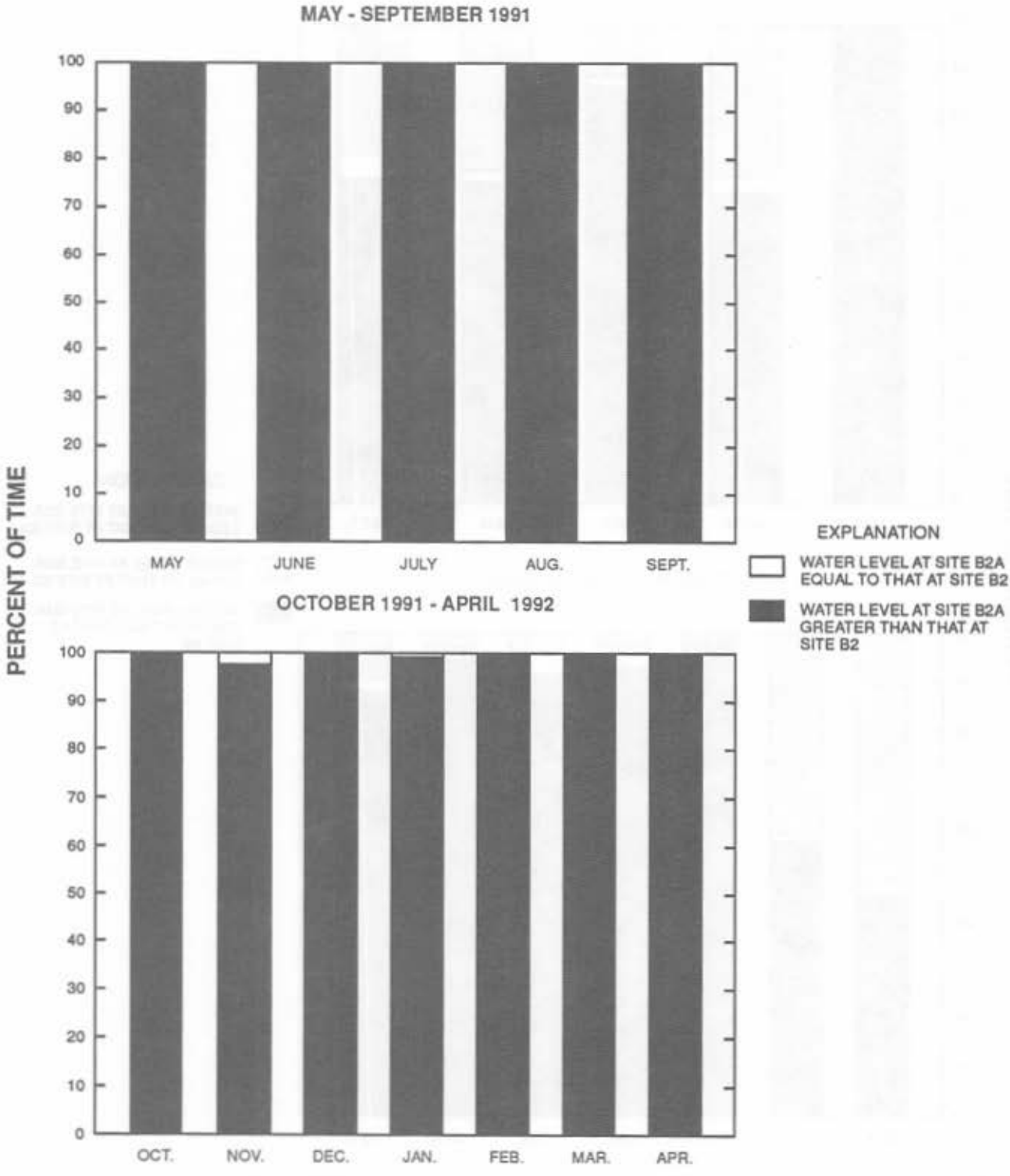


Figure 7.--Relation of water levels in drainage canal upstream (site B2A) and downstream (site B2) from flashboard riser.

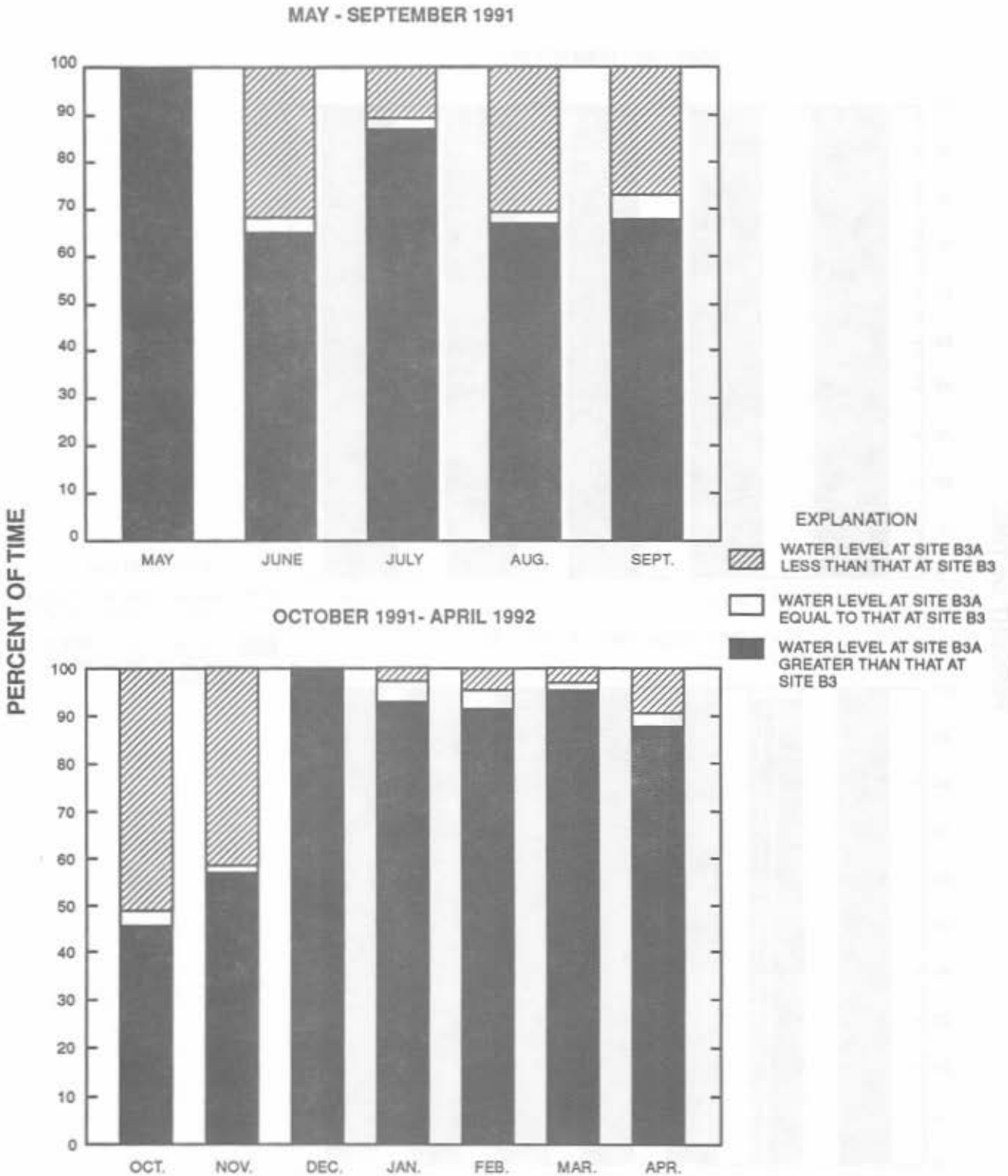


Figure 8.--Relation of water levels in drainage canal upstream (site B3A) and downstream (site B3) from flashboard riser.

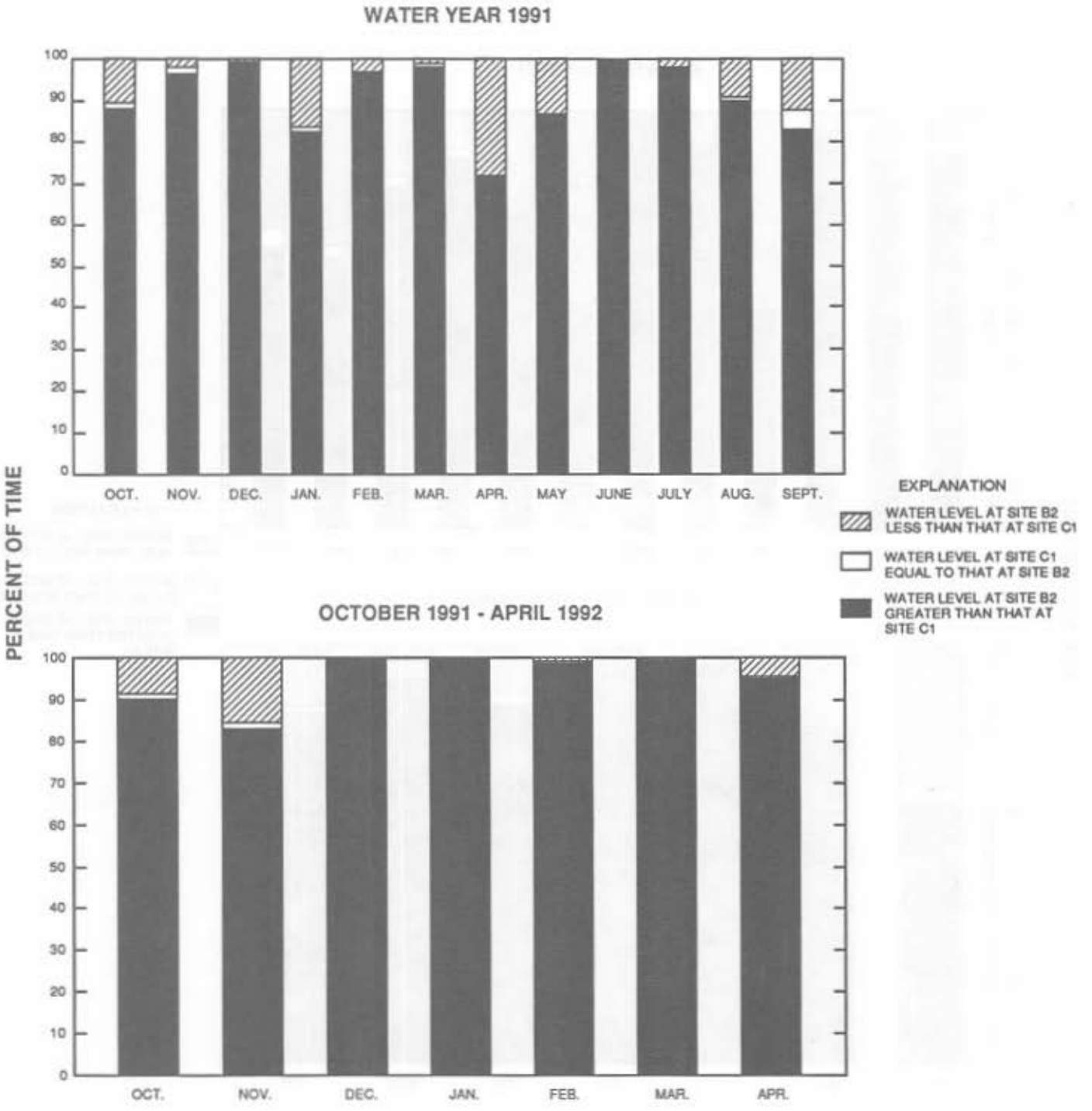


Figure 9.--Relation of water levels in Campbell Creek (site C1) and in upstream drainage canal (site B2).

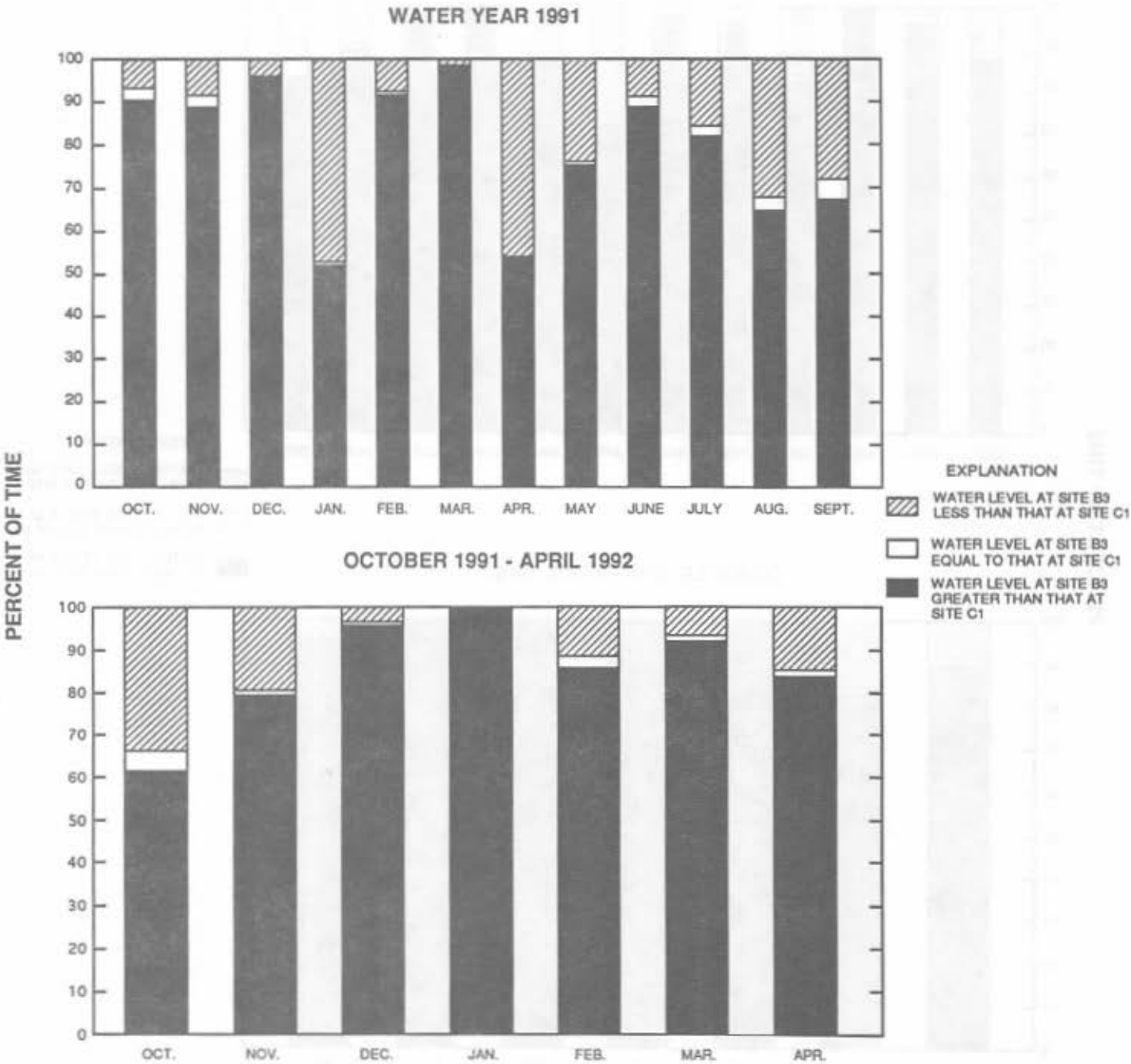


Figure 10.--Relation of water levels in Campbell Creek (site C1) and in upstream drainage canal (site B3).

Water levels downstream from tide gates at sites H2 and H3 were greater than water levels upstream of tide gates 92 and 77 percent of the time, respectively. Tide gates were effective in preventing saltwater from entering field ditches upstream of the tide gates. Water levels downstream from flashboard risers at sites B2 and B3 were less than upstream water levels 99.7 and 80 percent of the time, respectively. Water levels at sites B2 and B3 were greater 92 and 81 percent of the time, respectively, than water levels at site C1 (figs. 9 and 10), which represent the percentages of time water was moving downstream from the canal sites to Campbell Creek.

Stream Velocity

Standard stream-gaging techniques using a weir and a stage-discharge relation were not suitable at most of the study sites for three reasons: (1) movement of water in these canals occurs in two directions--downstream, as a result of land-surface drainage, and upstream, as a result of tidal action; (2) the weir will typically become submerged and nonfunctional during periods of extremely high water levels resulting from streamflow or increases in tidal elevation; and (3) the weir itself may act as a water-control structure by storing water in the canal upstream of the weir. This storage could potentially change the streamflow volume and water quality from what might occur without the weir. Consequently, stream velocity and channel cross-sectional area were used to compute discharge.

A continuous record of stream velocity (magnitude and direction) was obtained in each of the drainage canals using Marsh-McBirney[1] bi-directional electromagnetic velocity meters. The meter sensor, which is about 10 in. long and 1 in. in diameter, was mounted to extend horizontally and perpendicular to the flow. The meter was controlled by an electronic datalogger, which was programmed to turn on the meter and make 30 measurements during a 15-minute interval. These measurements were averaged to provide a mean velocity for the interval, which was stored in the datalogger. During biweekly visits to the sites, the data loggers were downloaded, and field measurements of velocity were made with a Price AA optic-current meter or a Marsh-McBirney MDL 201 current meter and compared to the electromagnetic velocity meter readings to ensure meter calibration and determine appropriate data corrections. The maximum velocity magnitudes recorded at each of the five velocity-monitoring sites (table 2) are shown in table 4.

Discharge

Discharge was computed for each canal in the following manner. First, the relation between water level (stage) and cross-sectional area was determined from measurements in each canal. The stage-area relation is for the cross section at which the velocity-meter probe was located. Next, discharge measurements (about 15 measurements in each canal) were made for different flow and water-level conditions. Using the average stream velocity for the cross section (measured flow divided by total area) determined from the discharge measurements and the point velocity measured by the bi-directional electromagnetic velocity meter at the

[1]Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Geological Survey.

time of the discharge measurements, a relation between measured point velocity and average velocity was developed for each canal. The relation between point velocity and average velocity was checked throughout the study period by making additional discharge measurements in the canal.

Table 4.--*Maximum recorded upstream and downstream velocities in five drainage canals*

[ft/s, foot per second; --, missing data]

	Maximum stream velocities			
	Water year 1991		Water year 1992	
Site	Upstream flow (ft/s)	Downstream flow (ft/s)	Upstream flow (ft/s)	Downstream flow (ft/s)
H1	-0.01	0.14	-0.02	0.03
H2	-.05	.06	-.02	.03
H3	-.19	.12	-.03	.03
B2	-.10	.31	--	--
B3	-.07	.09	-.04	.04

Discharge was then determined by (1) using measured water level to obtain a cross-sectional area, (2) using measured point velocity to obtain a cross-sectionally averaged velocity, and (3) multiplying cross-sectional area by cross-sectionally averaged velocity to obtain an instantaneous discharge. Flows were calculated at 15-minute intervals and averaged for a 24-hour period to obtain daily means.

Discharge record is dependent on accurate and continuous water-level and stream-velocity data; therefore, periods of discharge record may be missing as a result of missing water-level or velocity data. Stream-velocity data are missing whenever the water level in canals declined below the elevation of the velocity probe. Other periods of missing water-level or velocity data occurred as a result of instrument malfunction.

WATER-QUALITY DATA

Water-quality records were collected at the Hyde County sites (fig. 2), the Beaufort County sites (fig. 3), and in Campbell Creek (fig. 3). Data collection included routine, biweekly measurements and storm-event sampling. In addition, water samples at each canal site were continuously collected and composited to determine specific conductance. A summary of the water-quality sample collection is listed in table 5.

Standard USGS procedures for the collection and analysis of water-quality samples were followed. Procedures for the collection of field data, maintenance of instrumentation, and processing of data also were developed for the specific instrumentation and conditions of this

Table 5.--*Number of water-quality samples collected, October 1990-May 1992*

	Measurement interval															
	14 hours[1]	Biweekly												Oct. 26, 1990	June 19-22, 1991	Sept. 26, 1991
Site (figs. 2 and 3)	Specific conductance	Specific conductance	pH	Water temperature	Dissolved oxygen	Barometric pressure	Total nitrogen, $NO_2 + NO_3$	Total ammonia	Total nitrogen organic	Total, nitrogen ammonia + organic	Total phosphorus	Total phosphorus, ortho	Suspended sediment	Storm-event[2] samples		
H1	751	35	35	35	35	35	35	35	35	35	35	35	35	0	8	1
H1A	0	33	0	33	0	35	0	0	0	0	0	0	0	0	0	0
H2	410	35	35	35	35	35	35	35	35	35	35	35	35	0	4	1
H2A	0	35	0	35	0	35	0	0	0	0	0	0	0	0	0	0
H3	583	35	35	35	35	35	35	35	35	35	35	35	35	0	8	1
H3A	0	34	0	34	0	35	0	0	0	0	0	0	0	0	0	0
B2	582	34	34	34	34	34	34	34	34	34	34	34	34	7	4	0
B2A	0	22	0	22	0	34	0	0	0	0	0	0	0	0	0	0
B3	540	33	33	33	33	33	33	33	33	33	33	33	33	7	7	0
B3A	0	22	0	22	0	33	0	0	0	0	0	0	0	0	0	0
C1	0	32	33	30	34	34	34	34	34	34	34	34	34	0	0	0

[1]Composite sample consisting of five discrete samples collected at about 3-hour intervals.
[2]Storm-event samples analyzed for total nutrient and suspended-sediment concentrations.

study. These procedures are documented in an unpublished quality-assurance manual that was prepared as part of this investigation (R.G. Garrett, U.S. Geological Survey, written commun., 1990).

Biweekly Sampling

Field measurements of specific conductance, pH, water temperature, barometric pressure, and dissolved-oxygen concentration were made at sites in the five drainage canals downstream from water-control structures and at site C1 at approximately biweekly intervals. Measurements of specific conductance and water temperature also were made upstream of the water-control structures at sites H1A, H2A, H3A, B2A, and B3A.

Field meters were calibrated at the beginning of each day of use. Field instruments used were the Yellow Springs Instrument Company Model 33 S-C-T meter for specific conductance, the Beckman 11 pH meter, a Thommen barometer, and the Yellow Springs Instrument Company Model 54 dissolved-oxygen meter. The specific conductance, pH, and dissolved-oxygen meters are capable of measuring temperature. The temperatures of collected samples were measured with the specific-conductance meter so that conductance values could be adjusted to 25 °C. The dissolved-oxygen meter was used to measure water temperature in the canals at a 1-ft depth.

Specific-conductance standards were used to develop a calibration curve for the conductance meter. Field meter readings were within 5 percent of the standards after calibration. The pH meter was calibrated using standard solutions; after calibration, meter readings were within 0.2 pH units of the standards. Temperature thermistors were calibrated against an American Society for Testing Materials thermometer at two temperatures. All values were within 0.5 °C after calibration. The barometer was calibrated annually against a National Weather Service barometer. The dissolved-oxygen meter was calibrated in water-saturated air after adjustment for barometric pressure. After calibration, the meter readings were within 0.1 mg/L (milligram per liter) of the saturation value at the measured temperature and pressure. The dissolved-oxygen calibration was for freshwater. Samples of unknown specific conductance and pH prepared by the USGS's National Water-Quality Laboratory in Denver were analyzed annually and checked against the laboratory's measurements to ensure accuracy of field meters.

Manually collected samples were obtained at biweekly intervals at all sites in the five drainage canals and at site C1 (table 5). Samples were collected using the equal-width increment (EWI) method (Edwards and Glysson, 1988), which requires equal spacing of subsamples across the cross section of the canal or creek, and an equal transient rate, both up and down, in all subsamples. Samples were collected for analysis of specific conductance, pH, nutrient concentrations, and suspended-sediment concentrations. Samples collected for nutrients were immediately composited, stored in opaque brown bottles, preserved with mercuric chloride, and placed on ice.

Nutrient samples were analyzed for concentrations of total nitrite plus nitrate as nitrogen, total Kjeldahl nitrogen, total phosphorus, and total orthophosphate. Nutrient

analyses were performed in the USGS's National Water-Quality Laboratory in Denver using methods described by Fishman and Friedman (1985). Suspended-sediment concentrations were determined in the USGS's Raleigh, N.C., sediment laboratory using procedures documented by Guy (1969).

Event Sampling

To document water quality during high-flow events in drainage canals, samples were collected at sites downstream from water-control structures at time intervals of between 30 and 60 minutes during two storm events and once near peak water level for a third storm event (table 5). Event samples were not collected in Campbell Creek.

Event samples were collected using the Instrumentation Specialty Company (ISCO) model 2700 pumping sampler with fixed intake. The sampler intake was located near the center of the canal and about 0.5 ft above the bottom of the canal. Samples also were collected manually to ensure that automatically collected point samples were representative of conditions throughout the sampled transect. Results indicate that flow in these five canals is well mixed; there were only slight differences between automatically collected samples and samples collected by depth integration at three equally spaced locations across the canal. This is probably a result of the small cross-sectional area of flow and long, straight approaches with uniform geometry upstream of the sampling site.

Samples were retrieved from the sampler within 24 hours of sample collection, stored in opaque bottles, preserved with mercuric chloride, and placed on ice. Samples were analyzed for the same constituents as the biweekly, manually collected samples (table 5).

Specific-Conductance Samples in Drainage Canals

Because of the potential for crop damage and the loss of soil productivity, the upstream movement of saltwater in drainage canals is a major concern for farmers having low-lying fields near estuarine waters. Salinity may change quickly in the drainage canals in response to upland drainage and to downstream estuarine conditions. Specific conductance, as an indicator of salinity, was measured in the monitored canals.

Water samples were collected automatically in each of the monitored canals downstream from water-control structures using the ISCO Model 2700 automatic water samplers. Each 500 mL (milliliter) sample represented conditions during a 14-hour period and was the composite of five 100 mL samples collected at approximately 3-hour intervals. During biweekly visits to the sites, the sample bottles were replaced with clean empty bottles. The samples were then returned to the laboratory for measurement of specific conductance, and the bottles were cleaned and stored. These specific conductance values are shown as graphs in figures 11-15 on pages 73-77 of this report.

Specific Conductance and Salinity in Campbell Creek

Measurements of specific conductance and temperature were made at six locations along the longitudinal axis of Campbell Creek (fig. 3). Instrument sensors were located at

approximately mid-depth in the creek. Data were collected and recorded at 30-minute intervals at sites C2-C6 and at 15-minute intervals at site C1. Because specific conductance in Campbell Creek was higher than in the drainage canals, specific conductance at sites C1-C6 was converted to salinity using a conversion rating (table 6) (Miller and others, 1988) and is presented as such in this report.

Table 6.--*Conversion table for specific conductance to salinity*

[µS/cm, microsiemens per centimeter at 25 degrees Celsius; ppt, parts per thousand]

Specific conductance (µS/cm)	Salinity (ppt)	Specific conductance (µS/cm)	Salinity (ppt)
0	0.00	15,000	8.71
500	.23	15,500	9.03
1,000	.47	16,000	9.34
1,500	.74	16,500	9.65
2,000	1.00	17,000	9.97
2,500	1.27	17,500	10.29
3,000	1.55	18,000	10.62
3,500	1.82	18,500	10.94
4,000	2.10	19,000	11.26
4,500	2.38	19,500	11.59
5,000	2.67	20,000	11.91
5,500	2.95	20,500	12.23
6,000	3.24	21,000	12.56
6,500	3.54	21,500	12.89
7,000	3.83	22,000	13.21
7,500	4.13	22,500	13.54
8,000	4.42	23,000	13.87
8,500	4.71	23,500	14.20
9,000	5.01	24,000	14.53
9,500	5.31	24,500	14.86
10,000	5.62	25,000	15.19
10,500	5.92	25,500	15.53
11,000	6.23	26,000	15.86
11,500	6.54	26,500	16.20
12,000	6.84	27,000	16.54
12,500	7.15	27,500	16.87
13,000	7.45	28,000	17.21
13,500	7.77	28,500	17.54
14,000	8.08	29,000	17.88
14,500	8.40	29,500	18.22

At site C1, a USGS minimonitor equipped with two sensors was used to record temperature and conductance at 15-minute intervals. The minimonitor consists of (1) a water-tight can (about 14.5 in. high by 10.5 in. in diameter) containing signal conditioners, (2) cables with waterproof connectors, (3) water-quality sensors, and (4) a 12-volt battery (Garrett and Bales, 1991). The minimonitor is also controlled by a datalogger, which is programmed to turn on the minimonitor at 15-minute intervals, collect the data from the sensors, record the time, and turn off the minimonitor. The datalogger stores the data, which are downloaded bi-weekly during routine field trips.

At five of the Campbell Creek data-collection sites (C2-C6), a Hydrolab DataSonde I (DSI) was used to measure and record temperature and conductance at 30-minute intervals. The DSI is a submersible, fully self-contained unit capable of measuring and recording temperature and specific conductance. The DSI has a temperature range of -2 to 50 °C with a calibrated accuracy of ±0.1 °C. The selectable specific-conductance ranges are from 0-1,500, 0-15,000, and 0-150,000 µS/cm (microsiemens per centimeter at 25 degrees Celsius); calibrated accuracy is ±1 percent of full scale.

The DSI's were mounted in aluminum pipes which were driven into the streambed. Because the sensors and data-storage device were housed in one unit, the DSI had to be returned to the laboratory for data downloading and recalibration. This usually resulted in a few days of missing record each time the instrument was serviced. Field measurements were made whenever the DSI was deployed and whenever the unit was recovered. Calibration was performed in the laboratory using specific-conductance standards and an internal calibration curve. Data were recovered and the units were recalibrated at 4- to 5-week intervals.

Vertical profiles of specific conductance and temperature were measured at sites C2-C6 each time the conductance meters were serviced. Measurements were made near surface and at 1-ft intervals over the full depth of flow. Field readings at the appropriate depth were also compared to values recorded by the DSI at the corresponding time, and corrections were applied if necessary. Vertical profiles of specific conductance and temperature were measured biweekly at site C1 as part of the routine sampling schedule.

Campbell Creek salinity data indicated that, at times, there was significant variation in salinity from the water surface to the channel bottom. To obtain a better record of this vertical salinity profile, salinity data collection at Campbell Creek was modified in October 1991. At that time, the instrument at site C3 was moved to site C4, and salinity at site C4 was measured near the water surface and near the streambed. Likewise, the instrument at site C5 was moved to site C6 where salinity was measured near the surface and near the streambed. The instrument at site C2 remained at approximately mid-depth.

PRESENTATION OF DATA

Hydrologic and water-quality data in Hyde and Beaufort County drainage canals and Campbell Creek are presented in this section. In order to effectively present the large amount of information obtained at the study sites, some of the data collected at short time intervals have been summarized. For example, monthly summaries of water levels are provided, and

daily mean flows are presented, although these data were recorded at 15-minute intervals and are stored as such in the National Water Data Storage and Retrieval System of the USGS.

Data are presented in the following order:

- Daily values of accumulated precipitation (tables 7 and 8).
- Summaries of monthly water-level statistics (tables 9-19)--Maximum and minimum are instantaneous values; daily maximum and daily minimum mean are the monthly means of the daily maximum and minimum values; daily mean range is the monthly average of daily differences between the daily maximums and daily minimums.
- Daily mean values of discharge (tables 20-24).
- Results of biweekly water-quality field measurements and sample analyses (tables 25-35)--Barometric pressure was measured and used with water temperature and dissolved oxygen to compute saturation percentage of dissolved oxygen; barometric pressure is not reported in the tables.
- Storm-event sample water-quality analyses (tables 36-40).
- Composite samples of specific conductance, with each sample representing a 14-hour period (figs. 11-15).
- Vertical profiles of salinity in Campbell Creek (tables 41-46).
- Daily mean values of salinity in Campbell Creek (tables 47-56).

Within each category, data are presented (if available) first for the Hyde County drainage canals, then for the Beaufort County drainage canals, and finally for the Campbell Creek sites.

Table 7.--*Daily values of accumulated precipitation at site H2, October 1990-April 1992*

LOCATION.--Lat 35°27'04", long 76°22'30"; Hyde County; in agricultural field adjacent to drainage canal, 0.1 mi southeast of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458700.

REMARKS.--e, estimated from National Weather Service gage at New Holland; ---, missing data or no day in that month.

RAINFALL ACCUMULATED (INCHES), OCTOBER 1990-SEPTEMBER 1991
DAILY SUM VALUES

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.00	0.00e	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.12	0.00	1.57
2	.00	.00e	.00	.67	.00	.32	.00	.00	.00	.00	1.23	.00
3	.00	.00e	.00	.00	.00	1.88	.00	.00	.00	.00	.08	.00
4	.00	.00e	.14	.08	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00e	.00	.00	.00	.00	.00	.00	.00	.39	.28	.00
6	.00	.18e	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00e	.21	.00	.41	.00	.00	.00	.00	.00	1.21	.00
8	.00	.00e	.90	1.07	.00	.17	.00	.00	.00	.00	.00	.00
9	.00	.00e	.00	.20	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	1.68e	.00	.00	.00	.00	.00	.00	.00	.19	3.59	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.80	.00	.00
12	.00	.00	.00	.93	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.45	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.07	.23	.00	.00	.00	.00	.00	.57
15	.00	.02e	.00	.00	.00	.00	.00	.08	.00	1.03	.00	.00
16	.00	.00	.00	.54	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.41	.00	.08	.00	.00	.00	.00
19	.00	.00	.00	.10	.00	.00	.26	.00	.10	.00	.00	.00
20	.00	.00	.00	1.18	.00	.00	1.70	.00	.62	.00	.00	.00
21	.00	.00	.66	.00	.00	.00	.00	.00	.64	.00	.00	.00
22	.00	.00	.19	.00	.16	.00	.00	.00	.83	.00	.00	.00
23	1.28	.00	.00	.00	.00	.00	.00	.00	1.03	.00	.00	.00
24	.00	.00	.00	.60	.00	.00	.00	.00	.00	.00	.00	.14
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.38	.58
26	3.20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.42
27	.00e	.00	.00	.00	.00	.00	.00	.00	.00	.54	.00	.00
28	.00e	.00	.00	.42	.00	.00	.82	---	.00	.89	.00	.00
29	.00e	.79	.00	.00	---	3.09	.00	---	.00	.28	.00	.00
30	.00e	.00	.00	.45	---	.23	.00	.79e	.00	.55	.00	.00
31	.00e	---	.00	.00	---	.00	---	.00	---	.17	.00	---
TOTAL	4.48	2.67	2.10	6.24	0.64	6.78	2.78	0.95	3.22	5.96	6.77	3.28

Table 7.--*Daily values of accumulated precipitation at site H2, October 1990-April 1992*--Continued

LOCATION.--Lat 35°27'04", long 76°22'30"; Hyde County; in agricultural field adjacent to drainage canal, 0.1 mi southeast of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458700.

REMARKS.--e, estimated from National Weather Service gage at New Holland; ---, missing data or no day in that month.

RAINFALL ACCUMULATED (INCHES), OCTOBER 1991-APRIL 1992
DAILY SUM VALUES

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	.00	.00	.00	.00	.00	.00	.00
3	.37	.00	.26	1.44	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.21
5	.20	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.35	.00
8	.00	.00	.00	.00	.00	.00	.00
9	.00	.71	.00	.00	.00	.00	.00
10	.00	1.38	.00	.00	.00	.34	.00
11	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.22	.68	.00	.00
14	.00	.00	.00	.13	.00	.00	.00
15	.00	.00	.00	.00	.00	.20	.00
16	1.06	.00	.00	.00	.00	.00	.36
17	.43	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.19	.00	.00
19	.00	.00	.00	.00	.41	.41	.00
20	.00	.00	.00	.00	.00	.09	.00
21	.00	.00	.00	.00	.00	.00	.00
22	.00	.08	.00	.00	.00	.00	1.11
23	.00	.00	.00	.52	.18	.36	.00
24	.00	.00	.22	.00	.00	.00	.00
25	.00	.00	.00	.00	.14	.00	.10
26	.00	.00	.00	.00	.15	1.08	.00
27	.00	.00	1.10	.00	.00	.00	.00
28	.00	.00	1.80	.86	.00	.00	.00
29	.00	.00	.76	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.24	.00
31	.00	---	.00	.00	---	.29	---
TOTAL	2.06	2.17	4.14	3.17	1.75	3.36	1.78

Table 8.--*Daily values of accumulated precipitation at site B3, October 1990-April 1992*

LOCATION.--Lat 35°17'10", long 76°41'50"; Beaufort County, in agricultural field adjacent to drainage canal, 0.2 mi south of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455141.

REMARKS.--e, estimated from National Weather Service gage at New Bern; ---, no day in that month.

RAINFALL ACCUMULATED (INCHES), OCTOBER 1990-SEPTEMBER 1991
DAILY SUM VALUES

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.00	0.00	0.07	0.00	0.00	1.49	0.08	0.00	0.13	0.85	0.00	0.00
2	.00	.00	.00e	.54	.09	.00	.00	.00	2.45	.00	.23	.00
3	.00	.00	.02e	.01e	.10	.08	.00	.08	.00	.00	.24	.00
4	.08	.00	.10e	.08e	.11	.03	.09	.07	.15	.70	.00	.09
5	.09	1.76	.00e	.00	.12	.00e	.00	.00	.00	.12	.12	.00
6	.08	.72	.00e	.00	.09	.00e	.13	.00	.00	.13	.00	.90
7	.00	.00	.38e	.34	.57	.08	3.13	.07	.00	.09	.63	.00
8	.00	.00	.49e	.95	.00	.07	.00	.00	.00	.00	.00	.00
9	.07	.00	.00e	.00	.00	.00	.00	.00	.00	.08	.00	.08
10	.11	.00	.00e	.00	.00	.00	.00	.14	.00	.00	.00	.09
11	.00	.00	.00e	.80	.00	.00	.00	.09	.00	.22	.00	.00
12	.00	.00e	.00	.18	.00	.00	.00	.00	.00	.00	.36	.08
13	.00	.00e	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.08	.00e	.07	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.09	.00e	.00	.72	.00	.41	.00	.07	.00	.08	.79	.00
16	.08	.04	.00	.00	.00	.38	.00	.00	.00	.00	.00	.08
17	.00	.00	.00	.01	.00	.00	.00	.08	.00	.29	.00	.08
18	.00	.00	.00	.05	.00	.00	.00	.00	1.40	.00	.00	.08
19	.00	.00	.00	.14	.00	.00	.00	.34	.00	.21	.00	.09
20	.00	.00	.11	1.53	.00	.00	.00	.82	.00	.00	.00	.13
21	.00	.00	.53	.00	.00	.08	.00	.10	.00	.11	.00	.00
22	.00	.00	.00	.00	.29	.43	.00	.09	.52	.00	.00	.00
23	1.73	.00	.00	.00	.10	.00	.00	.09	.67	.00	.47	.09
24	.00	.00	.00	.65	.00	.00	.00	.00	.00	.00	.36	.16
25	.08	.00	.00	.00	.00	.09	.00	.00	.08	.00	.43	1.12
26	3.52	.00	.00	.00	.00	.00	.00	.07	.00	.00	.21	.64
27	.00	.87	.00	.00	.64	.09	.00	.15	.00	.09	.60	.00
28	.00	.00	.21	.77	.27	.08	1.96	.92	.00	.97	.00	.00
29	.07	.26	.00	.00	---	.00	.10	.09	.07	.36	.00	.08
30	.11	1.27	.00	.54	---	.00	.44	.10	.00	1.29	.00	.00
31	.00	---	.00	.00	---	.10	---	.09	---	.00	.00	---
TOTAL	6.19	4.92	1.98	7.31	2.38	3.41	5.93	3.46	5.47	5.59	4.44	3.79

Table 8.--*Daily values of accumulated precipitation at site B3, October 1990-April 1992*--Continued

LOCATION.--Lat 35°17'10", long 76°41'50"; Beaufort County, in agricultural field adjacent to drainage canal, 0.2 mi south of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455141.

REMARKS.--e, estimated from National Weather Service gage at New Bern; ---, no day in that month.

RAINFALL ACCUMULATED (INCHES), OCTOBER 1991-APRIL 1992
DAILY SUM VALUES

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	.27	.00	.00	.46	.00	.00	.00
3	.47	.00	.30	5.13	.00	.00	.00
4	.00	.00	.00	.19	.00	.00	.22
5	.65	.00	.00	.13	.00	.00	.00
6	.08	.00	.00	.00	.00	.08	.00
7	.00	.00	.00	.00	.00	.34	.00
8	.08	.00	.00	.00	.00	.00	.07
9	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.11	.00	.00	.43	.07
11	.00	.00	.00	.00	.00	.00	.00
12	.08	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.35	.00	.00	.00
14	.00	.00	.00	.69	.00	.00	.00
15	.00	.20	.00	.00	.00	.13	.08
16	1.61	.00	.00	.00	.00	.00	.15
17	.18	.14	.00	.00	.00	.00	.00
18	.00	.15	.00	.00	.00	.00	.00
19	.00	1.03	.00	.00	.00	.40	.00
20	.00	.00	.00	.00	.00	.10	.00
21	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.17	.00	.58	.39	.00
24	.00	.00	.30	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.18	.80	.00
27	.00	.00	1.08	.00	.00	.09	.00
28	.00	.00	.50	.00	.00	.00	.00
29	.00	.00	.73	.00	.00	.08	.00
30	.00	.00	.00	.00	---	.55	.00
31	.00	---	.00	.00	---	.09	---
TOTAL	3.42	1.52	3.19	6.95	0.76	3.48	0.59

Table 9.--*Monthly water-level statistics at site H1, October 1990-April 1992*

LOCATION.--Lat 35°26'44", long 76°22'25"; Hyde County, on left bank of agricultural drainage canal about 100 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458600.

DRAINAGE AREA.--Approximately 70 acres (0.109 mi^2).

PERIOD OF RECORD.--May 1988 through April 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; NA, not applicable; values are in feet above sea level; bottom of canal is at elevation -0.46 ft.

Period	Mean	Maximum recorded	Minimum recorded	Daily maximum mean	Daily minimum mean	Daily mean range
Water year 1991						
October	0.84	1.53	0.36	0.98	0.70	0.27
November	.78	1.56	.39	.90	.69	.22
December	.56	.90	.46	.63	.52	.10
January	.91	1.28	.47	1.01	.81	.19
February	.59	1.05	.43	.66	.54	.12
March	.90	1.57	.43	1.05	.78	.26
April	.72	1.32	.21[a]	.85	.60	.25
May	.66	1.19	.23	.83	.53	.29
June	.87	1.41	.29	1.04	.73	.31
July	.76	1.27	.25	.94	.61	.32
August	1.03	1.72[b]	.54	1.16	.94	.22
September	.97	1.34	.39	1.11	.84	.27
Water year mean	0.80	NA	NA	0.93	0.69	0.24
October 1991-April 1992						
October	0.87	1.78	0.47	1.03	0.72	0.31
November	1.06	2.07[b]	.37	1.17	1.00	.17
December	.41	1.33	.13[a]	.47	.37	.10
January	.85	1.73	.42	.97	.77	.20
February	.71	1.36	.35	.88	.57	.30
March	.55	1.13	.23	.76	.39	.36
April	.57	1.17	.29	.76	.43	.33

[a]Minimum value recorded for the water year.
[b]Maximum value recorded for the water year.

Table 10.--*Monthly water-level statistics at site H1A, October 1990-April 1992*

LOCATION.--Lat 35°26'48", long 76°22'18"; Hyde County, on left bank of agricultural drainage canal about 15 ft upstream of tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458600.

DRAINAGE AREA.--Approximately 70 acres (0.109 mi^2).

PERIOD OF RECORD.--October 1988 through April 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; NA, not applicable; values are in feet above sea level; bottom of canal is at elevation -0.50 ft.

Period	Mean	Maximum recorded	Minimum recorded	Daily maximum mean	Daily minimum mean	Daily mean range
Water year 1991						
October	0.58	0.87	0.38	0.63	0.54	0.09
November	.64	.71	.57	.65	.63	.02
December	.70	.88	.57	.70	.69	.01
January	.89	.95	.77	.90	.89	.02
February	.61	.80	.45	.64	.59	.05
March	.90	1.62	.43	1.03	.80	.23
April	.75	1.30	.31	.85	.65	.20
May	.61	1.02	.29[a]	.69	.54	.15
June	.82	1.47	.35	.92	.73	.19
July	.79	1.28	.31	.91	.68	.23
August	1.06	1.87[b]	.61	1.18	.97	.21
September	.94	1.30	.46	1.04	.85	.19
Water year mean	0.77	NA	NA	0.85	0.71	0.13
October 1991-April 1992						
October	0.81	1.67	0.51	0.88	0.72	0.16
November	1.06	1.93[b]	.37	1.14	1.00	.14
December	.39	1.23	.03[a]	.44	.35	.09
January	.87	1.71	.42	.96	.80	.16
February	.69	1.04	.37	.80	.59	.20
March	.53	1.05	.26	.64	.42	.22
April	.56	.83	.32	.64	.49	.14

[a]Minimum value recorded for the water year.
[b]Maximum value recorded for the water year.

Table 11.--*Monthly water-level statistics at site H2, October 1990-April 1992*

LOCATION.--Lat 35°26'57", long 76°22'37"; Hyde County, on right bank of agricultural drainage canal about 90 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458700.

DRAINAGE AREA.--Approximately 140 acres (0.219 mi^2).

PERIOD OF RECORD.--May 1988 through April 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; NA, not applicable; values are in feet above or below (-) sea level; bottom of canal is at elevation -1.42 ft.

Period	Mean	Maximum recorded	Minimum recorded	Daily maximum mean	Daily minimum mean	Daily mean range
Water year 1991						
October	0.78	2.14[a]	-0.68[b]	1.11	0.42	0.69
November	.67	2.10	-.51	.98	.34	.64
December	.32	.99	-.68[b]	.62	.00	.62
January	.71	1.36	-.15	1.00	.38	.64
February	.29	1.07	-.68[b]	.58	-.05	.63
March	.74	1.54	-.25	1.09	.35	.73
April	.60	1.53	-.67	.92	.23	.68
May	.64	1.39	-.11	.94	.35	.59
June	.94	1.61	.13	1.22	.64	.58
July	.76	1.41	.04	1.18	.36	.82
August	.89	1.58	.04	1.21	.58	.63
September	.93	1.48	-.07	1.20	.63	.57
Water year mean	0.69	NA	NA	1.00	0.35	0.65
October 1991-April 1992						
October	0.85	2.13	-0.54	1.13	0.51	0.62
November	.96	2.50[a]	-.39	1.22	.64	.58
December	.13	1.11	-.70	.44	-.19	.63
January	.62	1.81	-1.01[b]	.98	.18	.80
February	.63	1.48	-.20	.95	.25	.70
March	.46	1.43	-.97	.88	.00	.88
April	.52	1.35	-.54	.83	.14	.69

[a]Maximum value recorded for the water year.
[b]Minimum value recorded for the water year.

Table 12.--*Monthly water-level statistics at site H2A, October 1990-April 1992*

LOCATION.--Lat 35°26'59", long 76°22'34"; Hyde County, on right bank of agricultural drainage canal about 15 ft upstream of tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458700.

DRAINAGE AREA.--Approximately 140 acres (0.219 mi^2).

PERIOD OF RECORD.--October 1990 through April 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; NA, not applicable; values are in feet above or below (-) sea level; bottom of canal is at elevation -1.35 ft.

Period	Mean	Maximum recorded	Minimum recorded	Daily maximum mean	Daily minimum mean	Daily mean range
Water year 1991						
October	0.88	1.33	-0.02	1.09	0.63	0.46
November	.46	1.42[a]	-.41	.60	.30	.30
December	.16	.59	-.52	.30	.01	.29
January	.57	1.10	-.11	.75	.35	.40
February	-.19	.02	-.61	-.08	-.26	.18
March	.35	1.17	-.21	.52	.23	.30
April	.09	.90	-.58	.16	.00	.15
May	-.06	.44	-.40	-.03	-.10	.07
June	-.18	.98	-.90[b]	-.11	-.26	.15
July	.19	.68	-.22	.26	.14	.13
August	.73	1.36	.16	.88	.60	.28
September	.47	1.05	-.06	.54	.40	.12
Water year mean	0.29	NA	NA	0.38	0.17	0.24
October 1991-April 1992						
October	0.18	0.34	-0.30	0.22	0.14	0.09
November	.13	.61	-.26	.17	.07	.10
December	-.56	-.06	-.90[b]	-.49	-.61	.11
January	.27	1.01[a]	-.90[b]	.46	-.01	.47
February	.36	.75	-.11	.45	.25	.21
March	.26	.72	-.45	.42	.07	.35
April	.15	.46	-.44	.22	.05	.17

[a]Maximum value recorded for the water year.
[b]Minimum value recorded for the water year.

Table 13.--*Monthly water-level statistics at site H3, October 1990-April 1992*

LOCATION.--Lat 35°27'01", long 76°22'49"; Hyde County, on left bank of agricultural drainage canal about 800 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458800.

DRAINAGE AREA.--Approximately 104 acres (0.162 mi^2).

PERIOD OF RECORD.--May 1988 through April 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; NA, not applicable; values are in feet above or below (-) sea level; bottom of canal is at elevation -0.92 ft.

Period	Mean	Maximum recorded	Minimum recorded	Daily maximum mean	Daily minimum mean	Daily mean range
Water year 1991						
October	0.78	2.15[a]	-0.49[b]	1.10	0.42	0.68
November	.68	2.12	-.48	.98	.34	.63
December	.38	1.00	-.48	.70	.08	.61
January	.73	1.35	-.08	1.03	.40	.64
February	.31	1.05	-.48	.59	-.01	.60
March	.74	1.54	-.20	1.08	.36	.72
April	.60	1.54	-.48	.92	.27	.66
May	.64	1.41	.06	.94	.37	.57
June	.82	1.61	.12	1.13	.53	.60
July	.72	1.84	-.22	1.16	.35	.81
August	.87	1.38	.36	1.16	.61	.55
September	1.03	1.55	.17	1.29	.73	.57
Water year mean	0.69	NA	NA	1.00	0.37	0.64
October 1991-April 1992						
October	0.93	2.11	-0.10	1.23	0.58	0.64
November	.94	2.49[a]	-.38	1.21	.63	.58
December	.10	1.11	-.47	.41	-.18	.57
January	.64	1.81	-.49[b]	.98	.27	.71
February	.59	1.45	-.19	.91	.26	.65
March	.45	1.42	-.48	.86	.06	.80
April	.52	1.34	-.36	.82	.21	.61

[a]Maximum value recorded for the water year.
[b]Minimum value recorded for the water year.

Table 14.--*Monthly water-level statistics at site H3A, December 1990-April 1992*

LOCATION.--Lat 35°27'06", long 76°22'43"; Hyde County, on left bank of agricultural drainage canal about 15 ft upstream of tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458800.

DRAINAGE AREA.--Approximately 104 acres (0.162 mi^2).

PERIOD OF RECORD.--December 1990 through April 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; values are in feet above or below (-) sea level; bottom of canal is at elevation -0.85 ft.

Period	Mean	Maximum recorded	Minimum recorded	Daily maximum mean	Daily minimum mean	Daily mean range
December 1990-September 1991						
December	0.22	0.52	-0.24	0.34	0.09	0.25
January	.67	1.23	.09	.84	.46	.39
February	.20	.91	-.29	.31	.07	.23
March	.54	1.39	.01	.70	.40	.30
April	.30	1.08	-.31	.36	.22	.15
May	.18	.66	-.15	.21	.13	.06
June	.06	1.01	-.52[a]	.13	.00	.13
July	.40	.89	.05	.46	.33	.12
August	.84	1.53[b]	.24	.99	.65	.35
September	.58	1.12	.03	.63	.51	.13
October 1991-April 1992						
October	0.39	0.55	-0.18	0.41	0.34	0.08
November	.64	1.26	-.16	.71	.53	.19
December	.02	2.24[b]	-.44[a]	.17	-.11	.27
January	.61	1.59	-.26	.77	.42	.36
February	.42	.71	-.03	.50	.32	.19
March	.38	1.56	-.11	.48	.26	.22
April	.27	.55	.10	.31	.22	.09

[a]Minimum value recorded for the water year.
[b]Maximum value recorded for the water year.

Table 15.--*Monthly water-level statistics at site B2, October 1990-April 1992*

LOCATION.--Lat 35°17'20", long 76°41'45"; Beaufort County, on right bank of agricultural drainage canal about 150 ft downstream from flashboard riser; 0.2 mi south of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455143.

DRAINAGE AREA.--Approximately 47 acres (0.074 mi^2).

PERIOD OF RECORD.--May 1988 through April 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; NA, not applicable; values are in feet above sea level; bottom of canal is at elevation 0.79 ft; point of zero flow is at elevation 1.08 ft.

Period	Mean	Maximum recorded	Minimum recorded	Daily maximum mean	Daily minimum mean	Daily mean range
Water year 1991						
October	1.22	2.67	0.88[a]	1.36	1.14	0.22
November	1.34	2.58	1.16	1.43	1.27	.16
December	1.35	1.68	1.23	1.38	1.32	.06
January	1.56	2.55	1.27	1.66	1.48	.17
February	1.41	1.71	1.28	1.43	1.38	.04
March	1.56	5.04[b]	1.24	1.81	1.45	.35
April	1.47	3.05	1.15	1.61	1.37	.24
May	1.24	1.88	1.07	1.32	1.19	.13
June	1.59	3.89	1.13	1.91	1.39	.52
July	1.21	1.76	1.04	1.34	1.14	.20
August	1.43	2.11	1.15	1.59	1.35	.24
September	1.30	2.00	1.04	1.48	1.18	.31
Water year mean	1.39	NA	NA	1.53	1.30	0.22
October 1991-April 1992						
October	1.36	2.45	1.11	1.50	1.27	0.22
November	1.53	3.47	1.17	1.69	1.39	.30
December	1.22	2.32	1.04[a]	1.26	1.19	.07
January	1.76	4.64[b]	1.42	1.99	1.60	.39
February	1.43	1.99	1.27	1.50	1.38	.12
March	1.33	2.16	1.20	1.40	1.29	.11
April	1.30	2.11	1.16	1.37	1.24	.13

[a]Minimum value recorded for the water year.
[b]Maximum value recorded for the water year.

Table 16.--*Monthly water-level statistics at site B2A, June 1991-April 1992*

LOCATION.--Lat 35°17'23", long 76°41'46"; Beaufort County, on right bank of agricultural drainage canal about 15 ft upstream from flashboard riser; 0.2 mi south of State Highway 33, 5 mi east of Aurora. Owner, U.S. Geological Survey (USGS); Hydrologic Unit 03020104; USGS downstream order identification number 0208455143.

DRAINAGE AREA.--Approximately 47 acres (0.074 mi^2).

PERIOD OF RECORD.--June 1991 through April 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; values are in feet above sea level; bottom of canal is at elevation 0.85 ft.

Period	Mean	Maximum recorded	Minimum recorded	Daily maximum mean	Daily minimum mean	Daily mean range
June-September 1991						
June	3.15	4.17[a]	2.54	3.24	3.07	0.17
July	2.27	2.71	1.68[b]	2.32	2.23	.09
August	2.53	2.79	2.41	2.57	2.50	.07
September	2.45	2.57	2.26	2.47	2.40	.07
October 1991-April 1992						
October	2.53	2.71	2.35	2.55	2.51	0.04
November	2.28	3.17	2.10	2.34	2.25	.09
December	2.27	2.85	2.01[b]	2.30	2.24	.06
January	2.68	4.67[a]	2.55	2.79	2.62	.17
February	2.61	2.68	2.56	2.62	2.60	.03
March	2.61	2.67	2.54	2.63	2.59	.04
April	2.58	2.65	2.49	2.60	2.56	.04

[a]Maximum value recorded for the water year.
[b]Mininum value recorded for the water year.

Table 17.--*Monthly water-level statistics at site B3, October 1990-April 1992*

LOCATION.--Lat 35°17'10", long 76°41'50"; Beaufort County, on left bank of agricultural drainage canal 600 ft downstream from flashboard riser; 0.2 mi south of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455141.

DRAINAGE AREA.--Approximately 68 acres (0.107 $mi^{2)}$.

PERIOD OF RECORD.--May 1988 through April 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; NA, not applicable; values are in feet above sea level; bottom of canal is at elevation -0.11 ft.

Period	Mean	Maximum recorded	Minimum recorded	Daily maximum mean	Daily minimum mean	Daily mean range
Water year 1991						
October	1.07	2.68	0.43	1.35	0.81	0.54
November	.98	2.44	.55	1.20	.81	.39
December	.77	1.30	.66	.86	.72	.14
January	1.10	2.16	.72	1.34	.91	.43
February	.81	1.42	.67	.90	.75	.14
March	1.13	3.73[a]	.68	1.49	.96	.53
April	1.08	2.81	.63	1.25	.74	.30
May	.88	1.70	.41	1.15	.68	.47
June	1.18	3.05	.45	1.56	.92	.63
July	.86	1.73	.36[b]	1.14	.62	.51
August	1.13	1.97	.62	1.43	.90	.53
September	1.20	1.97	.58	1.47	.94	.53
Water year mean	1.01	NA	NA	1.26	0.83	0.43
October 1991-April 1992						
October	1.12	2.46	0.55	1.42	0.88	0.55
November	1.30	3.55[a]	.65	1.51	1.13	.38
December	.68	1.89	.51	.75	.63	.11
January	1.29	3.40	.69	1.50	1.15	.35
February	1.00	1.98	.68	1.21	.84	.37
March	.82	1.96	.61	1.06	.69	.36
April	.83	2.11	.50[b]	1.09	.66	.43

[a]Maximum value recorded for the water year.
[b]Minimum value recorded for the water year.

Table 18.--*Monthly water-level statistics at site B3A, May 1991-April 1992*

LOCATION.--Lat 35°17'08", long 76°41'50"; Beaufort County, on left bank of agricultural drainage canal 45 ft upstream of flashboard riser; 0.2 mi south of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455141.

DRAINAGE AREA.--Approximately 68 acres (0.107 mi^2).

PERIOD OF RECORD.--May 1991 through April 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; values are in feet above sea level; bottom of canal is at elevation -0.05 ft.

Period	Mean	Maximum recorded	Minimum recorded	Daily maximum mean	Daily minimum mean	Daily mean range
May-September 1991						
May	2.54	3.11	1.86	2.62	2.50	0.12
June	1.31	3.60[a]	.62[b]	1.57	1.13	.44
July	.98	1.87	.63	1.19	.81	.38
August	1.17	2.16	.82	1.43	.99	.44
September	1.23	2.01	.79	1.47	1.02	.46
October 1991-April 1992						
October	0.96	1.61	0.83	1.06	0.88	0.18
November	.87	1.47	.47[b]	.92	.85	.07
December	.93	2.04	.87	.97	.90	.07
January	1.64	4.05[a]	.98	1.93	1.44	.49
February	1.29	1.98	.92	1.43	1.17	.26
March	1.06	1.97	.87	1.20	.99	.22
April	1.00	2.11	.85	1.15	.91	.24

[a]Maximum value recorded for the water year.
[b]Minimum value recorded for the water year.

Table 19.--*Monthly water-level statistics at site C1, October 1990-April 1992*

LOCATION.--Lat 35°17'13", long 76°41'13"; Beaufort County, on right bank of Campbell Creek, which receives inflow from sites B2 and B3; on State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455145.

DRAINAGE AREA.--Approximately 5,120 acres (8 mi^2).

PERIOD OF RECORD.--May 1988 through April 1992.

REMARKS.--mi, mile; mi^2, square mile; NA, not applicable; values are in feet above or below (-) sea level.

Period	Mean	Maximum recorded	Minimum recorded	Daily maximum mean	Daily minimum mean	Daily mean range
Water year 1991						
October	0.96	2.01	-0.29	1.26	0.61	0.65
November	.84	2.17	-.05	1.16	.51	.64
December	.22	1.59	-1.94[a]	.69	-.23	.89
January	1.05	2.09	-.50	1.39	.62	.78
February	.37	1.49	-.91	.72	-.03	.75
March	.74	2.16	-1.00	1.47	.11	1.36
April	.93	3.48[b]	-1.70	1.45	.35	1.10
May	.81	2.66	-.19	1.21	.42	.78
June	.85	1.97	-.23	1.11	.58	.53
July	.76	1.69	-.10	1.11	.41	.70
August	1.05	1.86	.23	1.34	.76	.59
September	1.17	1.98	.35	1.46	.86	.60
Water year mean	0.81	NA	NA	1.20	0.41	0.78
October 1991-April 1992						
October	1.07	2.43	0.31	1.37	0.76	0.61
November	1.15	3.47[b]	-.29	1.47	.84	.63
December	.22	1.40	-.86	.51	-.14	.65
January	.79	2.06	-.93	1.13	.41	.72
February	.83	1.97	-.55	1.15	.44	.72
March	.55	2.10	-.95[a]	1.00	.16	.83
April	.71	2.08	-.27	1.06	.35	.71

[a]Minimum value recorded for the water year.
[b]Maximum value recorded for the water year.

Table 20.--*Daily mean values of discharge at site H1, October 1990-April 1992*

LOCATION.--Lat 35°26'44", long 76°22'25"; Hyde County, on left bank of agricultural drainage canal about 100 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458600.

DRAINAGE AREA.--Approximately 70 acres (0.109 mi^2).

PERIOD OF RECORD.--April 1989 through April 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ---, no data or water level below velocity probe so discharge could not be computed; MAX, maximum; MIN, minimum; CFSM, cubic foot per second per square mile; IN., inch. Negative values indicate tidally driven flow in an upstream direction.

DISCHARGE, CUBIC FEET PER SECOND, OCTOBER 1990-SEPTEMBER 1991

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-0.021	0.061	0.010	---	---	0.071	0.028	---	---	---	0.093	0.060
2	-.020	.063	.013	0.56	---	.24	.046	---	---	---	.26	.082
3	-.027	.060	.017	---	0.058	.22	.037	---	---	---	.52	.11
4	-.020	.058	.026	---	.051	.066	.047	---	---	---	.45	.085
5	-.018	.061	.012	---	.021	.22	.033	---	---	---	.43	.079
6	-.026	.062	.009	---	.010	.33	.023	---	---	---	.49	.082
7	-.024	.078	.012	---	.21	.36	.016	---	---	---	.47	.11
8	-.022	.063	.025	---	.23	.21	.013	---	---	---	.47	.13
9	-.028	.075	.024	---	.26	.19	.010	---	---	---	.51	.13
10	-.041	.10	.024	---	.25	.19	.007	---	---	0.084	.43	.11
11	-.059	.046	.021	---	.20	.18	.009	---	---	.080	.48	---
12	-.058	.041	.018	---	.21	.15	.016	---	---	.11	.37	---
13	-.075	.030	.018	---	.33	.26	.020	---	---	.10	.48	---
14	-.072	.023	.015	---	.29	.30	---	---	---	.090	.50	---
15	-.060	.006	.014	---	.14	.30	.025	---	---	.10	.44	---
16	-.075	-.021	.015	---	.037	.73	.019	---	---	.11	.40	---
17	-.024	-.014	.010	---	.048	.68	.020	---	---	.094	.39	---
18	.075	-.011	.014	---	.095	.57	.028	---	---	.067	.38	---
19	.040	-.021	.014	---	.12	.42	.071	---	---	.048	.47	---
20	.054	-.034	.010	---	.15	.44	.086	---	---	.022	.46	---
21	.049	-.038	.027	---	.12	.56	.079	---	---	.020	.42	---
22	.037	-.036	.031	---	.12	.53	.073	---	---	.021	.34	---
23	.062	-.027	.030	---	.093	.54	.078	---	---	.022	.16	---
24	.067	-.023	.025	---	.089	.43	.075	---	---	.014	.074	---
25	.079	-.013	.014	---	.097	.68	.078	---	---	.025	.090	.059
26	.080	-.007	.012	---	.060	.70	---	---	---	.033	.11	.057
27	.059	-.004	.013	---	.037	.67	---	---	---	.036	.10	.065
28	.065	-.008	.012	---	.054	.26	---	---	---	.055	.093	.075
29	.055	-.007	.012	---	---	.067	---	---	---	.069	.081	.058
30	.062	.006	.016	---	---	.028	---	---	---	.081	.071	.027
31	.062	---	.013	---	---	.000	---	---	---	.089	.058	---
TOTAL	0.176	0.569	0.526	---	---	10.592	---	---	---	---	10.090	---
MEAN	.006	.019	.017	---	---	.34	---	---	---	---	.33	---
MAX	.080	.10	.031	---	---	.73	---	---	---	---	.52	---
MIN	-.075	-.038	.009	---	---	0	---	---	---	---	.058	---
CFSM	.05	.17	.16	---	---	3.15	---	---	---	---	3.00	---
IN.	.06	.19	.18	---	---	3.63	---	---	---	---	3.46	---

Table 20.--*Daily mean values of discharge at site H1, October 1990-April 1992*--Continued

LOCATION.--Lat 35°26'44", long 76°22'25"; Hyde County, on left bank of agricultural drainage canal about 100 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458600.

DRAINAGE AREA.--Approximately 70 acres (0.109 mi^2).

PERIOD OF RECORD.--April 1989 through April 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ---, no data or water level below velocity probe so discharge could not be computed; MAX, maximum; MIN, minimum; CFSM, cubic foot per second per square mile; IN., inch. Negative values indicate tidally driven flow in an upstream direction.

DISCHARGE, CUBIC FEET PER SECOND, OCTOBER 1991-APRIL 1992

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1	---	0.10	0.022	---	-0.064	0.039	0.030
2	---	---	.022	---	-.060	.008	.019
3	---	.093	---	---	-.085	-.011	.027
4	---	.21	---	---	-.092	-.006	-.012
5	---	.20	---	---	-.11	.052	.008
6	---	.19	---	---	.075	.043	.022
7	---	.17	---	---	-.005	-.039	.010
8	---	.14	---	---	-.11	.039	.021
9	---	.14	---	---	.22	.089	.026
10	0.060	---	---	0.090	.22	.084	.015
11	.057	.20	---	.082	-.050	.046	.019
12	.044	.18	---	.070	.005	.036	.015
13	.066	.17	---	.065	.018	.025	.037
14	.065	.15	---	.063	.058	.021	.046
15	.024	.12	---	.042	.058	.011	.034
16	-.049	.050	---	.026	.022	.022	---
17	-.064	-.037	---	.036	.072	.022	---
18	-.057	-.012	---	.028	.036	---	---
19	-.039	.068	---	.045	.085	---	---
20	-.047	.064	---	.024	.070	---	---
21	-.058	-.022	---	.020	.054	---	---
22	.035	.034	---	.030	.040	---	---
23	.000	.057	---	.083	.034	---	---
24	-.026	.051	---	.062	.041	---	---
25	.077	.036	---	.043	.066	---	---
26	.081	.042	---	.045	.077	---	---
27	-.019	.040	---	.044	.077	---	---
28	.024	.025	---	.099	.057	---	---
29	.028	.021	---	.078	.025	---	---
30	.16	.026	---	.018	---	---	---
31	.18	---	---	-.062	---	---	---
TOTAL	---	---	---	---	0.834	---	---
MEAN	---	---	---	---	.029	---	---
MAX	---	---	---	---	.22	---	---
MIN	---	---	---	---	-.11	---	---
CFSM	---	---	---	---	.26	---	---
IN.	---	---	---	---	.29	---	---

Table 21.--*Daily mean values of discharge at site H2, October 1990-April 1992*

LOCATION.--Lat 35°26'57", long 76°22'37"; Hyde County, on right bank of agricultural drainage canal about 90 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458700.

DRAINAGE AREA.--140 acres (0.219 mi^2).

PERIOD OF RECORD.--April 1989 through April 1992.

REMARKS.--mi, mile; mi^2, square mile; ---, no data; MAX, maximum; MIN, minimum; CFSM, cubic foot per second per square mile; IN., inch. Negative values indicate tidally driven flow in an upstream direction. Tide gate installed August 16, 1990.

DISCHARGE, CUBIC FEET PER SECOND, OCTOBER 1990-SEPTEMBER 1991

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-0.93	0.66	1.3	0.23	0.61	---	-0.56	0.86	0.13	-0.20	---	-0.057
2	-.88	.73	1.3	.66	.56	---	-.54	.78	.14	-.20	---	.095
3	-.87	.71	1.5	.59	.49	---	-.58	.83	.19	-.079	0.089	-.10
4	-.70	.70	1.4	.56	.48	---	-.53	.91	.18	-.041	.074	-.38
5	-.68	.72	.94	.61	.44	---	-.44	.70	.22	-.054	.14	-.51
6	-.69	.71	1.1	.53	.49	---	-.39	.57	.21	-.035	.22	-.34
7	-.57	.60	1.1	.55	.52	---	-.36	.55	.21	-.004	.22	-.11
8	-.52	.58	1.4	.58	---	---	-.35	.54	.20	.009	.26	-.54
9	-.46	.62	1.2	.25	---	---	-.34	.54	.17	---	.27	-1.9
10	-.44	.79	1.1	.50	---	---	-.29	.58	.17	---	.24	-1.8
11	-.38	.49	1.0	.74	---	---	-.35	.53	---	---	.26	---
12	-.36	.47	.76	.57	---	---	-.30	.42	---	---	.28	---
13	-.30	.38	.38	.52	---	---	-.24	.43	---	---	.24	---
14	-.22	.38	.20	.61	---	---	-.17	.41	---	---	.24	---
15	-.19	.12	.35	.56	---	---	-.12	.37	---	---	.22	---
16	-.22	-.20	.60	.69	---	0.27	-.063	.44	---	---	.23	---
17	.12	-.16	.25	.58	---	.25	-.003	.41	---	---	.26	---
18	.86	-.16	.69	.47	---	.35	.067	.36	---	---	.27	---
19	.66	-.20	.69	.47	---	.30	.17	.40	---	---	.27	---
20	.78	-.19	.61	.51	---	.30	.24	.38	---	---	.30	---
21	.77	-.18	.91	.50	---	.31	.35	.30	---	---	.29	---
22	.73	-.16	.98	.67	---	.26	.41	.28	---	---	.29	---
23	.80	-.12	.89	.67	---	.25	.53	.36	-.007	---	.86	---
24	.82	-.12	.37	.63	---	.21	.58	.27	-.24	---	.85	---
25	.87	-.12	-.26	.68	---	.16	.72	.22	-.24	---	1.1	---
26	.72	-.075	-.29	.69	---	.22	.92	.31	-.12	---	.047	---
27	.79	-.097	-.056	.70	---	.19	1.0	.48	-.060	---	-.45	---
28	.68	.008	.20	.64	---	-.056	1.0	.37	-.33	---	-.37	---
29	.61	-.039	.53	.69	---	-.51	1.0	.53	-.22	---	-.23	---
30	.63	.54	.77	.71	---	-.50	.95	.45	-.20	---	-.070	---
31	.61	---	.34	.57	---	-.60	---	.12	---	---	-.13	---
TOTAL	2.04	7.387	22.254	17.93	---	---	2.311	14.70	---	---	---	---
MEAN	.066	.25	.72	.58	---	---	.077	.47	---	---	---	---
MAX	.87	.79	1.5	.74	---	---	1.0	.91	---	---	---	---
MIN	-.93	-.20	-.29	.23	---	---	-.58	.12	---	---	---	---
CFSM	.30	1.12	3.28	2.64	---	---	.35	2.17	---	---	---	---
IN.	.35	1.25	3.78	3.05	---	---	.39	2.50	---	---	---	---

Table 21.--*Daily mean values of discharge at site H2, October 1990-April 1992*--Continued

LOCATION.--Lat 35°26'57", long 76°22'37"; Hyde County, on right bank of agricultural drainage canal about 90 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458700.

DRAINAGE AREA.--140 acres (0.219 mi^2).

PERIOD OF RECORD.--April 1989 through April 1992.

REMARKS.--mi, mile; mi^2, square mile; ---, no data; MAX, maximum; MIN, minimum; CFSM, cubic foot per second per square mile; IN., inch. Negative values indicate tidally driven flow in an upstream direction. Tide gate installed August 16, 1990.

DISCHARGE, CUBIC FEET PER SECOND, OCTOBER 1991-APRIL 1992

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1	---	---	---	---	---	---	0.58
2	---	---	---	---	---	---	.40
3	---	---	---	---	---	---	.52
4	---	---	---	---	---	---	.47
5	---	---	---	---	---	---	.38
6	---	---	---	---	---	---	.41
7	---	---	---	---	---	---	.39
8	---	---	---	---	---	---	.42
9	---	---	---	---	---	---	.41
10	---	---	---	---	---	---	-.17
11	---	---	---	---	---	---	.053
12	---	---	---	---	---	---	.25
13	---	---	---	---	---	---	-.39
14	---	---	---	---	---	---	.023
15	---	---	---	---	---	---	-.14
16	---	---	---	---	---	---	-.14
17	---	---	---	---	---	---	.050
18	---	---	---	---	---	---	.14
19	---	---	---	---	---	0.31	.22
20	---	---	---	---	---	.60	-.31
21	---	---	---	---	---	.73	.15
22	---	---	---	---	---	.69	.24
23	---	---	---	---	---	.61	.63
24	---	---	---	---	---	.72	.61
25	---	---	---	---	---	.62	.60
26	---	---	---	---	---	.60	.74
27	---	---	---	---	---	.56	.89
28	---	---	---	---	---	.47	.95
29	---	---	---	---	---	.51	1.1
30	---	---	---	---	---	.47	1.2
31	---	---	---	---	---	.43	---
TOTAL	---	---	---	---	---	---	10.676
MEAN	---	---	---	---	---	---	.36
MAX	---	---	---	---	---	---	1.2
MIN	---	---	---	---	---	---	-.39
CFSM	---	---	---	---	---	---	1.62
IN.	---	---	---	---	---	---	1.81

Table 22.--*Daily mean values of discharge at site H3, October 1990-April 1992*

LOCATION.--Lat 35°27'01", long 76°22'49"; Hyde County, on left bank of agricultural drainage canal about 800 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458800.

DRAINAGE AREA.--Approximately 104 acres (0.162 mi^2).

PERIOD OF RECORD.--April 1989 through April 1992.

REMARKS.--mi, mile; mi^2, square mile; ---, no data; MAX, maximum; MIN, minimum; CFSM, cubic foot per second per square mile; IN., inch. Negative values indicate tidally driven flow in an upstream direction.

DISCHARGE, CUBIC FEET PER SECOND, OCTOBER 1990-SEPTEMBER 1991

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	---	0.61	0.45	---	0.94	---	-1.7	---	0.49	-0.065	-1.2	-0.18
2	-0.012	.63	.42	---	1.2	---	-1.4	---	.40	-.026	---	.41
3	-.42	.61	---	---	.82	---	.28	---	.39	-.015	---	.049
4	-.77	.60	---	---	.62	---	.69	---	.23	.078	---	.048
5	-.64	.58	.51	1.3	.59	---	-.047	---	.087	.15	---	-.029
6	-.63	.63	.73	.24	.61	---	-.29	---	-.027	.17	---	-.24
7	-.60	.60	.92	.60	.69	---	-.36	---	-.12	.27	---	-.21
8	-.57	.53	-1.1	.82	-.026	---	-.24	---	-.17	.27	---	.068
9	-.61	.57	-.21	.74	-1.0	---	-.12	---	-.23	.30	---	.063
10	-.99	.57	.010	.87	2.6	---	-.090	---	-.29	.43	---	-.010
11	-1.1	.39	---	-1.7	-.15	---	-.045	---	.35	.38	---	---
12	---	.33	---	.93	-.86	---	.32	---	.67	.43	---	---
13	---	.28	---	.96	1.1	---	.40	---	.97	.47	---	---
14	---	.34	---	.86	-.021	---	.34	---	1.0	.47	---	---
15	---	.44	---	.70	.20	---	.47	---	1.0	.42	---	---
16	---	-3.7	---	.70	.15	---	.50	0.75	1.2	.43	---	---
17	---	-.73	---	.73	.024	---	.46	.67	1.2	.42	---	---
18	.84	.20	---	.76	-.19	---	.37	.53	1.2	.36	---	---
19	.55	.28	---	.90	-.30	---	.41	.44	1.2	.30	---	---
20	.69	.37	---	.63	-.34	---	.34	.48	1.1	.29	---	---
21	.68	.38	---	.46	---	---	.19	.58	1.1	.34	---	---
22	.69	.35	---	.67	---	---	.20	.41	.62	.43	---	---
23	.77	.37	---	1.4	---	---	.22	.44	-.41	.51	---	---
24	.77	.33	---	.73	---	---	.34	.38	-.17	.47	.78	---
25	.83	.30	---	1.1	---	---	.070	.52	.007	.61	.88	---
26	.54	.27	---	1.5	---	---	---	.56	.066	.49	1.0	---
27	.80	.27	---	.96	---	---	---	.49	.049	-.24	1.1	---
28	.64	.30	---	1.0	---	---	---	.42	.15	-.82	.97	---
29	.54	.22	---	.88	---	1.5	---	.69	.17	-.91	.46	---
30	.63	.20	---	1.3	---	-.87	---	.61	.055	-1.0	.20	---
31	.61	---	---	.81	---	-1.6	---	.42	---	-1.2	.14	---
TOTAL	---	7.12	---	---	---	---	---	---	12.287	4.212	---	---
MEAN	---	.24	---	---	---	---	---	---	.41	.14	---	---
MAX	---	.63	---	---	---	---	---	---	1.2	.61	---	---
MIN	---	-3.7	---	---	---	---	---	---	-.41	-1.2	---	---
CFSM	---	1.47	---	---	---	---	---	---	2.53	.84	---	---
IN.	---	1.63	---	---	---	---	---	---	2.82	.97	---	---

Table 22.--*Daily mean values of discharge at site H3, October 1990-April 1992*--Continued

LOCATION.--Lat 35°27'01", long 76°22'49"; Hyde County, on left bank of agricultural drainage canal about 800 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458800.

DRAINAGE AREA.--Approximately 104 acres (0.162 mi^2).

PERIOD OF RECORD.--April 1989 through April 1992.

REMARKS.--mi, mile; mi^2, square mile; ---, no data; MAX, maximum; MIN, minimum; CFSM, cubic foot per second per square mile; IN., inch. Negative values indicate tidally driven flow in an upstream direction.

DISCHARGE, CUBIC FEET PER SECOND, OCTOBER 1991-APRIL 1992

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1	---	0.041	0.41	0.55	---	0.027	0.17
2	---	.45	.39	.55	---	.016	.12
3	---	.73	.42	.62	---	.029	.13
4	---	-.22	.31	.67	---	.094	.13
5	---	.33	.42	.65	---	.24	.16
6	---	.18	.40	.54	---	.47	.20
7	---	.19	.35	.85	---	.57	.26
8	---	.35	.35	.88	---	.47	-.17
9	---	.39	.31	.27	---	.60	-.39
10	---	---	.32	.051	---	.25	-.37
11	---	-.27	.42	.025	---	.038	-.36
12	---	.29	.42	.046	---	.056	.30
13	---	.33	.41	.057	---	.046	.38
14	---	.66	.38	.053	---	.012	.43
15	---	.62	-.007	.019	---	.040	.40
16	---	.54	.14	-.008	---	.14	.49
17	---	.59	.25	.002	---	.21	.43
18	---	.60	-.037	.008	---	.30	.45
19	---	.55	.085	.015	---	.31	.55
20	---	.53	.080	.028	---	.37	.59
21	---	.50	.054	---	0.043	.41	.59
22	---	.45	.13	---	.044	.38	.44
23	---	.26	.17	---	.051	.43	.39
24	0.60	.45	.23	---	.046	.51	.29
25	.69	.42	-.12	---	.062	.44	-.23
26	.62	.45	.12	---	.051	-.19	-.41
27	.64	.46	.24	---	.054	-.086	-.48
28	.68	.43	.49	---	.012	-.086	-.60
29	.83	.40	.50	---	.021	-.11	-.69
30	.82	.40	.46	---	---	-.14	---
31	.87	---	.53	---	---	-.12	---
TOTAL	---	---	8.625	---	---	5.726	---
MEAN	---	---	.28	---	---	.18	---
MAX	---	---	.53	---	---	.60	---
MIN	---	---	-.12	---	---	-.19	---
CFSM	---	---	1.72	---	---	1.14	---
IN.	---	---	1.98	---	---	1.31	---

Table 23.--*Daily mean values of discharge at site B2, October 1990-February 1991*

LOCATION.--Lat 35°17'20", long 76°41'45"; Beaufort County, on right bank of agricultural drainage canal about 150 ft downstream from flashboard riser; 0.2 mi south of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455143.

DRAINAGE AREA.--Approximately 47 acres (0.074 mi^2).

PERIOD OF RECORD.--April 1989 through April 1992.

REMARKS.--mi, mile; mi^2, square mile; ---, no data or water level below velocity probe so discharge could not be computed; MAX, maximum; MIN, minimum; CFSM, cubic foot per second per square mile; IN., inch. Negative values indicate tidally driven flow in an upstream direction.

DISCHARGE, CUBIC FEET PER SECOND, OCTOBER 1990-FEBRUARY 1991

Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	---	0.13	0.038	0.48	0.78
2	---	.12	.062	.74	.70
3	---	.11	.035	.89	.60
4	---	.10	.003	.89	.52
5	---	.087	.013	.70	.52
6	---	.18	.021	.41	.49
7	---	.18	.032	.40	---
8	---	.23	.17	1.1	---
9	---	.32	.19	1.2	---
10	---	.71	.14	.62	---
11	---	.52	.097	.45	---
12	---	.38	.093	.75	---
13	---	.28	.087	.82	---
14	---	.15	.097	.83	---
15	---	.035	.082	.30	---
16	---	.054	.054	.28	---
17	---	-.010	.032	.58	---
18	---	-.016	.048	.34	---
19	---	-.006	.079	.34	---
20	---	-.004	.072	.32	---
21	---	.045	.11	.069	---
22	---	.023	.17	.30	---
23	---	.038	-.018	.40	---
24	0.26	.036	-.19	.23	---
25	.30	.005	-.068	.37	---
26	1.1	.004	-.16	.28	---
27	1.7	.004	.019	.38	---
28	.78	.004	.023	.36	---
29	.52	.036	.002	.37	---
30	.27	.12	-.059	.26	---
31	.10	---	---	.49	---
TOTAL	---	3.865	---	15.949	---
MEAN	---	.13	---	.51	---
MAX	---	.71	---	1.2	---
MIN	---	-.016	---	.069	---
CFSM	---	1.75	---	6.97	---
IN.	---	1.95	---	8.04	---

Table 24.--*Daily mean values of discharge at site B3, October 1990-April 1992*

LOCATION.--Lat 35°17'10", long 76°41'50", Beaufort County, on left bank of agricultural drainage canal about 600 ft downstream from flashboard riser; 0.2 mi south of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455141.

DRAINAGE AREA.--Approximately 68 acres (0.107 mi^2).

PERIOD OF RECORD.--April 1989 through September 1991.

REMARKS.--mi, mile; mi^2, square mile; ---, no data or water level below velocity probe so discharge could not be computed; MAX, maximum; MIN, minimum; CFSM, cubic foot per second per square mile; IN., inch. Negative values indicate tidally driven flow in an upstream direction.

DISCHARGE, CUBIC FEET PER SECOND, OCTOBER 1990-SEPTEMBER 1991

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-0.002	0.69	0.016	0.023	0.000	0.007	0.050	---	0.046	0.006	0.34	0.027
2	-.005	.70	.015	.021	.001	.016	.031	---	---	-.001	.39	.047
3	.001	.65	.015	.020	.000	---	.021	---	.001	.003	.041	.039
4	.008	.61	.015	.027	.001	.001	.022	---	.025	-.013	.042	.030
5	.009	.66	.015	.025	.001	.004	.011	---	.036	.000	.059	.022
6	.009	.65	.015	.016	.001	-.012	.009	---	.018	.014	.066	.026
7	.008	.86	.014	.021	.11	-.20	.012	---	-.022	.003	.060	.040
8	.002	.83	.025	.045	.36	---	.018	---	-.007	.012	.061	.042
9	.009	.99	.023	.028	-.086	.31	.013	---	-.043	.011	.052	.042
10	.013	1.1	.019	.034	-.35	.37	.017	---	-.022	.012	.043	.033
11	.015	.68	.020	.033	-.060	.37	.017	0.051	-.024	-.049	.075	.023
12	.018	.58	.018	.020	-.041	.44	.012	.026	-.019	-.068	.078	.034
13	-.062	.54	.020	.026	.031	.30	.009	.017	-.033	-.043	.056	.036
14	-.034	.64	.026	.020	-.070	.30	.015	.016	-.041	-.047	.051	.024
15	-.046	.49	.020	.007	.030	.54	.008	.027	-.010	-.065	.048	.029
16	.018	.22	.019	.004	.10	.52	.002	.048	.16	-.064	.052	.024
17	.026	.016	.019	.006	.010	.28	.001	.034	.26	-.051	.046	.019
18	.003	.020	.017	.006	-.13	.17	.002	.040	.40	.033	.057	.020
19	-.021	.028	.017	.004	-.14	.18	.013	.088	---	.065	.042	.016
20	-.029	.029	.020	.006	-.25	.20	---	.092	---	.074	.044	.029
21	-.031	.031	.019	.004	-.24	-.75	---	.072	.29	.061	.040	.040
22	-.007	.025	.017	.003	-.15	-.49	---	.047	.38	.062	---	.042
23	-.041	.020	.018	.004	.000	-.45	---	.037	.86	.050	.031	.026
24	-.22	.018	.018	.006	.001	-.42	---	.023	1.0	.037	.026	.026
25	-.87	.014	.020	.006	.000	-.40	---	.010	.93	.053	.028	---
26	-.78	.013	.019	.008	-.001	-.28	---	.010	.80	.053	.039	---
27	1.2	.012	.029	.005	.000	---	---	.006	.65	.051	.037	---
28	.81	.011	.017	.006	.000	.15	---	.005	.49	.15	.038	---
29	.81	.016	.016	.006	---	---	---	.006	.15	.19	.034	---
30	.79	.017	.015	.004	---	---	---	.005	.014	.38	.025	---
31	.60	---	.018	.003	---	.48	---	.014	---	.20	.016	---
TOTAL	2.201	11.160	0.574	0.447	-0.872	---	---	---	---	1.119	---	---
MEAN	.071	.37	.019	.014	-.031	---	---	---	---	.036	---	---
MAX	1.2	1.1	.029	.045	.36	---	---	---	---	.38	---	---
MIN	-.87	.011	.014	.003	-.35	---	---	---	---	-.068	---	---
CFSM	.67	3.49	.17	.14	-.29	---	---	---	---	.34	---	---
IN.	.77	3.89	.20	.16	-.30	---	---	---	---	.39	---	---

Table 24.--*Daily mean values of discharge at site B3, October 1990-April 1992*--Continued

LOCATION.--Lat 35°17'10", long 76°41'50", Beaufort County, on left bank of agricultural drainage canal about 600 ft downstream from flashboard riser; 0.2 mi south of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455141.

DRAINAGE AREA.--Approximately 68 acres (0.107 mi^2).

PERIOD OF RECORD.--April 1989 through September 1991.

REMARKS.--mi, mile; mi^2, square mile; ---, no data or water level below velocity probe so discharge could not be computed; MAX, maximum; MIN, minimum; CFSM, cubic foot per second per square mile; IN., inch. Negative values indicate tidally driven flow in an upstream direction.

DISCHARGE, CUBIC FEET PER SECOND, OCTOBER 1991-APRIL 1992

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1	---	---	---	0.006	---	---	0.025
2	---	---	---	---	---	---	.010
3	---	---	---	---	---	---	.013
4	---	---	---	---	---	---	.005
5	---	0.012	---	---	---	---	-.005
6	---	.012	---	---	---	---	-.008
7	---	.010	---	---	---	---	-.012
8	---	.011	---	---	---	---	-.026
9	0.006	---	---	---	---	---	-.020
10	.005	---	---	---	---	---	-.10
11	.004	.009	---	---	---	---	-.073
12	.003	.010	---	---	---	---	-.050
13	.005	.008	---	---	---	---	-.48
14	.005	.006	---	---	---	---	-.21
15	.004	---	---	---	---	---	-.19
16	.006	---	---	---	---	---	-.081
17	---	---	---	---	---	---	.038
18	---	---	---	---	---	---	.042
19	---	---	---	---	---	0.019	.073
20	---	---	---	---	---	.087	-.014
21	---	---	---	---	---	.084	.054
22	---	---	---	---	---	.083	.084
23	---	---	---	---	---	.075	.18
24	---	---	---	---	---	.090	.12
25	---	---	---	---	---	.073	.14
26	---	---	---	---	---	.080	.17
27	---	---	---	---	---	.046	.24
28	---	---	---	---	---	.031	.35
29	---	---	---	---	---	.029	.43
30	---	---	---	---	---	.018	.33
31	---	---	---	---	---	.018	---
TOTAL	---	---	---	---	---	---	1.035
MEAN	---	---	---	---	---	---	.034
MAX	---	---	---	---	---	---	.43
MIN	---	---	---	---	---	---	-.48
CFSM	---	---	---	---	---	---	.32
IN.	---	---	---	---	---	---	.36

Table 25.--*Biweekly water-quality field measurements and sample analyses at site H1, October 1990-May 1992*

LOCATION.--Lat 35°26'44", long 76°22'25"; Hyde County, on left bank of agricultural drainage canal about 100 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458600.

DRAINAGE AREA.--Approximately 70 acres (0.109 mi^2).

PERIOD OF RECORD.--November 1988 through May 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus; <, less than. Negative streamflow values indicate tidally driven flow in an upstream direction. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Time	Water level (feet above sea level)	Streamflow, instantaneous (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature of water (°C)	Dissolved oxygen (mg/L)	Dissolved oxygen (percent saturation)
Water year 1991								
Oct. 17	1530	0.99	-0.01	17,600	6.5	21.0	1.6	19
25	1730	.99	.00	16,000	6.7	17.5	1.6	18
Nov. 15	1430	.73	-.01	920	6.6	10.0	12.8	112
30	1130	.52	.00	1,060	7.0	8.0	9.0	75
Dec. 14	1430	.61	.00	643	6.8	9.0	12.1	104
Jan. 04	1300	.66	.00	931	6.3	10.5	11.8	105
17	1000	.92	.50	810	6.4	11.0	6.5	59
Feb. 08	1100	.68	.23	687	6.8	10.5	9.8	88
21	1645	.43	.12	411	7.4	15.0	14.2	140
Mar. 08	1200	.85	.17	610	5.4	10.0	--	--
28	1530	.52	.03	1,690	6.8	20.0	4.4	49
Apr. 10	1400	.28	.00	596	7.5	23.0	8.4	99
26	1500	.98	.08	4,350	6.1	21.0	4.4	50
May 12	1530	.37	.00	7,580	--	28.0	6.4	83
30	1630	.80	.00	13,300	6.7	29.5	5.5	76
June 11	0930	.51	.00	15,900	6.4	21.5	1.3	16
21	2100	1.10	.00	2,730	6.3	23.5	4.7	56
July 09	1530	1.00	.00	11,500	6.5	31.0	3.9	55
Aug. 02	1300	.93	.23	924	6.0	25.0	3.1	38
23	0845	.93	.27	385	6.5	23.0	2.0	23
Sept. 11	1030	.84	.00	6,200	6.1	22.5	0.6	7
24	1645	.97	.08	14,800	6.6	21.5	2.0	24
October 1991-May 1992								
Oct. 09	1200	0.87	0.00	13,300	6.7	16.5	2.4	25
23	1515	.83	.00	5,410	6.6	17.0	2.6	27
Nov. 15	1400	.95	.00	9,000	6.0	13.0	3.6	35
Dec. 03	0830	.37	.00	8,910	6.7	18.0	4.3	47
23	0949	.14	.00	--	7.3	7.0	4.5	--
Jan. 09	0830	1.33	.00	1,780	6.7	7.0	5.1	42
22	1330	.42	.00	1,530	8.6	5.5	9.3	74
Feb. 05	1315	.83	.00	3,530	9.1	8.5	11.6	101
20	1200	.59	.00	1,400	7.7	12.0	15.2	141
Mar. 04	0930	.46	.00	10,300	6.8	13.0	1.3	13
18	1400	.25	.00	10,800	6.8	16.5	4.3	--
31	1230	.40	.00	4,900	6.8	14.0	--	--
Apr. 16	1245	.51	.00	8,330	6.6	16.0	5.4	56
May 01	1000	.66	.00	10,400	7.4	15.5	5.4	56

Table 25.--*Biweekly water-quality field measurements and sample analyses at site H1, October 1990-May 1992*--Continued

LOCATION.--Lat 35°26'44", long 76°22'25"; Hyde County, on left bank of agricultural drainage canal about 100 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458600.

DRAINAGE AREA.--Approximately 70 acres (0.109 mi^2).

PERIOD OF RECORD.--November 1988 through May 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus; <, less than. Negative streamflow values indicate tidally driven flow in an upstream direction. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Total nitrogen, $NO_2 + NO_3$ (mg/L as N)	Total nitrogen, ammonia (mg/L as N)	Total nitrogen, organic (mg/L as N)	Total nitrogen, ammonia + organic (mg/L as N)	Total phosphorus (mg/L as P)	Total phosphorus, ortho (mg/L as P)	Suspended sediment (mg/L)
Water year 1991							
Oct. 17	<0.10	0.19	0.91	1.1	0.03	<0.01	6
25	<.10	.13	.77	.90	.02	.02	20
Nov. 15	.30	.08	.62	.70	.02	<.01	2
30	<.10	.08	.52	.60	.05	.01	9
Dec. 14	.20	.05	.55	.60	.04	.02	7
Jan. 04	<.10	.06	.64	.70	.02	<.01	7
17	.40	.05	1.0	1.1	.03	.03	9
Feb. 08	.40	.04	1.9	1.9	.04	.03	4
21	<.05	.06	.54	.60	.03	.01	6
Mar. 08	.41	.02	7.8	7.8	.09	.06	5
28	<.05	.18	1.6	1.8	.14	.03	189
Apr. 10	<.05	.11	1.7	1.8	.11	.03	171
26	.12	.05	.95	1.0	.05	<.01	12
May 12	<.05	.42	1.2	1.6	.07	.03	18
30	<.05	.39	2.9	3.3	.07	.02	39
June 11	<.05	.35	1.2	1.5	.07	<.01	--
21	--	--	--	--	--	--	--
July 09	<.05	.07	1.4	1.5	.05	.02	--
Aug. 02	<.05	.19	.91	1.1	.11	.02	26
23	<.05	.25	1.2	1.4	.10	.03	17
Sept. 11	<.05	.58	1.4	2.0	.08	<.01	11
24	<.05	.39	1.1	1.5	.08	.01	--
October 1991-May 1992							
Oct. 09	<.05	0.26	0.94	1.2	0.06	<0.01	5
23	<.05	.24	.96	1.2	.05	.01	9
Nov. 15	<.05	.04	.46	.50	.04	<.01	18
Dec. 03	<.05	.70	1.4	2.1	.14	.02	16
23	<.05	.80	1.6	2.4	.18	<.01	46
Jan. 09	.10	.05	.85	.90	.06	.01	5
22	<.05	.11	.49	.60	.02	<.01	<.5
Feb. 05	<.05	.11	.49	.60	.03	<.01	17
20	<.05	.03	.77	.80	.05	<.01	7
Mar. 04	<.05	.67	1.3	2.0	.06	<.01	6
18	<.05	1.90	1.8	3.7	.11	.02	42
31	.45	1.10	1.2	2.3	.05	<.01	12
Apr. 16	.13	.29	.91	1.2	.03	<.01	4
May 01	<.05	.15	.25	.40	<.01	.03	4

Table 26.--*Biweekly water-quality field measurements at site H1A, October 1990-May 1992*

LOCATION.--Lat 35°26'48", long 76°22'18"; Hyde County, on left bank of agricultural drainage canal about 15 ft upstream of tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458600.

DRAINAGE AREA.--Approximately 70 acres (0.109 mi^2).

PERIOD OF RECORD.--November 1988 through May 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); --, no data.

Date	Time	Water level (feet above sea level)	Specific conductance (µS/cm)	Temperature of water (°C)
Water year 1991				
Oct. 17	1530	0.56	21,200	21.0
25	1730	.78	14,000	17.5
Nov. 15	1430	.71	742	10.0
30	1130	.56	846	8.0
Dec. 14	1430	.65	562	9.5
Jan. 04	1300	.73	792	10.5
17	1000	.93	732	11.0
Feb. 08	1100	.72	594	10.5
21	1645	.45	469	15.0
Mar. 08	1200	.84	434	10.0
28	1530	.54	1,710	21.5
Apr. 10	1400	.34	2,180	24.5
26	1500	.97	3,740	21.0
May 12	1530	.38	7,410	25.0
30	1630	.54	12,800	30.0
June 11	0930	--	--	21.5
July 09	1530	.98	10,900	31.5
Aug. 02	1300	.92	879	25.0
23	0845	.94	253	23.5
Sept. 11	1030	.84	5,900	22.5
24	1645	.80	15,000	21.5
October 1991-May 1992				
Oct. 09	1200	--	9,440	16.5
23	1515	0.70	1,820	17.0
Nov. 15	1400	.95	8,890	13.0
Dec. 03	0830	.37	7,270	18.0
23	0949	.15	--	7.0
Jan. 09	0830	1.33	1,500	7.0
22	1330	.44	1,250	5.5
Feb. 05	1315	.85	1,150	8.5
20	1200	.62	1,300	12.0
Mar. 04	0930	.47	9,750	13.0
18	1400	.27	9,300	16.5
31	1230	.40	4,400	14.0
Apr. 16	1245	.51	8,680	16.0
May 01	1000	.65	8,330	15.5

Table 27.--*Biweekly water-quality field measurements and sample analyses at site H2, October 1990-May 1992*

LOCATION.--Lat 35°26'57", long 76°22'37"; Hyde County, on right bank of agricultural drainage canal about 90 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458700.

DRAINAGE AREA.--Approximately 140 acres (0.219 mi^2).

PERIOD OF RECORD.--November 1988 through May 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus; <, less than. Negative streamflow values indicate tidally driven flow in an upstream direction. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Time	Water level (feet above sea level)	Streamflow, instantaneous (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature of water (°C)	Dissolved oxygen (mg/L)	Dissolved oxygen (percent saturation)
Water year 1991								
Oct. 17	1700	0.96	0.33	21,800	7.1	25.0	5.5	71
25	0945	.94	.00	21,800	7.1	21.0	3.2	39
Nov. 15	1200	.63	-.59	10,300	6.9	12.5	11.9	114
30	1200	.48	.00	12,900	6.6	14.5	4.7	47
Dec. 14	1530	.48	.83	11,000	6.9	12.5	9.6	93
Jan. 04	1100	.67	1.23	6,220	6.3	12.0	6.3	59
17	1300	.55	.58	1,990	6.4	11.5	--	--
Feb. 08	1300	.17	.46	3,370	7.1	11.5	5.4	50
21	1530	-.02	.39	11,800	6.7	15.5	6.3	65
Mar. 08	1430	.78	.00	4,620	5.6	12.5	--	--
28	1330	.25	-.30	5,530	7.8	20.0	9.4	106
Apr. 10	1300	.0	-.39	3,020	8.1	24.5	7.0	85
26	1230	1.05	1.85	14,400	6.7	20.5	6.3	73
May 12	1630	.20	.00	17,900	--	27.0	9.4	125
30	1745	.88	1.71	15,600	8.6	32.0	8.3	120
June 11	0830	.50	1.68	19,600	6.9	23.5	4.0	50
July 09	1430	1.20	.00	14,000	7.1	32.0	7.6	109
Aug. 02	1600	1.12	1.91	8,310	7.0	27.0	7.8	101
23	0945	1.10	1.67	6,900	6.5	24.0	4.8	58
Sept. 11	1130	.60	1.78	16,900	6.7	27.0	4.3	57
24	1545	1.03	.00	20,800	7.3	22.0	4.5	55
October 1991-May 1992								
Oct. 09	1015	0.84	-0.31	22,900	7.4	16.5	4.5	50
23	1430	.85	.00	24,500	7.9	20.5	9.5	114
Nov. 15	1630	.76	.00	14,900	7.0	13.5	9.4	94
Dec. 03	0730	.28	.00	18,200	7.7	19.5	6.3	73
23	1145	--	.00	15,500	7.3	7.0	12.9	111
Jan. 09	1015	1.02	.00	7,170	6.7	9.0	6.5	58
22	1130	.24	.00	719	9.0	9.0	10.6	91
Feb. 05	1430	1.00	.00	13,300	7.7	12.0	16.0	156
20	1330	.40	.00	2,170	7.0	15.0	13.2	131
Mar. 04	1200	.56	-.57	20,500	7.1	13.5	6.9	71
17	1500	.52	1.14	9,300	8.4	14.5	14.7	149
31	1520	.01	.00	1,330	7.2	14.0	8.3	82
Apr. 16	1415	.60	.00	17,900	7.1	18.0	9.2	103
May 01	1345	.80	1.65	19,300	8.0	21.0	13.8	165

Table 27.--*Biweekly water-quality field measurements and sample analyses at site H2, October 1990-May 1992*--Continued

LOCATION.--Lat 35°26'57", long 76°22'37"; Hyde County, on right bank of agricultural drainage canal about 90 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458700.

DRAINAGE AREA.--Approximately 140 acres (0.219 mi^2).

PERIOD OF RECORD.--November 1988 through May 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus; <, less than. Negative streamflow values indicate tidally driven flow in an upstream direction. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Total nitrogen, $NO_2 + NO_3$ (mg/L as N)	Total nitrogen, ammonia (mg/L as N)	Total nitrogen, organic (mg/L as N)	Total nitrogen, ammonia + organic (mg/L as N)	Total phosphorus (mg/L as P)	Total phosphorus, ortho (mg/L as P)	Suspended sediment (mg/L)
Water year 1991							
Oct. 17	<0.10	0.28	0.82	1.1	0.03	<0.01	15
25	<.10	.21	.69	.90	.02	.02	16
Nov. 15	.70	.16	.24	.40	.02	<.01	8
30	<.10	.32	.58	.90	.04	<.01	22
Dec. 14	.40	.14	.66	.80	.05	<.01	<.5
Jan. 04	.60	.29	.71	1.0	.02	.01	13
17	1.20	.15	1.0	1.2	.03	.02	12
Feb. 08	.50	.28	1.1	1.4	.03	.01	21
21	<.10	.23	.57	.80	.03	<.01	--
Mar. 08	.68	.21	.99	1.2	.05	.02	23
28	<.05	.04	1.2	1.2	.10	.03	44
Apr. 10	.05	.27	1.5	1.8	.10	.03	29
26	.13	.06	.24	.30	.03	<.01	9
May 12	<.05	.05	.75	.80	.06	.01	51
30	<.05	.04	.76	.80	.03	<.01	28
June 11	<.05	.07	.63	.70	.06	<.01	--
July 09	<.05	.03	1.1	1.1	.05	.02	--
Aug. 02	.08	.14	.96	1.1	.05	<.01	20
23	.18	.27	.93	1.2	.06	<.01	21
Sept. 11	<.05	.03	.77	.80	.05	<.01	22
24	<.05	.08	.62	.70	.06	.01	--
October 1991-May 1992							
Oct. 09	<0.05	0.08	0.42	0.50	0.06	<0.01	12
23	<.05	.03	.77	.80	.05	.04	18
Nov. 15	.12	.12	.48	.60	.02	.01	8
Dec. 03	<.05	.10	.30	.40	.02	<.01	5
23	<.05	.09	.41	.50	.02	<.01	1
Jan. 09	1.30	.05	.85	.90	.04	.01	6
22	.35	.06	.54	.60	.02	.01	4
Feb. 05	.17	.06	.54	.60	.03	<.01	6
20	.06	.03	.87	.90	.17	<.01	11
Mar. 04	<.05	.02	.78	.80	.04	.01	11
17	<.05	.05	.65	.70	.02	.01	25
31	.13	.11	.79	.90	<.01	<.01	35
Apr. 16	<.05	.07	.83	.90	.03	<.01	12
May 01	<.05	.07	.43	.50	<.01	.02	18

Table 28.--*Biweekly water-quality field measurements at site H2A, October 1990-May 1992*

LOCATION.--Lat 35°26'59", long 76°22'34"; Hyde County, on right bank of agricultural drainage canal about 15 ft upstream of tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458700.

DRAINAGE AREA.--Approximately 140 acres (0.219 mi^2).

PERIOD OF RECORD.--October 1990 through May 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); --, no data.

Date	Time	Water level (feet above sea level)	Specific conductance (µS/cm)	Temperature of water (°C)
Water year 1991				
Oct. 17	1700	--	6,300	25.0
25	0945	0.53	21,090	21.0
Nov. 15	1200	.52	16,740	12.5
30	1200	.25	9,460	15.5
Dec. 14	1530	-.07	6,650	10.5
Jan. 04	1100	.40	3,090	12.0
17	1300	.41	1,410	14.0
Feb. 08	1300	.18	2,060	11.5
21	1530	.00	5,710	15.5
Mar. 08	1430	.56	1,730	12.5
28	1330	.08	2,980	21.0
Apr. 10	1300	-.54	2,920	24.5
26	1230	.54	4,860	20.5
May 12	1630	.03	4,050	23.0
30	1745	-.34	6,000	30.0
June 11	0830	.16	6,030	23.5
July 09	1430	.16	2,790	32.0
Aug. 02	1600	.73	3,040	27.0
23	0945	.75	1,530	24.5
Sept. 11	1130	.59	1,900	27.0
24	1545	-.06	1,500	22.0
October 1991-May 1992				
Oct. 09	1015	0.04	1,480	16.5
23	1430	.29	2,050	20.5
Nov. 15	1630	.68	4,210	13.5
Dec. 03	0730	-.13	4,950	19.5
23	1145	-.73	5,270	7.0
Jan. 09	1015	.02	2,990	9.0
22	1130	.13	611	9.0
Feb. 05	1430	.28	2,150	12.0
20	1330	.14	1,710	15.0
Mar. 04	1200	.31	9,950	13.5
17	1500	.13	8,820	14.5
31	1520	.06	1,210	14.0
Apr. 16	1415	.03	2,090	18.0
May 01	1345	.28	2,050	21.0

Table 29.--*Biweekly water-quality field measurements and sample analyses at site H3, October 1990-May 1992*

LOCATION.--Lat 35°27'01", long 76°22'49"; Hyde County, on left bank of agricultural drainage canal about 800 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458800.

DRAINAGE AREA.--Approximately 104 acres (0.162 mi^2).

PERIOD OF RECORD.--November 1988 through May 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus; <, less than. Negative streamflow values indicate tidally driven flow in an upstream direction. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Time	Water level (feet above sea level)	Streamflow, instantaneous (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature of water (°C)	Dissolved oxygen (mg/L)	Dissolved oxygen (percent saturation)
Water year 1991								
Oct. 17	1330	0.94	-0.30	21,400	8.7	21.0	5.1	61
25	1615	.92	-.90	21,600	7.2	21.0	3.3	--
Nov. 15	1630	.59	-.76	12,800	7.0	13.0	5.0	49
30	1500	.56	.00	16,800	7.3	12.0	10.2	99
Dec. 14	1200	.28	-1.06	12,200	7.3	10.5	9.4	87
Jan. 04	0900	.58	.74	5,380	6.4	10.0	8.4	75
17	1400	.47	-.48	1,550	6.3	11.5	--	--
Feb. 08	1430	.18	-.66	1,630	7.0	11.0	7.1	65
21	1330	-.6	-.16	8,550	7.1	15.5	9.0	92
Mar. 08	1530	.58	.00	2,170	6.1	11.5	--	--
28	1130	.12	.00	9,320	6.9	20.5	8.1	94
Apr. 10	1200	-.2	.55	3,090	7.8	18.5	6.1	66
26	1030	.94	2.0	13,000	7.6	18.5	7.5	83
May 12	1730	.49	-.24	13,600	--	27.0	11.4	150
30	1330	.68	2.6	16,500	7.8	31.0	8.3	118
June 11	0800	.53	1.44	19,700	8.5	21.0	6.1	73
July 09	1330	1.05	1.25	12,000	7.0	31.5	9.1	129
Aug. 02	1500	.96	1.50	6,690	6.8	27.0	7.7	99
23	1145	.91	.59	5,840	6.6	24.5	5.8	71
Sept. 11	1300	.78	.11	16,900	6.8	25.0	4.7	60
24	1400	.96	.00	20,700	7.3	22.5	5.8	72
October 1991-May 1992								
Oct. 09	0900	0.78	-0.28	23,000	8.6	15.5	6.5	70
23	1330	.81	.28	22,800	7.7	17.5	7.8	88
Nov. 15	1530	.68	.00	13,000	6.9	14.0	10.2	103
Dec. 03	1000	.32	.00	16,800	7.0	19.5	7.5	88
23	1300	-.01	.00	15,100	7.7	9.0	13.0	117
Jan. 09	1100	1.09	.00	6,600	6.6	8.5	5.1	45
22	1415	.35	.00	6,390	7.8	8.5	10.4	90
Feb. 05	1530	.88	.00	11,300	7.4	10.5	14.2	133
20	1430	.45	.00	4,150	7.1	15.0	13.3	133
Mar. 04	1030	.55	.49	13,900	6.9	14.5	5.0	51
17	1130	.40	-.23	9,220	9.0	11.5	14.2	134
31	1715	.68	.00	3,400	7.1	14.5	9.2	92
Apr. 16	1530	.60	--	8,910	7.7	22.0	14.8	173
May 01	1200	.75	.81	15,400	8.0	19.5	14.4	165

Table 29.--*Biweekly water-quality field measurements and sample analyses at site H3, October 1990-May 1992*--Continued

LOCATION.--Lat 35°27'01", long 76°22'49"; Hyde County, on left bank of agricultural drainage canal about 800 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458800.

DRAINAGE AREA.--Approximately 104 acres (0.162 mi^2).

PERIOD OF RECORD.--November 1988 through May 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus; <, less than. Negative streamflow values indicate tidally driven flow in an upstream direction. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Total nitrogen, $NO_2 + NO_3$ (mg/L as N)	Total nitrogen, ammonia (mg/L as N)	Total nitrogen, organic (mg/L as N)	Total nitrogen, ammonia + organic (mg/L as N)	Total phosphorus (mg/L as P)	Total phosphorus, ortho (mg/L as P)	Suspended sediment (mg/L)
Water year 1991							
Oct. 17	<0.10	0.07	0.63	0.70	0.02	0.01	7
25	<.10	.16	.64	.80	<.01	<.01	14
Nov. 15	.40	.18	.62	.80	.02	<.01	3
30	<.10	.13	.77	.90	.03	<.01	3
Dec. 14	.30	.10	.60	.70	.03	<.01	3
Jan. 04	.40	.14	.66	.80	<.01	<.01	12
17	1.40	.07	.63	.70	<.01	.01	7
Feb. 08	.70	.13	.47	.60	.02	<.01	--
21	<.10	.10	.60	.70	.02	<.01	14
Mar. 08	.27	.08	.82	.90	.07	.02	35
28	<.05	.06	1.1	1.2	.03	<.01	70
Apr. 10	<.05	.11	1.4	1.5	.07	.01	15
26	.13	.04	.46	.50	.03	<.01	32
May 12	<.05	.03	.97	1.0	.06	<.01	53
30	<.05	.03	1.1	1.1	.01	<.01	14
June 11	<.05	.03	.67	.70	.04	<.01	--
July 09	<.05	<.01	--	1.1	.03	<.01	--
Aug. 02	<.05	.09	1.2	1.3	.02	<.01	19
23	<.05	.11	1.3	1.4	.04	<.01	--
Sept. 11	<.05	.04	.86	.90	.06	<.01	--
24	<.05	.06	.64	.70	.05	.01	--
October 1991-May 1992							
Oct. 09	<0.05	0.04	0.36	0.40	0.03	<0.01	6
23	<.05	.03	.37	.40	.02	.02	8
Nov. 15	1.00	.05	.65	.70	.06	.06	7
Dec. 03	<.05	.05	.35	.40	.03	<.01	10
23	<.05	.07	.53	.60	.01	<.01	6
Jan. 09	1.50	.03	.67	.70	.03	.01	7
22	.35	.07	.53	.60	.02	<.01	7
Feb. 05	.29	.08	.52	.60	.02	<.01	24
20	.10	.03	.67	.70	.07	<.01	11
Mar. 04	<.05	.02	.88	.90	.05	<.01	15
17	<.05	.02	.68	.70	.02	<.01	12
31	<.05	.02	.58	.60	<.01	<.01	22
Apr. 16	<.05	.02	.98	1.0	.02	<.01	8
May 01	<.05	.04	1.3	1.3	.07	.03	--

Table 30.--*Biweekly water-quality field measurements at site H3A, October 1990-May 1992*

LOCATION.--Lat 35°27'06", long 76°22'43"; Hyde County, on left bank of agricultural drainage canal about 15 ft upstream of tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458800.

DRAINAGE AREA.--Approximately 104 acres (0.162 mi^2).

PERIOD OF RECORD.--October 1990 through May 1992.

REMARKS.--ft, foot; mi mile; mi^2, square mile; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); --, no data.

Date	Time	Water level (feet above sea level)	Specific conductance (µS/cm)	Temperature of water (°C)
Water year 1991				
Oct. 17	1330	--	3,850	21.0
25	1615	--	3,410	21.0
Nov. 15	1630	--	3,810	13.0
30	1500	--	--	12.0
Dec. 14	1200	0.15	3,980	10.0
Jan. 04	0900	.43	2,090	10.0
17	1400	.54	1,550	12.0
Feb. 08	1430	.31	1,510	11.0
21	1330	-1.00	5,000	15.0
Mar. 08	1530	.63	2,380	10.5
28	1130	.18	3,120	20.5
Apr. 10	1200	-.02	4,300	18.0
26	1030	.58	4,680	19.0
May 12	1730	.18	5,850	24.5
30	1330	-.12	6,500	30.5
June 11	0800	-.40	10,500	22.0
July 09	1330	.34	2,590	31.0
Aug. 02	1500	.78	2,850	27.0
23	1145	.80	2,260	24.5
Sept. 11	1300	.61	4,500	25.0
24	1400	.26	2,320	22.5
October 1991-May 1992				
Oct. 09	0900	1.39	2,480	15.5
23	1330	.41	3,850	17.5
Nov. 15	1530	.74	8,060	14.0
Dec. 03	1000	.14	7,410	19.5
23	1300	-.14	11,000	9.0
Jan. 09	1100	1.09	2,150	8.5
22	1415	.18	3,000	8.5
Feb. 05	1530	.36	6,340	10.5
20	1430	.37	1,890	15.0
Mar. 04	1030	.20	5,330	14.5
17	1130	.11	4,780	11.5
31	1715	.29	3,560	14.5
Apr. 16	1530	.20	5,060	22.0
May 01	1200	.27	5,460	19.5

Table 31.--*Biweekly water-quality field measurements and sample analyses at site B2, October 1990-April 1992*

LOCATION.--Lat 35°17'20", long 76°41'45"; Beaufort County, on right bank of agricultural drainage canal about 150 ft downstream from flashboard riser; 0.2 mi south of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455143.

DRAINAGE AREA.--Approximately 47 acres (0.074 mi^2).

PERIOD OF RECORD.--November 1988 through April 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus; <, less than. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Time	Water level (feet above sea level)	Streamflow, instantaneous (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature of water (°C)	Dissolved oxygen (mg/L)	Dissolved oxygen (percent saturation)
Water year 1991								
Oct. 18	1200	1.12	0.00	15,300	7.5	23.5	3.4	42
Nov. 14	1430	1.42	.17	358	9.1	14.0	14.9	143
29	1600	1.38	.04	617	7.4	15.0	14.7	146
Dec. 12	1330	1.39	.06	368	8.9	12.0	15.6	144
Jan. 03	1530	1.48	.31	317	7.1	12.0	11.9	109
18	1130	1.48	.37	282	7.2	10.0	12.0	106
Feb. 07	1200	1.46	.20	324	6.8	12.5	10.4	98
22	1400	1.34	.03	435	7.8	14.0	13.6	132
Mar. 07	1630	1.54	.37	247	7.0	18.0	--	--
27	1330	1.26	.04	678	8.2	23.5	15.5	183
Apr. 10	0730	1.30	.04	500	7.0	18.5	1.7	18
May 10	1200	1.15	.01	367	--	22.5	6.3	72
31	1130	1.22	.02	569	6.6	26.0	1.7	22
June 11	1300	1.16	.02	309	8.1	25.0	10.8	131
July 09	0815	1.15	.01	330	7.1	23.0	2.2	26
Aug. 02	0700	1.29	.07	472	6.9	24.5	4.8	58
22	1500	1.37	.04	156	6.7	23.5	6.7	79
Sept. 10	1430	1.24	--	148	7.2	28.0	8.1	103
25	1400	0.93	--	6,770	8.6	25.5	15.1	191
October 1991-April 1992								
Oct. 08	1200	1.30	--	216	7.3	15.0	7.4	73
23	0945	1.22	0.03	252	7.4	15.5	6.5	65
Nov. 15	0930	1.35	.09	342	7.4	10.5	5.6	50
Dec. 02	1400	1.18	.02	353	7.9	21.0	6.8	76
24	0845	1.08	.00	422	8.1	10.5	8.0	72
Jan. 08	1200	1.67	1.4	222	7.4	7.0	7.4	60
23	1030	--	.04	296	8.4	10.0	10.4	93
Feb. 06	1030	1.85	1.7	209	8.0	8.0	10.6	90
21	0945	1.44	.40	207	8.1	9.5	10.4	90
Mar. 03	1500	1.34	.09	231	7.6	19.0	--	--
18	1000	1.23	.03	340	8.1	14.5	13.2	129
Apr. 01	1030	0.47	.31	235	7.4	13.0	8.6	82
17	1050	1.19	.02	419	8.5	21.0	16.2	181
30	1600	1.31	.02	2,050	8.3	20.0	17.1	190

Table 31.--*Biweekly water-quality field measurements and sample analyses at site B2, October 1990-April 1992*--Continued

LOCATION.--Lat 35°17'20", long 76°41'45"; Beaufort County, on right bank of agricultural drainage canal about 150 ft downstream from flashboard riser; 0.2 mi south of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455143.

DRAINAGE AREA.--Approximately 47 acres (0.074 mi^2).

PERIOD OF RECORD.--November 1988 through April 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus; <, less than. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Total nitrogen, $NO_2 + NO_3$ (mg/L as N)	Total nitrogen, ammonia (mg/L as N)	Total nitrogen, organic (mg/L as N)	Total nitrogen, ammonia + organic (mg/L as N)	Total phosphorus (mg/L as P)	Total phosphorus, ortho (mg/L as P)	Suspended sediment (mg/L)
Water year 1991							
Oct. 18	<0.10	0.16	1.7	1.9	0.16	0.10	--
Nov. 14	6.10	.06	.84	.90	.02	.01	1
29	0.20	.07	1.4	1.5	.26	.17	141
Dec. 12	4.60	.02	.48	.50	.03	.01	2
Jan. 03	3.40	.05	.75	.80	.04	.02	14
18	6.60	.03	.67	.70	.03	.02	8
Feb. 07	1.70	.03	.87	.90	.06	.02	11
22	<.10	.06	.54	.60	.02	.02	7
Mar. 07	3.20	.02	.68	.70	.06	.04	11
27	.05	.08	1.1	1.2	.05	.01	9
Apr. 10	<.05	.13	1.1	1.2	.17	.12	12
May 10	<.05	.06	1.2	1.3	.18	.11	8
31	<.05	.05	2.0	2.0	.50	.28	54
June 11	<.05	.05	1.0	1.1	.15	.05	--
July 09	<.05	.47	1.7	2.2	.54	.41	--
Aug. 02	2.70	.24	.96	1.2	.13	.08	11
22	.81	.06	.94	1.0	.13	.06	15
Sept. 10	<.05	.03	1.8	1.8	.27	.11	24
25	<.05	.06	7.7	7.8	1.10	.22	150
October 1991-April 1992							
Oct. 08	0.99	0.06	0.94	1.0	0.12	0.07	14
23	.53	.07	.53	.60	.09	.04	20
Nov. 15	1.10	.09	.81	.90	.16	.09	15
Dec. 02	<.05	.02	.88	.90	.12	.05	--
24	<.05	<.01	--	1.0	.13	.02	48
Jan. 08	2.40	.05	.75	.80	.07	.04	16
23	.31	.04	.46	.50	.05	.02	12
Feb. 06	.17	.03	.37	.40	.02	.02	10
21	<.05	.02	.58	.60	.08	.01	19
Mar. 03	<.05	.02	.48	.50	.05	.03	21
18	.16	.10	.40	.50	.03	.02	11
Apr. 01	.20	.06	.54	.60	.02	.02	22
17	<.05	.03	1.3	1.3	.18	.07	19
30	<.05	.11	1.5	1.6	.28	.12	31

Table 32.--*Biweekly water-quality field measurements at site B2A, May 1991-April 1992*

LOCATION.--Lat 35°17'23", long 76°41'46"; Beaufort County, on right bank of agricultural drainage canal about 15 ft upstream of flashboard riser; 0.2 mi south of State Highway 33, 5 mi east of Aurora. Owner, U.S. Geological Survey (USGS); Hydrologic Unit 03020104; USGS downstream order identification number 0208455143.

DRAINAGE AREA.--Approximately 47 acres (0.074 mi^2).

PERIOD OF RECORD.--May 1991 through April 1992.

REMARKS.--ft, foot; mi mile; mi^2, square mile; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); --, no data.

Date	Time	Water level (feet above sea level)	Specific conductance (µS/cm)	Temperature of water (°C)
May 1991-April 1992				
May 10	1200	--	219	24.0
31	1130	3.60	550	26.5
June 11	1300	3.34	209	26.5
July 09	0815	2.49	200	25.0
Aug. 02	0700	2.56	347	25.0
22	1500	2.57	230	25.0
Sept. 10	1430	2.52	231	28.0
25	1400	1.95	663	25.5
Oct. 08	1200	2.55	248	15.0
23	0945	2.55	181	15.5
Nov. 15	0930	2.21	304	10.5
Dec. 02	1400	2.23	278	21.0
24	0845	1.08	311	10.5
Jan. 08	1200	2.62	244	7.0
23	1030	2.58	296	10.0
Feb. 06	1030	2.60	184	8.0
21	0945	--	198	9.5
Mar. 03	1500	2.57	216	19.0
18	1000	2.57	310	14.5
Apr. 01	1030	2.61	179	13.0
17	1050	2.56	279	21.0
30	1600	2.53	144	20.0

Table 33.--*Biweekly water-quality field measurements and sample analyses at site B3, October 1990-May 1992*

LOCATION.--Lat 35°17'10", long 76°41'50"; Beaufort County, on left bank of agricultural drainage canal 600 ft downstream from flashboard riser; 0.2 mi south of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455141.

DRAINAGE AREA.--Approximately 68 acres (0.107 mi^2).

PERIOD OF RECORD.--November 1988 through May 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus; <, less than. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Time	Water level (feet above sea level)	Streamflow, instantaneous (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature of water (°C)	Dissolved oxygen (mg/L)	Dissolved oxygen (percent saturation)
Water year 1991								
Oct. 18	1300	0.68	0.05	13,700	7.1	20.5	2.2	26
26	1300	2.38	--	306	6.3	12.0	9.0	85
Nov. 16	1100	.72	.16	718	7.8	8.5	11.1	94
Dec. 12	1500	.78	.18	518	7.7	9.0	16.8	145
Jan. 04	1630	1.21	.33	498	7.0	10.0	14.4	126
18	1000	.85	.13	539	7.8	6.0	10.0	80
Feb. 07	1500	.97	.35	367	7.2	13.5	8.8	85
22	1500	1.71	.17	267	8.4	14.0	14.6	142
Mar. 07	1330	.94	.08	402	6.8	19.5	--	--
27	1445	1.80	.36	546	7.3	24.0	11.3	134
Apr. 10	0830	.71	.00	488	5.6	18.5	2.7	29
May 10	1530	.72	.27	568	--	23.0	5.1	--
31	0930	.50	.07	771	7.1	22.5	3.7	43
June 11	1200	.62	.00	1,160	7.3	22.0	4.3	49
July 09	0930	.85	.07	350	7.1	24.0	1.5	18
Aug. 02	0800	1.16	.52	336	7.2	26.5	1.5	19
22	1200	.98	.42	483	7.9	23.0	8.3	97
Sept. 10	1630	1.38	.00	6,100	6.6	25.0	1.5	18
25	1200	.77	.00	12,200	7.2	22.0	1.6	19
October 1991-May 1992								
Oct. 08	1300	1.16	0.00	542	7.7	14.0	8.1	78
23	1030	.84	.00	441	7.4	14.0	7.7	74
Nov. 15	1030	1.09	.10	958	7.3	10.5	5.7	51
Dec. 02	1530	.65	.00	642	7.9	20.5	9.2	102
24	0935	.58	.00	666	7.7	9.0	7.4	65
Jan. 08	1330	1.81	.00	411	6.8	5.5	7.4	58
23	1130	.75	.00	350	7.5	9.5	8.7	77
Feb. 06	1130	1.84	.00	785	7.7	7.0	8.7	73
21	1045	.76	.00	323	7.8	7.0	12.4	101
Mar. 03	1200	.69	.10	341	5.7	15.0	11.2	111
18	0900	.61	.00	349	7.9	9.5	5.4	47
Apr. 01	1145	.87	.16	272	8.0	18.0	13.2	140
17	1200	.53	.00	840	7.4	22.0	5.2	59
May 01	1730	1.29	.00	5,830	7.0	17.0	4.2	44

Table 33.--*Biweekly water-quality field measurements and sample analyses at site B3, October 1990-May 1992*--Continued

LOCATION.--Lat 35°17'10", long 76°41'50"; Beaufort County, on left bank of agricultural drainage canal 600 ft downstream from flashboard riser; 0.2 mi south of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455141.

DRAINAGE AREA.--Approximately 68 acres (0.107 mi^2).

PERIOD OF RECORD.--November 1988 through May 1992.

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus; <, less than. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Total nitrogen, $NO_2 + NO_3$ (mg/L as N)	Total nitrogen, ammonia (mg/L as N)	Total nitrogen, organic (mg/L as N)	Total nitrogen, ammonia + organic (mg/L as N)	Total phosphorus (mg/L as P)	Total phosphorus, ortho (mg/L as P)	Suspended sediment (mg/L)
Water year 1991							
Oct. 18	<0.10	0.12	2.1	2.2	0.39	0.28	13
26	6.30	.09	2.0	2.1	.36	.28	34
Nov. 16	3.60	.10	.80	.90	.01	<.01	4
Dec. 12	3.60	.03	.37	.40	.03	<.01	1
Jan. 04	3.10	.05	.75	.80	.02	.02	7
18	5.90	.06	.64	.70	.01	.01	6
Feb. 07	.70	.05	1.2	1.3	.21	.09	240
22	.70	.03	.47	.50	.03	.03	86
Mar. 07	3.20	.02	.58	.60	.06	.03	9
27	.68	.77	.83	1.6	.08	.04	26
Apr. 10	.07	.41	1.4	1.8	.19	.09	41
May 10	.06	.34	1.2	1.5	.16	.09	13
31	<.05	.07	2.0	2.1	.41	.18	11
June 11	<.05	.06	2.5	2.6	.27	.09	--
July 09	<.05	.26	.94	1.2	.18	.12	--
Aug. 02	3.30	.16	1.1	1.3	.08	.01	29
22	1.40	.08	.82	.90	.09	.03	38
Sept. 10	<.05	.24	1.2	1.4	.16	.04	19
25	<.05	.20	1.8	2.0	.21	.06	--
October 1991-May 1992							
Oct. 08	<0.05	0.09	0.51	0.60	0.13	0.06	16
23	.33	.07	.43	.50	.05	.03	7
Nov. 15	.08	.34	1.1	1.4	.03	<.01	23
Dec. 02	<.05	.02	.98	1.0	.21	.10	4
24	<.05	.02	.68	.70	.08	.03	4
Jan. 08	2.30	.05	.45	.50	.05	.03	13
23	.80	.03	.37	.40	.03	<.01	2
Feb. 06	.97	.03	.47	.50	.03	.01	8
21	.92	.03	.37	.40	.03	<.01	3
Mar. 03	1.00	.18	.82	1.0	.03	.01	2
18	<.05	.06	.74	.80	.09	.04	2
Apr. 01	.98	.05	.35	.40	<.01	<.01	157
17	.07	.65	1.2	1.8	.20	.11	18
May 01	.12	.28	.62	.90	.08	.05	13

Table 34.--*Biweekly water-quality field measurements at site B3A, May 1991-May 1992*

LOCATION.--Lat 35°17'08", long 76°41'50"; Beaufort County, on left bank of agricultural drainage canal 45 ft upstream of flashboard riser; 0.2 mi south of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455141.

DRAINAGE AREA.--Approximately 68 acres (0.107 mi^2).

PERIOD OF RECORD.--May 1991 through May 1992.

REMARKS.--ft, foot; mi mile; mi^2, square mile; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C).

Date	Time	Water level (feet above sea level)	Specific conductance (µS/cm)	Temperature of water (°C)
		May 1991-May 1992		
May 10	1530	1.75	295	24.0
31	0930	3.08	250	27.5
June 11	1200	.64	299	26.0
July 09	0930	.88	275	28.5
Aug. 02	0800	1.05	280	27.0
22	1200	1.04	190	28.0
Sept. 10	1630	1.41	4,950	25.0
25	1200	.78	9,600	22.0
Oct. 08	1300	1.37	440	14.0
23	1030	.87	300	14.0
Nov. 15	1030	1.09	432	10.5
Dec. 02	1530	.87	426	20.5
24	0935	.88	333	9.0
Jan. 08	1330	1.83	216	5.5
23	1130	1.08	250	9.5
Feb. 06	1130	1.86	221	7.0
21	1045	1.31	219	7.0
Mar. 03	1200	1.15	248	15.0
18	0900	1.01	200	9.5
Apr. 01	1145	.98	207	18.0
17	1200	.87	180	22.0
May 01	1730	1.28	1,530	17.0

Table 35.--*Biweekly water-quality field measurements and sample analyses at site C1, October 1990-April 1992*

LOCATION.--Lat 35°17'13", long 76°41'13"; Beaufort County, on right bank of Campbell Creek, which receives inflow from sites B2 and B3; on State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455145.

DRAINAGE AREA.--Approximately 5,120 acres (8 mi^2).

PERIOD OF RECORD.--April 1989 through April 1992.

REMARKS.--mi, mile; mi^2, square mile; ppt, parts per thousand; °C, Celsius; mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus; <, less than. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Time	Water level (feet above sea level)	Salinity (ppt)	pH (standard units)	Temperature of water (°C)	Dissolved oxygen (mg/L)	Dissolved oxygen (percent saturation)
Water year 1991							
Oct. 18	1000	0.63	10.1	6.4	21.0	2.3	27
26	1100	.12	5.0	6.8	13.5	--	--
Nov. 14	1400	1.06	12.2	9.1	14.5	13.5	141
29	1400	.12	14.1	8.9	14.5	4.9	52
Dec. 13	1645	.26	15.2	6.9	13.5	7.9	83
Jan. 03	1330	.78	13.1	8.1	12.5	4.3	43
18	1315	.77	10.7	7.1	11.0	6.7	65
Feb. 07	1630	.18	5.4	6.5	11.5	7.4	70
22	1300	.18	10.9	7.8	12.0	--	--
Mar. 07	1700	.27	10.1	7.0	14.0	--	--
27	1600	.47	7.8	8.0	18.5	7.9	88
Apr. 10	0930	--	4.5	7.4	17.5	4.0	43
May 10	1800	.49	3.2	--	22.0	6.4	74
31	1230	.26	7.0	6.9	28.0	5.0	67
June 11	1500	.66	8.3	6.8	23.5	4.9	60
July 09	1045	.88	9.5	7.5	34.0	1.4	21
Aug. 02	1000	--	12.8	6.0	--	6.0	--
22	1600	1.02	7.5	6.9	25.0	3.7	47
Sept. 11	1600	1.04	10.2	7.0	26.0	4.7	62
25	1430	1.12	9.9	7.1	24.0	3.5	45
October 1991-April 1992							
Oct. 08	1500	1.43	10.8	7.8	20.0	4.8	56
22	1545	1.18	11.5	6.8	21.0	--	--
Nov. 14	1600	1.18	10.7	8.7	11.5	6.9	67
Dec. 02	1300	.42	14.3	8.3	16.0	7.4	82
23	1620	.14	15.6	7.7	9.0	10.9	104
Jan. 08	1505	1.71	8.3	7.4	9.0	5.3	48
23	0900	.58	9.3	8.3	9.0	6.4	59
Feb. 06	0900	1.66	--	8.9	--	10.6	--
21	0900	.68	--	7.3	--	3.5	--
Mar. 03	1600	.53	9.1	7.7	20.5	6.6	--
18	1100	.23	10.4	7.3	--	5.9	--
Apr. 01	0915	.68	8.4	7.8	13.0	6.1	61
17	0945	.23	9.4	7.5	15.0	2.2	23
30	1430	1.33	11.4	6.1	16.0	6.0	65

Table 35.--*Biweekly water-quality field measurements and sample analyses at site C1, October 1990-April 1992*--Continued

LOCATION.--Lat 35°17'13", long 76°41'13"; Beaufort County, on right bank of Campbell Creek, which receives inflow from sites B2 and B3; on State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455145.

DRAINAGE AREA.--Approximately 5,120 acres (8 mi^2).

PERIOD OF RECORD.--April 1989 through April 1992.

REMARKS.--mi, mile; mi^2, square mile; ppt, parts per thousand; °C, Celsius; mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus; <, less than. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Total nitrogen, $NO_2 + NO_3$ (mg/L as N)	Total nitrogen, ammonia (mg/L as N)	Total nitrogen, organic (mg/L as N)	Total nitrogen, ammonia + organic (mg/L as N)	Total phosphorus (mg/L as P)	Total phosphorus, ortho (mg/L as P)	Suspended sediment (mg/L)
Water year 1991							
Oct. 18	<0.10	0.06	0.64	0.70	0.03	<0.01	9
26	1.20	.08	1.0	1.1	.10	.10	39
Nov. 14	.20	.10	.20	.30	.04	.02	4
29	<.10	.08	.72	.80	.04	.02	4
Dec. 13	<.10	.04	.26	.30	.04	.02	25
Jan. 03	<.10	.08	.52	.60	.02	<.01	7
18	.40	.09	.31	.40	.02	.02	7
Feb. 07	.60	.05	.85	.90	.03	.02	12
22	<.10	.05	.35	.40	.01	.01	14
Mar. 07	.48	.06	.44	.50	.03	.02	--
27	<.05	.03	.77	.80	.04	.01	4
Apr. 10	.12	.08	1.5	1.6	.05	.02	2
May 10	.07	.12	1.1	1.2	.04	.02	5
31	<.05	.02	1.4	1.4	.06	<.01	--
June 11	<.05	.02	.98	1.0	.09	.01	--
July 09	<.05	<.01	--	.20	.20	.14	--
Aug. 02	<.05	.05	.65	.70	.28	.21	8
22	.10	.03	.97	1.0	.22	.12	7
Sept. 11	<.05	.06	.94	1.0	.18	.07	9
25	<.05	.06	.64	.70	.08	.04	--
October 1991-April 1992							
Oct. 08	0.05	0.08	0.52	0.60	0.09	0.05	6
22	<.05	.13	.17	.30	.04	.06	12
Nov. 14	<.05	.06	.34	.40	.01	<.01	2
Dec. 02	<.05	.03	.87	.90	.16	.08	3
23	<.05	.11	.29	.40	.03	.02	6
Jan. 08	1.10	.09	.81	.90	.07	.02	13
23	.46	.07	.83	.90	.05	<.01	17
Feb. 06	<.05	.02	1.5	1.5	.12	.03	9
21	.05	.15	.75	.90	.07	<.01	9
Mar. 03	.09	.20	.50	.70	.07	.04	9
18	<.05	.06	.64	.70	.05	.02	17
Apr. 01	.17	.09	.71	.80	.04	<.01	8
17	<.05	.03	.67	.70	.07	.01	--
30	<.05	.04	--	<.20	<.01	.03	4

Table 36.--*Storm-event sample water-quality analyses at site H1, June 22 and September 26, 1991*

LOCATION.--Lat 35°26'44", long 76°22'25"; Hyde County, on left bank of agricultural drainage canal about 100 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458600.

DRAINAGE AREA.--Approximately 70 acres (0.109 mi^2).

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus; <, less than. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Time	Water level (feet above sea level)	Streamflow, instantaneous (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature of water (°C)	Dissolved oxygen (mg/L)	Dissolved oxygen (percent saturation)
			1991					
June 22	0800	0.90	--	2,680	--	--	--	--
22	1530	.84	--	1,670	6.1	26.5	6.1	--
22	1745	.97	--	2,910	--	--	--	--
22	2015	1.24	--	473	--	--	--	--
22	2030	1.23	--	525	--	--	--	--
22	2045	1.23	--	525	--	--	--	--
22	2100	1.23	--	546	--	--	--	--
Sept. 26	1200	.81	0.051	8,730	6.3	20.5	2.0	23

Date	Total nitrogen, $NO_2 + NO_3$ (mg/L as N)	Total nitrogen, ammonia (mg/L as N)	Total nitrogen, organic (mg/L as N)	Total nitrogen, ammonia + organic (mg/L as N)	Total phosphorus (mg/L as P)	Total phosphorus, ortho (mg/L as P)
			1991			
June 22	1.60	0.64	2.0	2.6	0.11	0.05
22	1.20	.44	1.7	2.1	.11	.04
22	1.00	.39	2.5	2.9	.11	.03
22	5.40	2.70	1.4	4.1	.35	.19
22	5.50	2.90	1.9	4.8	.35	.22
22	5.40	2.70	2.0	4.7	.26	.16
22	5.40	2.60	2.3	4.9	.29	.18
Sept. 26	<.05	.43	1.1	1.5	.12	.04

Table 37.--*Storm-event sample water-quality analyses at site H2, June 21-22 and September 26, 1991*

LOCATION.--Lat 35°26'57", long 76°22'37"; Hyde County, on right bank of agricultural drainage canal about 90 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458700.

DRAINAGE AREA.--Approximately 140 acres (0.219 mi^2).

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus. Negative streamflow values indicate tidally driven flow in an upstream direction. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Time	Water level (feet above sea level)	Streamflow, instantaneous (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature of water (°C)	Dissolved oxygen (mg/L)	Dissolved oxygen (percent saturation)
			1991					
June 21	2000	0.96	1.1	13,500	7.1	25.5	4.4	57
22	1230	.84	.42	7,150	7.4	28.0	8.4	110
22	1700	1.04	-.025	--	--	--	--	--
Sept. 26	1030	.84	.81	18,300	7.1	21.0	4.7	57

Date	Total nitrogen, $NO_2 + NO_3$ (mg/L as N)	Total nitrogen, ammonia (mg/L as N)	Total nitrogen, organic (mg/L as N)	Total nitrogen, ammonia + organic (mg/L as N)	Total phosphorus (mg/L as P)	Total phosphorus, ortho (mg/L as P)
			1991			
June 21	0.07	0.32	0.88	1.2	0.05	<0.01
22	.43	.43	1.7	2.1	.12	.03
22	.90	.60	1.5	2.1	.14	.04
Sept. 26	.07	.08	.62	.70	.03	.01

Table 38.--*Storm-event sample water-quality analyses at site H3, June 20-22 and September 26, 1991*

LOCATION.--Lat 35°27'01", long 76°22'49"; Hyde County, on left bank of agricultural drainage canal about 800 ft downstream from tide gate; 0.1 mi southwest of U.S. Highway 264, 5 mi northwest of Swanquarter; Hydrologic Unit 03020105; USGS downstream order identification number 0208458800.

DRAINAGE AREA.--Approximately 104 acres (0.162 mi^2).

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus; <, less than. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Time	Water level (feet above sea level)	Streamflow, instantaneous (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature of water (°C)	Dissolved oxygen (mg/L)	Dissolved oxygen (percent saturation)
			1991					
June 20	0800	1.53	1.4	13,400	--	--	--	--
21	2045	1.00	1.1	11,600	6.7	25.5	6.3	81
21	2100	1.00	1.2	11,700	--	--	--	--
22	1400	.77	1.8	6,540	6.7	27.5	7.5	98
22	1630	1.18	1.2	--	--	--	--	--
22	1645	1.06	1.2	--	--	--	--	--
22	1700	.87	1.1	6,070	--	--	--	--
Sept. 26	1130	.39	--	17,300	7.0	22.0	4.1	50

Date	Total nitrogen, $NO_2 + NO_3$ (mg/L as N)	Total nitrogen, ammonia (mg/L as N)	Total nitrogen, organic (mg/L as N)	Total nitrogen, ammonia + organic (mg/L as N)	Total phosphorus (mg/L as P)	Total phosphorus, ortho (mg/L as P)
			1991			
June 20	<0.05	0.05	0.95	1.0	0.03	<0.01
21	<.05	.06	1.5	1.6	.05	<.01
21	<.05	.14	1.3	1.4	.04	<.01
22	1.80	2.00	2.2	4.2	.06	<.01
22	1.50	1.60	2.3	3.9	.05	.01
22	<.05	.24	1.4	1.6	.03	<.01
22	1.50	1.60	2.0	3.6	.06	<.01
Sept. 26	<.05	.04	.36	.40	.02	<.01

Table 39.--*Storm-event sample water-quality analyses at site B2, October 26, 1990, and June 21-22, 1991*

LOCATION.--Lat 35°17'20", long 76°41'45"; Beaufort County, on left bank of agricultural drainage canal about 150 ft downstream from flashboard riser; 0.2 mi north of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455143.

DRAINAGE AREA.--Approximately 47 acres (0.074 mi^2).

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Time	Water level (feet above sea level)	Streamflow, instantaneous (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature of water (°C)	Dissolved oxygen (mg/L)	Dissolved oxygen (percent saturation)
1990								
Oct. 26	1100	2.61	3.7	--	--	--	--	--
26	1215	2.68	3.9	384	6.7	12.5	8.0	76
26	1400	2.63	3.6	--	--	--	--	--
26	1430	2.59	3.6	--	--	--	--	--
26	1500	2.55	3.5	--	--	--	--	--
26	1501	2.55	3.5	--	--	--	--	--
26	1730	2.36	3.1	--	--	--	--	--
1991								
June 21	2000	2.50	1.6	--	--	--	--	--
22	1315	1.91	1.1	--	--	--	--	--

Date	Total nitrogen, $NO_2 + NO_3$ (mg/L as N)	Total nitrogen, ammonia (mg/L as N)	Total nitrogen, organic (mg/L as N)	Total nitrogen, ammonia + organic (mg/L as N)	Total phosphorus (mg/L as P)	Total phosphorus, ortho (mg/L as P)	Suspended sediment (mg/L)
1990							
Oct. 26	0.20	0.16	0.94	1.1	0.28	0.21	83
26	5.10	.06	1.5	1.6	.42	.36	33
26	5.20	.06	1.4	1.5	.48	.37	48
26	13.0	.08	1.6	1.7	.39	.30	41
26	5.80	.05	1.4	1.4	.42	.32	--
26	6.20	.05	1.9	1.9	.35	.25	41
26	6.00	.05	1.5	1.5	.39	.28	--
1991							
June 21	5.50	0.25	1.3	1.6	0.14	0.06	--
22	4.90	.25	1.0	1.3	.11	.05	--

Table 40.--*Storm-event sample water-quality analyses at site B3, October 26, 1990, and June 19-22, 1991*

LOCATION.--Lat 35°17'10", long 76°41'50"; Beaufort County, on left bank of agricultural drainage canal about 600 ft downstream from flashboard riser; 0.2 mi south of State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455141.

DRAINAGE AREA.--Approximately 68 acres (0.106 mi^2).

REMARKS.--ft, foot; mi, mile; mi^2, square mile; ft^3/s, cubic foot per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius (°C); mg/L, milligram per liter; --, no data; N, nitrogen; P, phosphorus. Rounding may result in ammonia plus organic nitrogen concentrations that are not equal to the sum concentrations of the individual forms of nitrogen.

Date	Time	Water level (feet above sea level)	Streamflow, instantaneous (ft^3/s)	Specific conductance (µS/cm)	pH (standard units)	Temperature of water (°C)	Dissolved oxygen (mg/L)	Dissolved oxygen (percent saturation)
1990								
Oct. 26	1100	2.67	2.2	--	--	--	--	--
26	1300	2.38	2.0	306	6.3	12.0	9.0	85
26	1400	2.29	1.8	--	--	--	--	--
26	1500	2.11	1.7	--	--	--	--	--
26	1630	1.91	1.5	--	--	--	--	--
26	1631	1.91	1.5	--	--	--	--	--
26	1715	1.82	1.5	--	--	--	--	--
1991								
June 19	1745	3.05	1.9	596	--	--	--	--
20	0830	2.70	2.9	596	--	--	--	--
21	1945	1.36	.70	--	--	--	--	--
21	2000	1.37	.95	869	--	--	--	--
21	2015	1.37	1.2	869	--	--	--	--
22	1220	1.13	.40	--	--	--	--	--

Date	Total nitrogen, $NO_2 + NO_3$ (mg/L as N)	Total nitrogen, ammonia (mg/L as N)	Total nitrogen, organic (mg/L as N)	Total nitrogen, ammonia + organic (mg/L as N)	Total phosphorus (mg/L as P)	Total phosphorus, ortho (mg/L as P)	Suspended sediment (mg/L)
1990							
Oct. 26	4.00	0.21	2.2	2.4	0.51	0.45	17
26	6.30	.09	2.0	2.1	.36	.28	34
26	7.00	.09	1.6	1.7	.36	.27	--
26	7.90	.07	1.5	1.6	.33	.24	--
26	8.20	.05	1.4	1.4	.24	.20	--
26	7.90	.09	1.9	2.0	.31	.19	--
26	9.00	.05	1.5	1.6	.27	.18	--
1991							
June 19	1.90	0.12	1.8	1.9	0.24	0.07	--
20	3.10	.09	1.4	1.5	.09	.03	--
21	3.90	.12	.98	1.1	.07	.03	--
21	4.30	.11	1.5	1.6	.07	.03	--
21	4.00	.13	1.7	1.8	.14	.03	--
22	4.40	.13	1.1	1.2	.06	.03	--

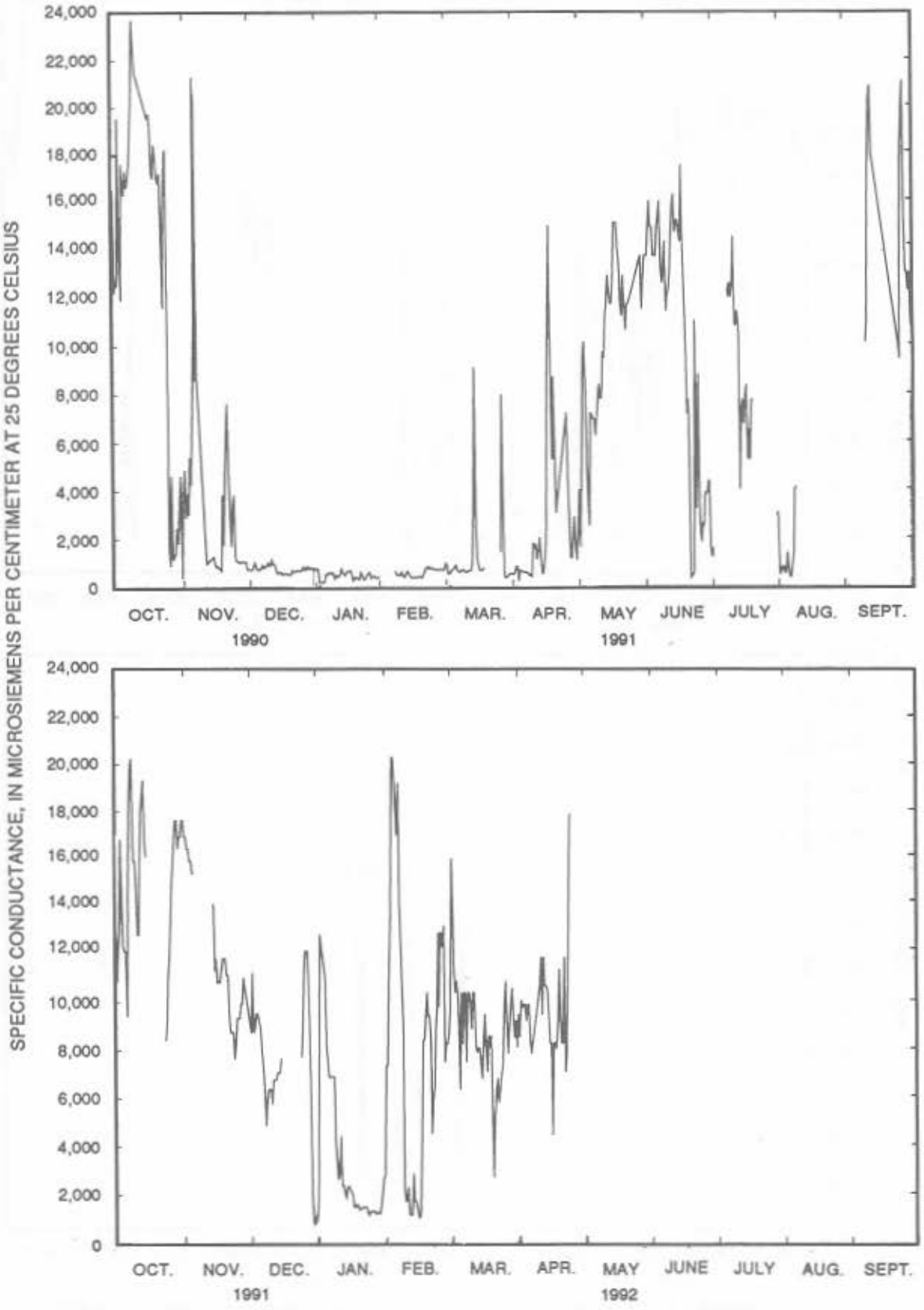


Figure 11.--Specific conductance for 14-hour composite samples at site H1.

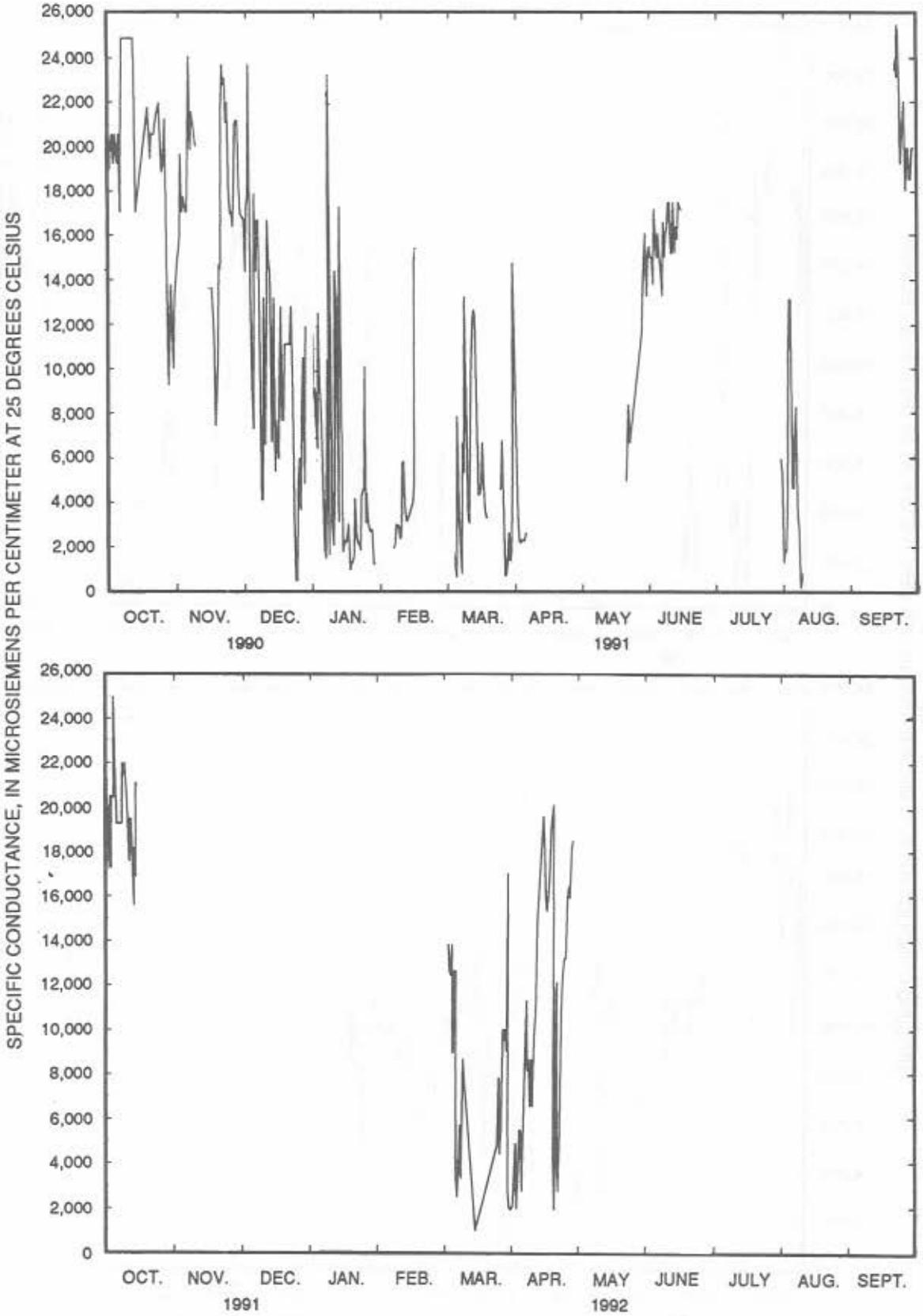


Figure 12.--Specific conductance for 14-hour composite samples at site H2.

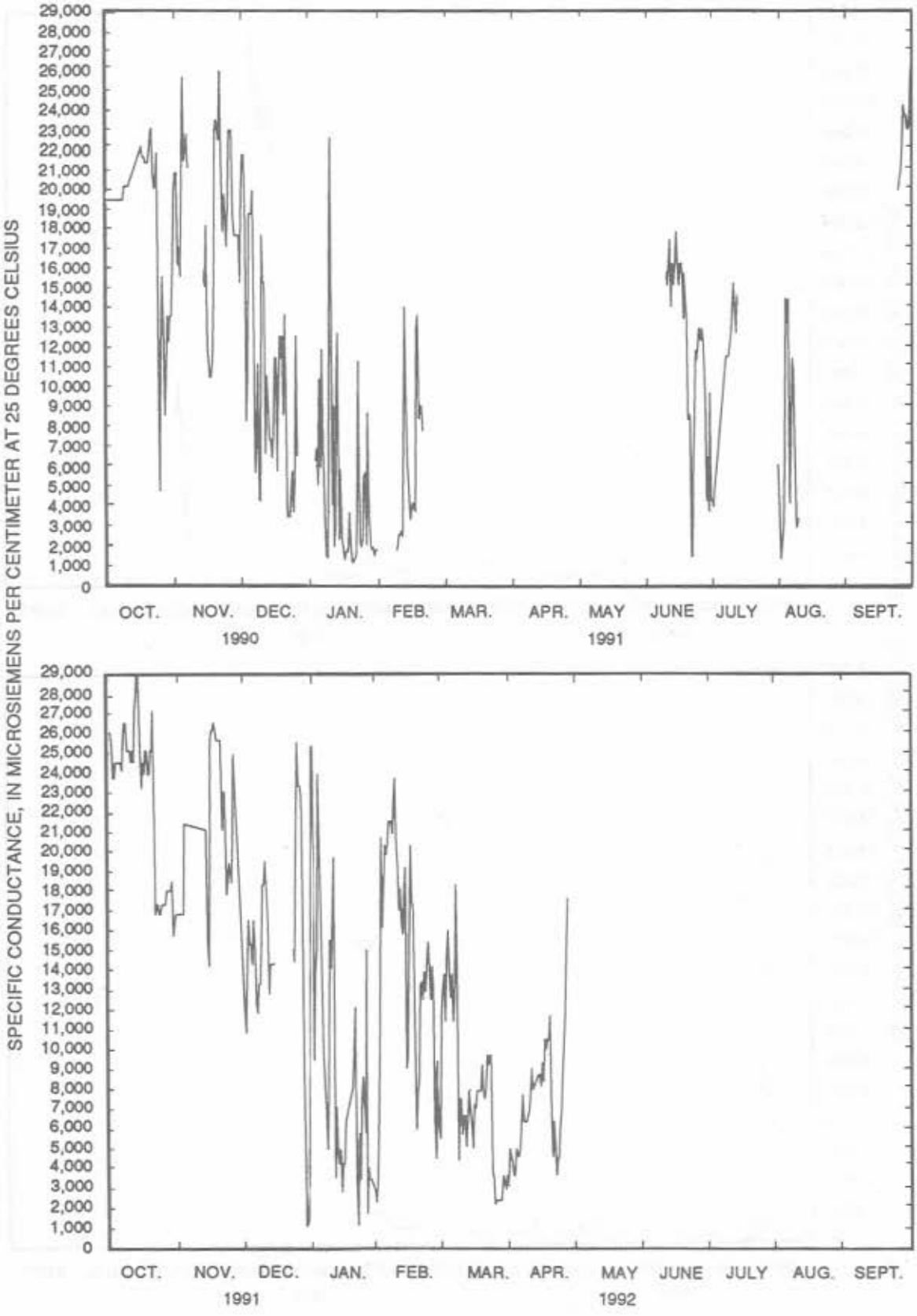


Figure 13.--Specific conductance for 14-hour composite samples at site H3.

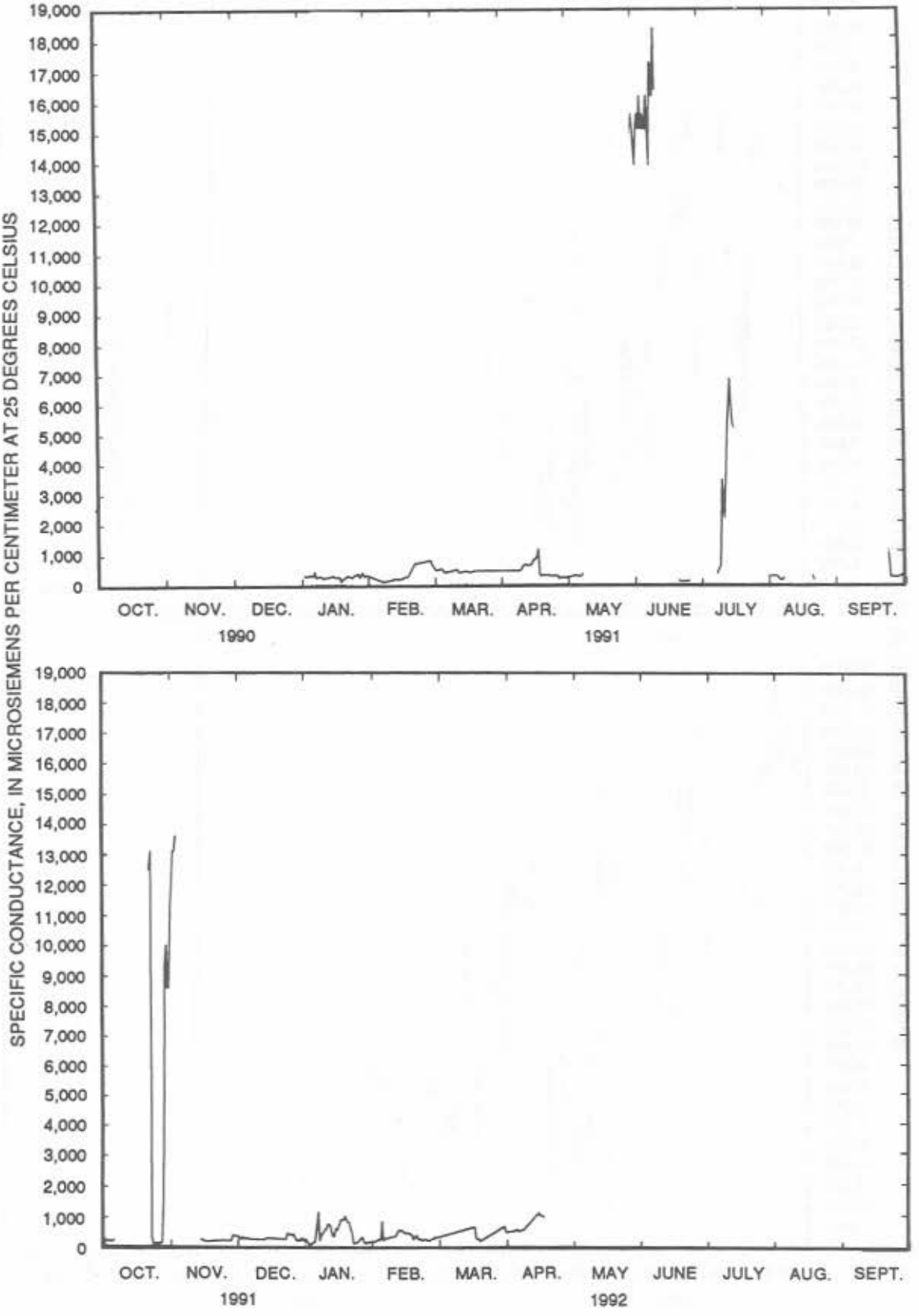


Figure 14.--Specific conductance for 14-hour composite samples at site B2.

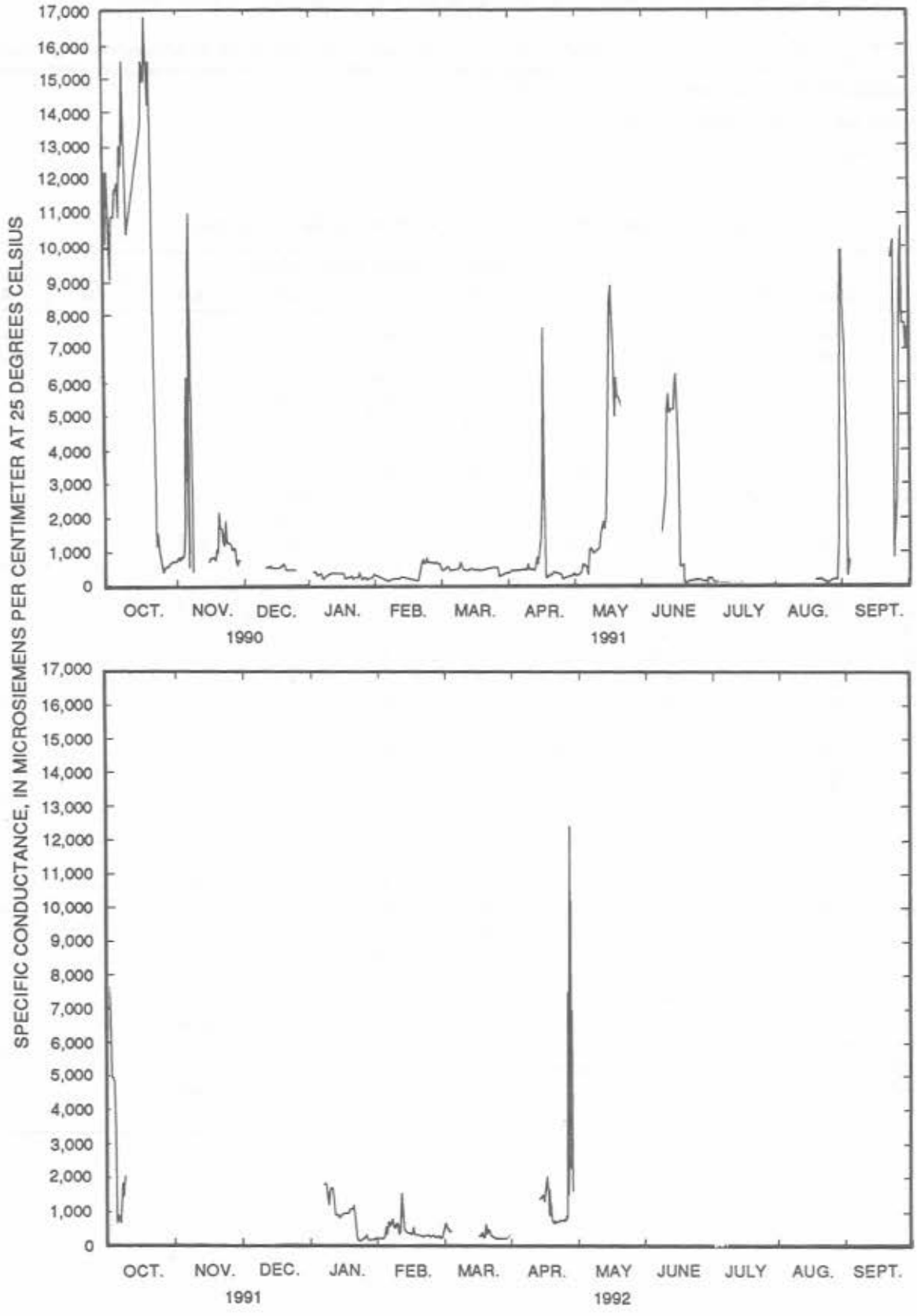


Figure 15.--Specific conductance for 14-hour composite samples at site B3.

Table 41.--*Vertical profiles of salinity at site C1, October 1990-April 1992*

LOCATION.--Lat 35°17'13", long 76°41'13"; Beaufort County, on right bank of Campbell Creek, which receives inflow from sites B2 and B3; on State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455145. Measurements were made at middle of channel.

DRAINAGE AREA.--Approximately 5,120 acres (8 mi^2).

REMARKS.--mi, mile; mi^2, square mile; --, no data.

SALINITY, PARTS PER THOUSAND, OCTOBER 1990-APRIL 1992

		Depth (feet below water surface)								
Date	**Time**	**0.1**	**1.0**	**2.0**	**3.0**	**4.0**	**5.0**	**6.0**	**7.0**	**8.0**
10-18-90	1000	10.2	10.2	10.3	10.5	10.7	--	--	--	--
10-26-90	1100	3.5	4.2	4.5	4.7	4.8	4.9	--	--	--
11-14-90	1330	11.4	12.0	12.6	13.3	13.9	14.1	--	--	--
11-29-90	1400	13.4	13.6	14.1	14.3	14.4	14.6	--	--	--
12-13-90	1700	14.3	16.0	16.4	16.5	16.5	--	--	--	--
01-03-91	1330	1.4	14.9	15.6	15.9	15.9	15.9	--	--	--
01-18-91	1330	2.4	11.7	13.3	13.3	13.3	13.3	--	--	--
02-07-91	1630	.6	.8	2.1	11.6	12.0	12.0	--	--	--
02-22-91	1300	3.2	10.2	12.2	12.4	12.8	12.8	12.8	--	--
03-07-91	1700	1.5	2.4	10.8	10.9	11.1	--	--	--	--
03-27-91	1600	4.1	7.1	8.6	8.7	8.7	8.7	8.7	--	--
04-10-91	0930	.9	2.1	8.2	10.0	10.5	--	--	--	--
05-10-91	1800	.7	.8	4.1	6.2	7.2	--	--	--	--
05-31-91	1230	4.5	8.1	8.1	8.3	8.0	8.2	--	--	--
06-11-91	1500	7.4	8.5	8.5	8.8	8.8	--	--	--	--
07-09-91	1100	10.5	10.5	10.9	11.0	11.0	--	--	--	--
08-22-91	1600	.5	1.5	9.9	11.3	11.4	11.5	--	--	--
09-25-91	1430	11.5	11.6	12.1	12.1	12.4	--	--	--	--
11-14-91	1600	8.9	11.6	12.2	12.4	12.4	12.4	--	--	--
12-02-91	1300	14.7	15.1	15.7	15.7	15.7	--	--	--	--
01-23-92	0900	--	12.2	12.9	13.3	13.5	13.5	13.5	--	--
02-06-92	0900	--	10.5	10.6	10.9	10.9	10.9	--	--	--
02-12-92	1300	9.8	10.6	10.3	10.3	10.2	10.3	10.3	--	--
02-21-92	0900	--	11.5	12.0	12.2	12.4	13.1	--	--	--
03-03-92	1600	3.0	7.3	10.7	11.4	11.4	--	--	--	--
03-18-92	1100	5.2	11.2	12.4	12.7	13.0	13.0	13.0	--	--
04-01-92	0930	.8	10.5	12.0	12.2	12.2	--	--	--	--
04-17-92	1000	5.5	10.4	10.5	10.6	--	--	--	--	--
04-30-92	1430	8.8	9.3	9.4	9.4	9.5	9.5	9.5	--	--

Table 42.--*Vertical profiles of salinity at site C2, November 1990-April 1992*

LOCATION.--Lat 35°17'30", long 76°40'33"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3; 0.75 mi downstream from site C1 at State Highway 33 bridge, 6 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455165. Measurements were made within 3 ft of sensor housing.

DRAINAGE AREA.--Approximately 6,342 acres (9.9 mi^2).

REMARKS.--mi, mile; ft, foot, mi^2, square mile; --, no data.

SALINITY, PARTS PER THOUSAND, NOVEMBER 1990-APRIL 1992

		Depth (feet below water surface)								
Date	**Time**	**0.1**	**1.0**	**2.0**	**3.0**	**4.0**	**5.0**	**6.0**	**7.0**	**8.0**
11-02-90	0530	13.2	13.2	13.7	13.5	13.9	14.5	--	--	--
12-13-90	1600	14.8	14.8	15.5	15.5	15.9	--	--	--	--
01-16-91	1300	4.7	5.7	9.5	11.3	12.6	13.4	--	--	--
01-18-91	1445	.7	12.0	13.0	13.9	13.7	--	--	--	--
02-19-91	1030	3.0	5.5	8.6	11.3	--	--	--	--	--
02-22-91	1100	4.0	9.6	12.8	13.0	13.5	13.4	--	--	--
03-26-91	1030	9.0	8.8	8.8	8.7	9.1	--	--	--	--
03-27-91	1130	8.1	8.1	8.1	8.1	8.9	9.1	--	--	--
04-23-91	0800	1.5	7.6	9.3	9.8	10.0	10.0	--	--	--
04-29-91	1030	1.0	2.0	1.6	8.2	8.8	8.8	8.8	--	--
05-29-91	1030	8.6	8.1	8.1	8.2	8.6	8.7	--	--	--
07-08-91	1230	7.5	10.8	10.8	10.8	--	--	--	--	--
08-12-91	1145	9.8	9.8	9.8	10.1	10.1	10.1	--	--	--
08-15-91	0930	5.6	8.6	9.8	9.8	9.8	--	--	--	--
09-17-91	1530	--	9.4	9.8	9.8	9.9	9.9	10.0	--	--
09-25-91	0930	10.9	11.2	11.2	11.2	11.5	--	--	--	--
10-25-91	1315	10.3	12.0	12.3	12.7	12.8	12.8	--	--	--
11-27-91	1200	--	--	15.9	15.9	15.9	15.9	15.9	--	--
12-03-91	1230	16.0	16.1	16.1	16.1	15.9	--	--	--	--
01-22-92	1400	3.2	10.2	12.3	12.6	--	--	--	--	--
01-23-92	1200	3.0	3.1	4.3	8.1	--	--	--	--	--
02-12-92	1300	9.8	10.3	10.3	10.3	10.2	10.3	10.6	--	--
02-14-92	1000	8.1	10.4	10.8	10.8	10.6	--	--	--	--
03-11-92	1000	9.5	9.4	9.3	9.6	--	--	--	--	--
03-13-92	1045	10.2	10.3	10.3	10.3	10.3	10.3	--	--	--
04-07-92	1315	8.6	9.0	9.2	10.9	11.0	11.0	--	--	--
04-10-92	0930	7.6	11.3	10.6	10.6	--	--	--	--	--

Table 43.--*Vertical profiles of salinity at site C3, November 1990-April 1992*

LOCATION.--Lat 35°17'25", long 76°39'48"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3; 0.75 mi downstream from site C2, 6.5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455175. Measurements were made within 3 ft of sensor housing.

DRAINAGE AREA.--Approximately 7,501 acres (11.7 mi^2).

REMARKS.--mi, mile; ft, foot; mi^2, square mile; --, no data.

SALINITY, PARTS PER THOUSAND, NOVEMBER 1990-APRIL 1992

		Depth (feet below water surface)								
Date	Time	0.1	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
11-14-90	1130	13.4	13.4	13.2	13.4	14.4	14.9	--	--	--
12-13-90	1600	14.4	14.4	14.7	15.9	16.3	--	--	--	--
01-16-91	1300	8.6	8.6	8.6	11.8	13.2	13.5	13.9	--	--
01-18-91	1500	8.6	11.3	11.8	14.7	14.7	14.7	14.7	14.7	--
02-19-91	1030	8.5	9.2	10.7	11.5	12.1	12.2	--	--	--
02-22-91	1100	4.7	9.7	11.3	12.3	12.6	13.0	13.4	--	--
03-26-91	1030	9.2	9.1	9.1	9.3	9.3	9.3	9.3	9.3	--
03-27-91	1100	10.2	10.3	10.3	10.3	10.3	10.3	10.3	--	--
04-23-91	0830	6.5	7.4	7.5	8.1	10.2	10.6	--	--	--
04-29-91	1045	2.8	4.6	7.0	8.3	8.8	8.8	8.8	--	--
05-29-91	1030	8.6	8.6	8.6	8.6	8.6	8.6	--	--	--
07-08-91	1245	8.9	9.0	10.9	11.1	11.3	11.3	--	--	--
08-12-91	1215	10.7	10.7	10.7	10.7	10.7	10.7	10.7	--	--
11-27-91	1215	17.1	17.0	17.0	17.0	17.1	17.1	17.6	--	--
03-13-92	1030	8.1	8.1	8.1	8.2	9.1	10.7	--	--	--
04-07-92	1300	10.2	10.3	10.3	10.3	10.5	11.0	11.4	--	--
04-10-92	0930	9.5	9.5	10.2	11.1	11.1	11.4	11.4	--	--

Table 44.--*Vertical profiles of salinity at site C4, November 1990-April 1992*

LOCATION.--Lat 35°16'55", long 76°39'12"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3; 1.0 mi downstream from site C3, 7 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455195. Measurements were made within 3 ft of sensor housing.

DRAINAGE AREA.--Approximately 9,306 acres (14.5 mi^2).

REMARKS.--mi, mile; ft, foot; mi^2, square mile; --, no data.

SALINITY, PARTS PER THOUSAND, NOVEMBER 1990-APRIL 1992

		Depth (feet below water surface)								
Date	Time	0.1	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
11-02-90	1130	13.3	13.3	13.3	13.6	13.7	14.0	14.6	--	--
12-13-90	1530	15.8	15.8	15.8	15.8	15.9	15.9	16.3	16.3	--
01-16-91	1630	11.8	11.8	11.9	11.9	13.3	14.5	14.6	--	--
01-18-91	1500	10.5	10.5	11.5	11.5	12.3	12.3	12.3	12.3	--
02-19-91	1030	8.5	8.8	12.1	12.1	13.1	13.5	13.8	--	--
02-22-91	1130	10.2	10.7	13.3	13.6	14.0	13.9	14.5	--	--
03-26-91	1030	9.4	9.4	9.4	9.4	9.4	9.5	9.6	--	--
03-27-91	1100	10.7	10.7	10.7	10.4	10.4	10.4	--	--	--
04-23-91	0830	6.9	8.3	9.0	9.3	10.2	11.1	--	--	--
04-29-91	1100	5.2	5.8	7.0	8.7	8.7	9.4	10.0	10.0	--
05-29-91	1045	8.6	8.6	8.7	8.7	8.7	8.7	8.7	--	--
07-08-91	1300	9.8	9.8	9.8	10.1	11.4	11.4	--	--	--
08-12-91	1230	10.4	10.5	10.5	10.5	10.6	10.8	10.8	--	--
08-15-91	0915	10.8	10.6	10.6	10.6	11.7	11.8	11.8	--	--
09-17-91	1515	--	10.8	10.8	11.0	11.1	11.3	11.3	--	--
09-25-91	1000	12.6	12.6	12.6	12.6	12.6	12.6	12.6	--	--
10-22-91	1400	11.4	11.5	11.8	12.1	12.5	12.6	12.7	12.7	--
12-03-91	1300	17.7	17.7	17.7	17.7	17.7	17.7	--	--	--
01-22-92	1330	9.6	10.7	12.6	12.7	12.9	13.1	--	--	--
01-23-92	1200	11.1	11.2	11.3	11.3	11.7	12.2	--	--	--
02-12-92	1230	10.8	10.8	10.8	10.8	10.8	10.8	--	--	--
02-14-92	1000	9.1	9.1	10.1	10.9	11.6	11.6	11.9	--	--
03-11-92	0930	10.4	10.5	10.5	10.4	10.5	10.5	--	--	--
03-13-92	0930	8.7	8.7	8.7	8.7	10.1	11.3	--	--	--
04-07-92	1230	11.3	11.3	11.5	11.5	12.0	12.0	12.0	--	--
04-10-92	0930	9.8	10.5	10.8	11.5	11.5	11.7	11.8	--	--

Table 45.--*Vertical profiles of salinity at site C5, December 1990-September 1991*

LOCATION.--Lat 35°17'00", long 76°38'12"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3; 0.90 mi downstream from site C4, 8 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455205. Measurements were made within 3 ft of sensor housing.

DRAINAGE AREA.--Approximately 10,835 acres (16.9 mi^2).

REMARKS.--mi, mile; ft, foot; mi^2, square mile; --, no data.

SALINITY, PARTS PER THOUSAND, DECEMBER 1990-SEPTEMBER 1991

		Depth (feet below water surface)								
Date	Time	0.1	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
12-13-90	1500	17.2	16.9	16.9	16.9	16.9	16.9	16.9	--	--
01-16-91	1500	13.0	13.0	13.0	13.4	13.4	14.1	14.6	--	--
01-18-91	1530	12.7	12.7	12.7	12.7	12.7	12.7	13.2	--	--
02-19-91	1000	8.8	12.1	12.2	13.5	13.9	14.1	14.9	--	--
02-22-91	1200	13.3	13.3	13.5	13.5	13.9	13.9	--	--	--
03-26-91	1100	9.8	9.8	9.8	9.8	9.8	11.0	11.1	--	--
03-27-91	1100	11.1	11.1	11.1	11.1	11.1	11.1	11.1	--	--
04-23-91	0900	8.1	8.4	9.8	10.2	11.0	11.0	11.0	--	--
04-29-91	1130	8.2	8.3	8.8	9.8	10.0	10.0	10.0	--	--
05-29-91	1100	9.3	9.3	9.3	9.1	8.8	9.0	9.0	9.0	--
07-08-91	1300	11.1	11.1	11.1	11.1	11.0	11.0	11.1	--	--
08-12-91	1300	10.4	10.4	10.5	10.5	10.7	10.9	10.9	--	--
08-15-91	0900	11.3	11.4	11.3	11.3	11.4	12.0	12.0	--	--
09-17-91	1500	--	11.1	11.3	11.1	11.3	10.7	11.3	--	--

Table 46.--*Vertical profiles of salinity at site C6, December 1990-April 1992*

LOCATION.--Lat 35°17'12", long 76°37'23"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3; 0.80 mi downstream from site C5, 9 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455220. Measurements were made within 3 ft of sensor housing.

DRAINAGE AREA.--Approximately 12,755 acres (19.9 mi^2).

REMARKS.--mi, mile; ft, foot; mi^2, square mile; --, no data.

SALINITY, PARTS PER THOUSAND, DECEMBER 1990-APRIL 1992

		Depth (feet below water surface)								
Date	Time	0.1	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
12-13-90	1630	16.2	16.2	16.2	16.5	16.5	16.5	16.5	16.5	--
01-16-91	1630	13.0	13.0	13.4	14.4	14.4	14.7	14.7	--	--
01-18-91	1530	13.3	13.3	13.3	13.3	13.3	13.3	14.3	14.3	--
02-19-91	1000	8.6	12.6	13.5	13.3	14.1	14.1	14.1	--	--
02-22-91	1200	12.4	13.5	13.7	13.8	14.2	14.2	14.2	--	--
03-26-91	1130	9.5	9.5	9.5	9.6	10.0	10.0	10.0	--	--
03-27-91	1030	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	--
04-23-91	0930	8.3	9.5	9.8	10.4	11.0	11.1	11.1	11.1	--
04-29-91	1200	8.6	9.1	9.1	9.6	9.8	9.8	9.8	9.8	--
05-29-91	1100	9.6	9.3	9.3	9.3	9.3	8.9	9.3	9.3	--
07-08-91	1315	11.0	11.0	11.1	11.1	11.2	11.3	--	--	--
08-12-91	1300	11.2	11.2	11.2	11.2	11.2	11.3	11.5	--	--
08-15-91	0900	10.4	11.1	11.1	11.4	11.7	12.0	12.0	--	--
09-17-91	1445	--	11.8	11.8	11.7	12.0	12.0	12.0	--	--
09-25-91	1045	14.9	14.7	14.7	14.7	14.9	14.9	15.1	15.1	--
10-22-91	1400	13.6	13.6	13.1	12.9	13.0	13.0	13.1	13.3	13.8
11-27-91	1300	18.3	18.3	18.3	18.3	18.3	18.3	18.3	--	--
12-03-91	1330	17.8	18.0	18.0	18.0	18.1	18.1	18.1	--	--
01-22-92	1300	12.0	12.1	12.4	12.4	12.5	12.6	--	--	--
01-23-92	1130	10.8	11.1	10.9	10.9	10.9	10.8	--	--	--
02-12-92	1215	12.6	11.9	12.3	12.3	12.3	12.6	12.6	12.6	--
02-14-92	1030	11.5	11.6	11.8	11.8	12.0	12.7	12.7	--	--
03-11-92	0900	11.1	11.1	11.1	11.1	11.1	11.1	--	--	--
03-13-92	0900	12.0	12.2	12.2	12.0	13.0	13.1	13.1	--	--
04-07-92	1215	11.2	11.2	11.2	11.2	11.2	11.2	11.6	12.0	12.1
04-10-92	0900	12.0	12.0	12.0	12.0	13.2	13.2	13.2	--	--

Table 47.--*Daily mean values of salinity at site C1, October 1990-May 1992*

LOCATION.--Lat 35°17'13", long 76°41'13"; Beaufort County, on right bank of Campbell Creek, which receives inflow from sites B2 and B3; on State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455145. Salinity sensor set in fixed position about 2 1/2 ft above bottom of channel; depth of water approximately 6 ft.

DRAINAGE AREA.--Approximately 5,120 acres (8.0 mi^2).

PERIOD OF RECORD.--October 1990 through May 1992.

REMARKS.--mi, mile; ft, foot; mi^2, square mile; ppt, parts per thousand; ---, no data. Maximum recorded salinity (19.1 ppt) occurred on February 17, 1991; minimum recorded salinity (0.2 ppt) occurred on March 30 and April 1, 1991.

SALINITY, PARTS PER THOUSAND, OCTOBER 1990-SEPTEMBER 1991

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	---	10.4	11.6	10.9	---	---	1.0	3.1	9.6	7.1	8.3	8.9
2	---	10.3	11.9	11.2	---	---	3.1	3.8	7.2	6.4	8.8	8.9
3	---	10.3	11.6	12.4	---	---	2.4	4.3	6.2	6.3	9.0	8.1
4	---	10.7	11.8	12.6	---	---	.7	5.2	8.0	6.9	9.0	7.6
5	---	10.7	11.5	12.0	---	---	.8	3.2	9.1	6.6	9.2	8.5
6	---	10.2	12.2	13.3	---	---	1.5	4.3	9.2	7.5	8.9	9.0
7	---	10.2	11.1	12.2	---	---	2.0	4.2	8.5	7.8	8.7	9.8
8	---	9.9	10.7	10.3	---	---	3.0	3.7	7.3	8.5	8.4	9.9
9	---	10.1	10.2	11.6	---	---	2.8	3.2	7.0	9.0	8.4	10.1
10	---	7.1	11.7	11.9	---	---	2.5	4.0	7.7	9.1	8.4	10.0
11	---	7.9	10.5	10.1	---	---	2.4	4.1	8.4	8.6	8.4	9.9
12	10.5	8.4	11.6	7.3	---	---	3.3	4.8	10.1	8.4	8.3	10.0
13	10.6	9.7	10.9	9.0	---	---	2.0	6.8	11.3	8.3	8.2	10.4
14	10.4	10.5	10.2	7.9	9.8	---	4.6	---	11.0	8.5	8.2	10.2
15	10.4	11.1	10.2	10.4	15.2	---	6.6	6.4	10.9	8.2	7.5	10.5
16	11.5	---	11.1	5.8	13.6	---	5.9	6.4	10.8	10.3	7.5	10.4
17	11.2	---	10.6	10.1	11.7	---	6.0	6.3	11.3	8.7	4.7	10.3
18	10.7	---	10.9	---	14.2	---	6.1	7.4	10.1	8.7	5.7	10.1
19	10.7	---	10.6	---	11.5	---	7.1	9.6	8.0	8.8	4.8	10.0
20	11.0	---	10.4	---	8.6	---	4.4	8.1	4.0	8.7	6.2	10.1
21	10.9	---	10.1	---	10.2	---	3.0	6.3	4.0	8.7	7.2	10.3
22	10.8	---	10.5	---	---	---	3.2	5.9	5.3	8.8	9.7	10.7
23	9.5	---	10.6	---	---	---	6.0	5.8	4.2	8.5	10.0	10.7
24	10.4	---	10.3	---	---	---	3.8	6.0	5.0	8.8	8.8	10.8
25	11.1	---	10.3	---	---	---	5.8	6.8	3.3	9.0	8.4	11.0
26	7.2	---	10.5	---	---	---	3.8	7.5	4.7	9.1	7.1	10.2
27	7.5	---	10.0	---	---	---	3.8	7.7	3.4	9.0	6.9	10.4
28	6.3	---	10.6	---	---	6.6	2.8	9.1	2.9	8.8	9.6	10.6
29	8.8	---	11.5	---	---	6.2	2.5	9.1	3.8	8.7	7.4	9.1
30	9.6	11.1	11.9	---	---	.4	2.1	8.6	5.3	8.6	7.8	8.9
31	9.9	---	11.4	---	---	.4	---	8.9	---	8.3	8.5	---

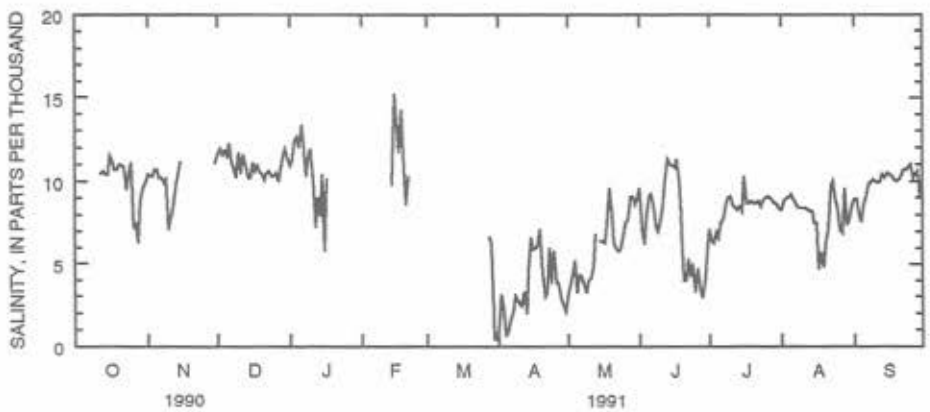


Table 47.--*Daily mean values of salinity at site C1, October 1990-May 1992*--Continued

LOCATION.--Lat 35°17'13", long 76°41'13"; Beaufort County, on right bank of Campbell Creek, which receives inflow from sites B2 and B3; on State Highway 33, 5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455145. Salinity sensor set in fixed position about 2 1/2 ft above bottom of channel; depth of water approximately 6 ft.

DRAINAGE AREA.--Approximately 5,120 acres (8.0 mi^2).

PERIOD OF RECORD.--October 1990 through May 1992.

REMARKS.--mi, mile; ft, foot; mi^2, square mile; ppt, parts per thousand; ---, no data. Maximum recorded salinity (16.5 ppt) occurred on December 26, 1991; minimum recorded salinity (0.2 ppt) occurred on January 16, 1992.

SALINITY, PARTS PER THOUSAND, OCTOBER 1991-MAY 1992

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
1	9.4	12.0	14.1	13.9	11.7	7.1	8.6	9.2
2	8.8	12.5	14.5	14.6	11.8	6.5	6.4	9.4
3	8.5	12.7	14.3	11.7	11.3	6.4	8.1	10.5
4	8.9	12.7	14.1	8.6	11.1	5.3	7.0	10.2
5	8.9	12.6	13.5	13.1	10.3	4.4	6.5	10.8
6	---	12.2	13.9	13.0	9.7	3.8	7.9	10.9
7	---	12.4	14.5	12.5	9.1	5.9	9.3	---
8	---	12.6	14.6	11.2	8.9	7.6	8.9	---
9	---	12.7	14.9	12.5	8.2	8.1	8.3	---
10	---	12.3	15.0	12.8	8.4	7.5	9.1	---
11	---	10.6	14.5	11.8	8.1	---	8.8	---
12	---	11.1	14.9	13.2	8.1	8.4	8.8	---
13	---	11.0	15.1	12.6	7.9	8.1	10.2	---
14	---	11.2	15.0	11.7	8.0	10.0	7.5	---
15	---	11.4	14.9	9.5	6.6	10.3	6.2	---
16	---	11.6	14.9	8.1	7.3	9.5	7.5	---
17	---	12.0	14.8	9.6	8.7	9.5	8.9	---
18	---	11.8	14.7	10.2	7.6	9.9	9.0	---
19	---	11.9	15.2	11.0	8.1	9.2	8.3	---
20	---	12.1	15.1	12.4	8.4	9.4	8.8	---
21	---	12.0	15.4	12.6	10.0	9.7	8.8	---
22	10.9	12.4	15.6	12.6	9.8	9.5	6.5	---
23	10.8	12.7	15.7	11.5	6.3	10.0	6.2	---
24	11.0	13.4	15.8	8.5	5.7	9.5	7.2	---
25	11.1	13.9	15.9	8.5	3.8	8.0	8.4	---
26	11.0	14.3	16.2	6.8	6.1	6.4	8.8	---
27	11.3	14.2	15.9	8.0	7.5	6.7	10.6	---
28	11.4	13.8	15.2	6.7	5.9	7.5	11.0	---
29	12.0	13.8	14.9	7.2	---	8.1	10.4	---
30	10.9	14.0	15.6	9.5	---	8.6	9.2	---
31	11.2	---	14.5	10.3	---	7.1	---	---

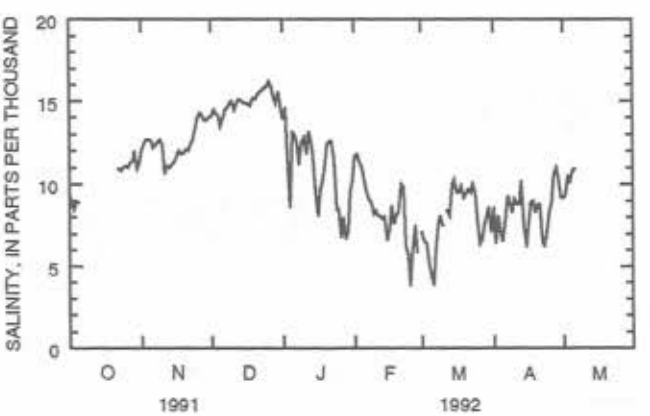


Table 48.--*Daily mean values of salinity at site C2, October 1990-May 1992*

LOCATION.--Lat 35°17'30", long 76°40'33"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3; 0.75 mi downstream from site C1 at State Highway 33 bridge, 6 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455165. Salinity sensor set in fixed position about 2 1/2 ft above bottom of channel; depth of water approximately 6 ft.

DRAINAGE AREA.--Approximately 6,342 acres (9.9 mi^2).

PERIOD OF RECORD.--November 1989 through May 1992.

REMARKS.--mi, mile; ft, foot; mi^2, square mile; ppt, parts per thousand; ---, no data. Maximum recorded salinity (17.0 ppt) occurred on January 4, 1991; minimum recorded salinity (0.2 ppt) occurred on March 30, 1991.

SALINITY, PARTS PER THOUSAND, OCTOBER 1990-SEPTEMBER 1991

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12.4	12.2	14.4	15.3	---	---	8.4	8.2	9.4	10.5	10.5	9.8
2	12.4	---	14.4	16.0	---	---	9.3	9.1	8.4	9.2	11.5	9.5
3	12.5	---	14.1	16.1	---	---	8.0	8.9	8.8	9.2	10.8	8.5
4	12.3	---	13.8	16.3	---	---	6.3	7.3	9.0	9.2	11.8	8.7
5	12.2	---	13.2	16.2	---	---	6.4	6.5	9.1	9.0	11.6	8.9
6	12.4	---	13.3	16.4	---	---	10.0	6.7	9.0	---	11.0	9.8
7	12.3	---	14.4	16.4	---	---	9.6	6.6	8.9	---	10.5	10.2
8	12.3	---	15.6	16.1	---	---	9.7	6.4	8.2	---	10.5	9.8
9	12.3	---	15.7	15.9	---	---	8.6	6.4	8.1	---	10.3	9.7
10	12.3	---	15.0	15.2	---	---	8.9	7.1	8.4	---	10.2	9.4
11	12.3	---	14.7	14.5	---	---	9.1	6.0	8.6	---	10.3	9.7
12	12.4	---	---	13.8	---	---	9.4	6.9	9.6	10.5	---	10.3
13	12.2	---	---	14.0	---	---	8.6	7.6	10.2	10.1	---	9.9
14	12.3	---	15.9	14.1	---	---	9.4	7.8	10.3	10.2	---	9.7
15	12.3	---	16.1	14.1	---	---	9.0	8.3	10.2	10.4	---	9.8
16	12.8	---	15.7	---	---	---	8.5	8.0	10.0	10.4	10.9	9.9
17	12.8	14.0	15.9	---	---	---	8.9	7.9	10.2	10.2	10.6	---
18	12.7	13.9	15.9	---	---	---	9.1	8.1	10.1	10.2	9.7	---
19	12.6	13.7	15.5	13.3	---	---	9.5	8.5	9.2	10.1	8.5	---
20	12.6	13.6	15.6	---	---	---	7.6	8.4	7.1	9.9	8.2	---
21	12.5	13.7	15.3	---	---	---	8.3	7.5	9.5	9.8	9.6	---
22	12.5	13.8	15.4	---	---	---	9.3	7.6	9.7	9.9	10.9	---
23	11.8	13.7	15.3	---	12.3	---	---	7.6	8.8	10.0	9.7	---
24	12.0	13.8	14.5	---	---	---	---	7.5	8.5	10.3	8.9	---
25	12.1	13.9	14.7	---	---	---	---	8.0	7.5	10.5	8.3	---
26	9.3	14.8	16.0	---	---	---	---	8.1	5.8	10.6	6.3	10.8
27	10.2	15.1	15.6	---	---	---	---	8.3	4.9	10.8	6.0	11.0
28	10.7	14.6	15.9	---	---	7.9	---	8.0	4.2	10.7	5.5	11.4
29	11.8	14.3	16.2	---	---	8.3	---	---	6.6	10.6	6.7	10.3
30	12.2	13.9	15.7	---	---	3.3	7.9	---	9.7	10.3	9.1	10.8
31	12.4	---	15.0	---	---	7.9	---	---	---	10.0	10.0	---

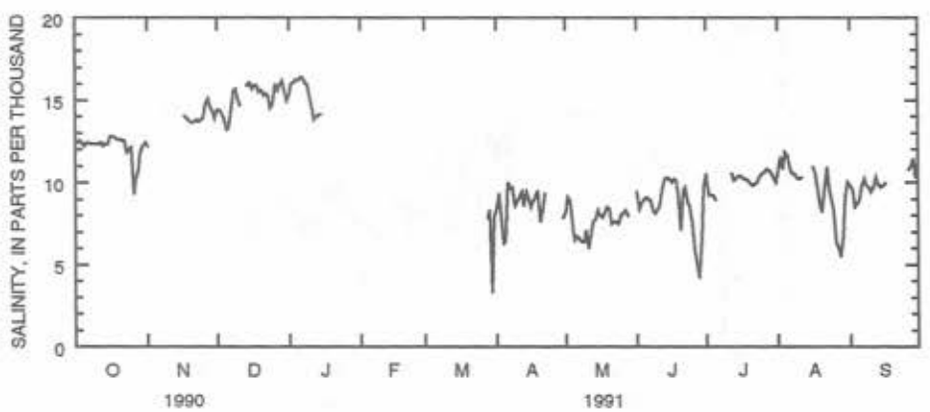


Table 48.--*Daily mean values of salinity at site C2, October 1990-May 1992*--Continued

LOCATION.--Lat 35°17'30", long 76°40'33"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3; 0.75 mi downstream from site C1 at State Highway 33 bridge, 6 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455165. Salinity sensor set in fixed position about 2 1/2 ft above bottom of channel; depth of water approximately 6 ft.

DRAINAGE AREA.--Approximately 6,342 acres (9.9 mi^2).

PERIOD OF RECORD.--November 1989 through May 1992.

REMARKS.--mi, mile; ft, foot; mi^2, square mile; ppt, parts per thousand; ---, no data. Maximum recorded salinity (20.3 ppt) occurred on December 25, 1991; minimum recorded salinity (3.1 ppt) occurred on January 2 and 3, 1992.

SALINITY, PARTS PER THOUSAND, OCTOBER 1991-May 1992

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
1	10.8	12.7	---	16.7	12.3	9.4	11.3	10.8
2	10.8	13.2	---	16.3	11.8	10.2	10.8	9.9
3	10.8	13.2	---	12.0	11.2	10.1	10.1	9.9
4	11.1	13.5	16.5	12.5	10.9	9.8	9.4	10.5
5	11.3	13.2	16.2	15.3	9.8	11.0	9.4	---
6	11.8	13.0	16.3	15.4	10.3	9.7	9.4	---
7	11.8	13.0	16.6	14.9	10.3	9.1	---	---
8	11.8	13.6	16.9	---	10.1	10.0	---	---
9	11.4	13.6	17.4	---	9.9	10.4	---	---
10	11.4	12.9	17.3	---	9.8	9.5	---	---
11	11.8	12.0	17.6	---	9.9	---	9.4	---
12	11.9	12.6	17.6	---	---	---	9.8	---
13	12.3	12.7	17.8	---	---	---	10.6	---
14	12.2	13.0	17.7	---	---	12.5	9.9	---
15	12.0	13.4	17.3	---	8.5	12.5	8.8	---
16	12.1	13.8	17.2	---	9.5	12.4	9.4	---
17	10.9	13.8	17.2	---	10.4	11.8	9.4	---
18	11.3	13.7	17.1	---	10.5	11.5	9.3	---
19	11.7	13.9	17.2	---	10.7	10.6	9.5	---
20	12.0	13.9	18.1	---	11.7	10.8	9.7	---
21	12.4	13.9	17.9	---	11.6	10.9	8.9	---
22	---	13.8	18.0	---	11.6	10.5	9.3	---
23	---	14.7	18.0	---	10.7	11.2	9.7	---
24	11.3	15.2	18.1	---	11.6	10.8	10.0	---
25	11.3	15.4	19.3	8.6	11.0	10.2	10.6	---
26	11.3	15.4	19.4	8.5	11.0	8.8	11.4	---
27	11.4	---	18.5	8.3	11.4	9.0	11.6	---
28	11.6	---	17.4	9.6	10.4	9.1	11.4	---
29	11.9	---	17.6	10.4	8.9	9.4	11.1	---
30	11.5	---	17.3	10.3	---	9.6	10.4	---
31	11.8	---	16.8	11.7	---	11.0	---	---

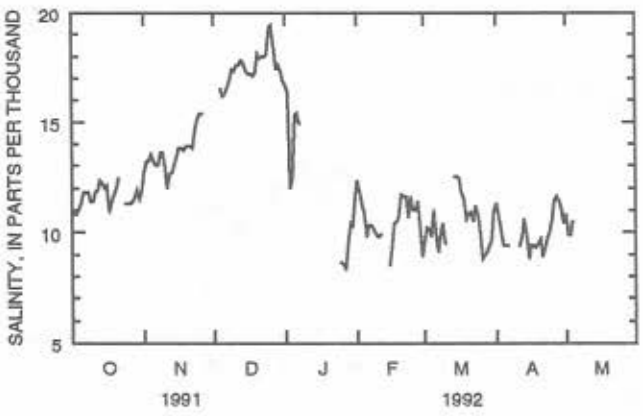


Table 49.--*Daily mean values of salinity at site C3, October 1990-September 1991*

LOCATION.--Lat 35°17'25", long 76°39'48"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3; 0.75 mi downstream from site C2, 6.5 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455175. Salinity sensor set in fixed position about 2 1/2 ft above bottom of channel; depth of water approximately 7 ft.

DRAINAGE AREA.--Approximately 7,501 acres (11.7 mi^2).

PERIOD OF RECORD.--November 1989 through September 1991.

REMARKS.--mi, mile; ft, foot; mi^2, square mile; ppt, parts per thousand; ---, no data. Maximum recorded salinity (17.7 ppt) occurred on December 31, 1990; minimum recorded salinity (4.0 ppt) occurred on March 30, 1991.

SALINITY, PARTS PER THOUSAND, OCTOBER 1990-SEPTEMBER 1991

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11.5	12.3	14.8	16.0	---	12.0	9.8	8.5	---	---	---	---
2	11.5	---	15.0	15.7	---	12.0	10.9	8.6	---	---	---	---
3	11.6	---	15.6	16.0	---	12.3	10.3	8.0	---	---	---	---
4	11.6	---	15.7	16.1	---	11.4	8.2	7.2	---	---	---	---
5	11.6	---	14.6	16.1	---	12.8	8.7	7.0	---	---	---	---
6	11.7	---	14.6	16.0	---	12.0	10.9	6.4	---	---	---	---
7	11.4	---	14.3	15.9	---	12.6	10.8	7.2	---	---	---	---
8	11.4	---	15.3	15.3	---	11.6	10.3	7.3	---	---	---	---
9	11.4	---	14.5	13.2	---	11.4	9.8	7.0	---	---	---	---
10	11.4	---	13.9	15.1	---	11.3	9.9	6.7	---	---	---	---
11	11.3	---	13.8	14.3	---	9.5	9.4	6.6	---	---	---	---
12	11.6	---	---	13.7	---	9.9	9.2	6.2	---	---	---	---
13	11.6	---	---	13.4	---	10.0	9.1	8.3	---	---	---	---
14	11.6	---	15.8	13.8	---	10.3	9.2	7.6	---	---	---	---
15	11.7	---	15.8	14.1	---	10.2	8.9	8.4	---	---	---	---
16	12.2	---	15.8	---	---	9.7	9.2	8.2	---	---	---	---
17	12.3	14.7	15.7	---	---	9.4	9.2	7.7	---	---	---	---
18	12.3	14.0	15.9	---	---	8.9	9.2	8.2	---	---	---	---
19	12.3	14.1	17.0	---	---	9.2	9.3	7.9	---	---	---	---
20	12.4	13.8	16.3	---	---	9.8	8.5	7.8	---	---	---	---
21	12.4	14.2	15.9	---	---	10.3	8.4	7.7	---	---	---	---
22	12.5	14.1	14.9	---	---	10.1	9.5	7.6	---	---	---	---
23	12.0	14.1	14.2	---	12.2	9.6	---	7.7	---	---	---	---
24	11.4	14.0	14.0	---	12.2	10.2	---	7.7	---	---	---	---
25	11.8	14.1	15.2	---	12.3	9.4	---	8.6	---	---	---	---
26	10.9	14.9	15.0	---	12.2	---	---	8.7	---	---	---	12.7
27	11.4	15.5	15.3	---	11.9	---	---	8.5	---	---	---	12.6
28	9.6	15.7	15.2	---	11.8	9.8	---	8.9	---	---	---	12.5
29	11.8	15.6	15.4	---	---	10.0	---	---	---	---	---	12.4
30	11.8	15.5	15.6	---	---	8.0	8.4	---	---	---	---	12.4
31	11.6	---	16.3	---	---	9.1	---	---	---	---	---	---

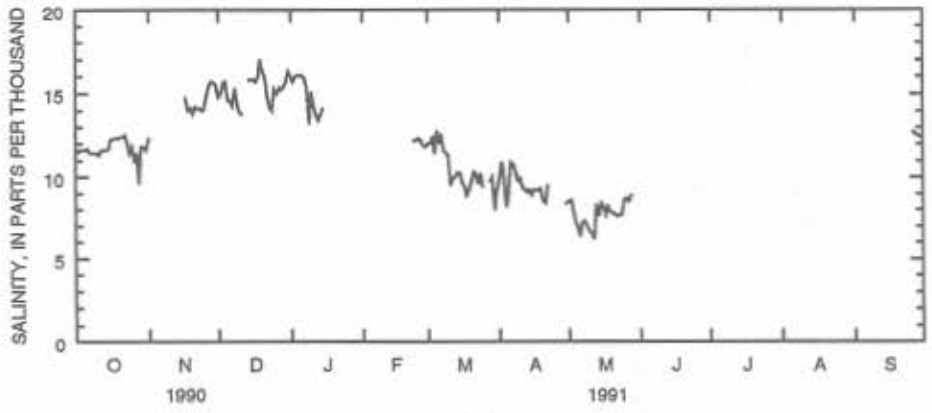


Table 50.--*Daily mean values of salinity at site C4, October 1990-September 1991*

LOCATION.--Lat 35°16'55", long 76°39'12"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3. 1.0 mi downstream from site C3, 7 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455195. Salinity sensor set in fixed position about 2 1/2 ft above bottom of channel; depth of water approximately 7 ft.

DRAINAGE AREA.--Approximately 9,306 acres (14.5 mi^2).

PERIOD OF RECORD.--November 1989 through September 1991.

REMARKS.--mi, mile; ft, foot; mi^2, square mile; ppt, parts per thousand; ---, no data. Maximum recorded salinity (18.8 ppt) occurred on December 14, 1990; minimum recorded salinity (5.2 ppt) occurred on March 30, 1991.

SALINITY, PARTS PER THOUSAND, OCTOBER 1990-SEPTEMBER 1991

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11.7	11.3	15.4	17.2	11.7	13.7	9.6	9.7	9.5	9.9	11.8	10.1
2	11.4	---	15.7	16.7	11.8	12.8	10.5	9.6	9.5	9.0	12.1	9.9
3	11.1	---	15.8	17.2	11.7	12.9	8.5	8.8	9.2	9.3	11.9	9.9
4	11.0	---	15.6	16.9	13.1	11.5	7.7	8.3	9.3	10.2	11.8	9.5
5	11.0	---	15.5	16.1	13.1	12.5	8.9	8.1	9.1	10.1	11.5	10.0
6	11.1	---	15.8	16.4	13.5	12.9	10.6	7.7	9.6	---	11.0	10.9
7	11.3	---	15.5	16.8	13.4	12.1	10.4	8.1	9.4	---	10.7	10.7
8	11.6	---	15.1	16.2	12.3	11.6	10.5	8.0	9.3	---	10.5	10.5
9	11.4	---	14.7	15.8	11.6	11.1	10.0	7.9	9.1	---	10.3	10.4
10	11.3	---	15.1	16.1	12.5	10.7	9.7	7.6	10.1	---	11.2	10.3
11	11.4	---	15.2	14.7	12.6	10.5	9.5	7.7	11.0	---	10.8	10.7
12	11.4	---	---	14.6	11.9	10.8	9.6	7.6	10.4	11.0	---	11.4
13	11.6	---	---	14.3	11.2	10.8	9.6	8.4	10.3	10.9	---	10.9
14	11.8	---	17.9	14.2	10.4	11.1	9.9	8.8	10.0	11.0	---	10.8
15	12.1	---	16.8	14.6	10.0	10.5	9.2	9.1	10.0	11.0	---	10.9
16	11.9	---	17.4	---	10.3	10.1	9.6	8.6	10.7	10.9	10.9	10.8
17	12.0	14.6	17.1	---	10.7	10.0	9.8	8.4	10.8	10.8	10.8	---
18	11.9	14.3	16.5	---	12.0	9.2	9.8	8.6	10.6	10.7	10.4	---
19	11.8	14.5	16.2	14.5	---	9.4	10.0	9.1	10.2	10.7	9.6	---
20	12.0	14.5	16.0	14.2	---	9.5	9.4	8.9	10.1	10.6	10.3	---
21	11.7	14.4	16.5	13.6	---	10.0	8.7	8.4	10.5	10.7	10.7	---
22	11.8	14.3	16.6	14.1	---	10.1	10.3	8.2	10.6	10.9	11.2	---
23	11.5	14.3	16.8	14.9	14.2	10.1	---	8.4	9.6	11.0	9.9	---
24	11.9	14.6	16.7	14.5	13.4	10.0	---	8.4	8.6	11.3	9.1	---
25	11.9	15.2	16.8	14.4	13.6	9.7	---	9.0	8.5	11.6	7.9	---
26	10.1	15.9	16.8	12.6	13.4	---	---	9.2	8.2	11.5	7.5	12.2
27	10.1	15.8	16.2	14.2	13.2	---	---	8.7	7.9	11.2	7.3	12.6
28	11.3	16.1	15.4	15.2	13.3	10.1	---	8.4	7.8	11.3	7.1	12.9
29	11.3	16.3	16.1	15.2	---	10.4	---	---	9.6	10.9	8.8	12.8
30	11.2	15.5	16.4	14.8	---	7.8	9.6	---	10.7	11.0	10.0	12.9
31	11.1	---	16.5	13.2	---	8.6	---	---	---	11.2	10.3	---

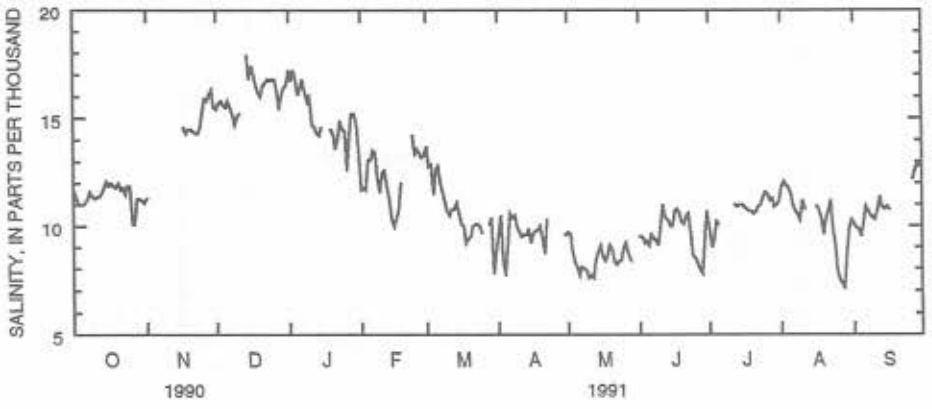


Table 51.--*Daily mean values of salinity at site C4, near surface, October 1991-May 1992*

LOCATION.--Lat 35°16'55", long 76°39'12"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3; 1.0 mi downstream from site C3, 7 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455195. Salinity sensor set in fixed position about 4 1/2 ft above bottom of channel; depth of water approximately 7 ft.

DRAINAGE AREA.--Approximately 9,306 acres (14.5 mi^2).

PERIOD OF RECORD.--October 1991 through May 1992.

REMARKS.--mi, mile; ft, foot; mi^2, square mile; ppt, parts per thousand; ---, no data. Maximum recorded salinity (17.7 ppt) occurred on November 24, 1991; minimum recorded salinity (2.4 ppt) occurred on April 11, 1992.

SALINITY, PARTS PER THOUSAND, OCTOBER 1991-MAY 1992

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
1	12.3	13.9	---	15.2	11.2	10.7	12.2	7.3
2	12.5	14.0	---	14.6	10.5	11.0	11.9	7.8
3	12.3	14.0	---	13.6	10.4	11.3	11.8	8.8
4	12.1	14.1	14.9	13.9	10.7	11.0	11.9	10.0
5	11.9	14.0	15.0	14.2	10.9	10.9	11.6	---
6	12.9	14.0	15.5	13.2	10.7	10.7	11.8	---
7	12.6	13.9	14.0	12.8	10.8	10.3	---	---
8	12.9	14.0	14.8	---	11.0	11.4	---	---
9	12.8	13.7	14.8	---	10.9	11.6	---	---
10	12.6	13.8	14.4	---	11.0	11.3	---	---
11	12.3	13.9	14.1	---	11.1	---	3.1	---
12	12.3	14.1	14.7	---	---	---	3.2	---
13	12.6	14.1	15.2	---	---	---	3.8	---
14	12.6	14.1	15.2	---	---	10.8	4.1	---
15	12.8	14.1	15.1	---	10.2	10.8	4.2	---
16	12.7	14.2	13.9	---	11.3	11.1	4.3	---
17	11.8	14.5	13.8	---	12.0	11.2	3.9	---
18	11.6	14.6	13.0	---	12.1	11.2	3.9	---
19	12.0	14.9	12.8	---	11.9	11.3	4.3	---
20	12.1	15.3	14.7	---	11.4	11.4	4.3	---
21	12.3	16.0	14.9	---	11.4	11.5	4.6	---
22	---	15.8	14.8	---	11.5	11.6	4.8	---
23	---	16.0	13.0	---	11.4	11.7	5.0	---
24	12.2	16.4	12.1	---	11.4	11.7	5.2	---
25	12.3	16.2	11.9	10.0	11.2	11.7	5.2	---
26	12.5	16.7	11.7	10.5	11.2	11.6	4.6	---
27	12.6	---	11.7	10.9	11.1	10.9	5.7	---
28	12.7	---	12.1	10.9	11.0	10.8	6.2	---
29	12.6	---	14.4	10.9	10.5	11.5	6.5	---
30	12.4	---	14.9	11.0	---	12.1	7.0	---
31	13.3	---	15.5	11.2	---	12.3	---	---

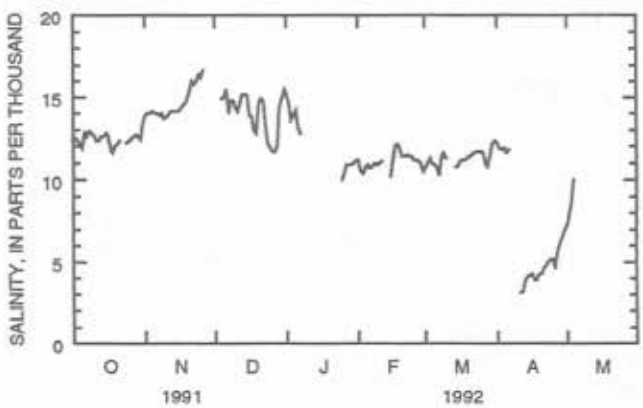


Table 52.--*Daily mean values of salinity at site C4, near bottom, October 1991-February 1992*

LOCATION.--Lat 35°16'55", long 76°39'12"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3; 1.0 mi downstream from site C3, 7 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455195. Salinity sensor set in fixed position about 2 ft above bottom of channel; depth of water approximately 7 ft.

DRAINAGE AREA.--Approximately 9,306 acres (14.5 mi^2).

PERIOD OF RECORD.--October 1991 through February 1992.

REMARKS.--mi, mile; ft, foot; mi^2, square mile; ppt, parts per thousand; ---, no data. Maximum recorded salinity (21.1 ppt) occurred on December 11, 1991; minimum recorded salinity (8.8 ppt) occurred on January 28, 1992.

SALINITY, PARTS PER THOUSAND, OCTOBER 1991-FEBRUARY 1992

Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	12.4	---	---	15.7	12.5
2	12.1	---	---	15.2	12.0
3	12.0	---	---	14.9	11.8
4	12.3	---	18.4	14.7	11.5
5	12.6	---	19.3	15.9	11.2
6	12.6	---	18.1	15.2	10.9
7	12.2	---	18.0	14.4	11.0
8	12.1	---	18.0	---	11.3
9	11.9	---	19.4	---	10.9
10	11.7	---	20.7	---	10.9
11	12.1	---	20.1	---	10.6
12	12.7	---	19.6	---	---
13	12.8	---	20.1	---	---
14	12.6	---	19.4	---	---
15	12.3	---	20.1	---	---
16	12.2	---	18.6	---	---
17	11.3	---	18.5	---	---
18	11.8	---	18.4	---	---
19	12.5	---	18.4	---	---
20	12.2	---	17.7	---	---
21	12.1	---	18.0	---	---
22	---	---	18.5	---	---
23	---	---	18.4	---	---
24	---	---	18.7	---	---
25	---	---	17.5	10.8	---
26	---	---	17.9	10.7	---
27	---	---	18.8	10.9	---
28	---	---	18.3	10.6	---
29	---	---	17.4	11.1	---
30	---	---	16.5	12.8	---
31	---	---	15.5	13.3	---

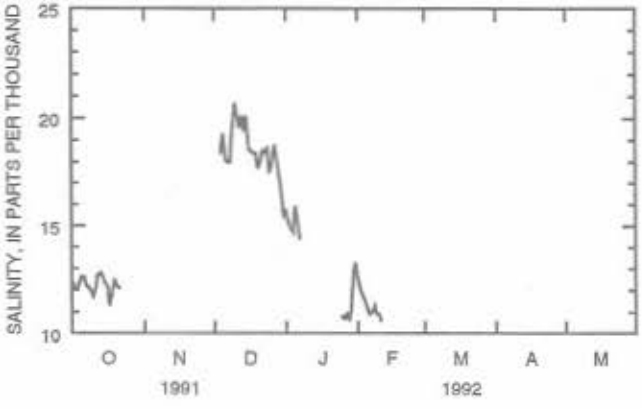


Table 53.--*Daily mean values of salinity at site C5, October 1990-September 1991*

LOCATION.--Lat 35°17'00", long 76°38'12"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3. 0.90 mi downstream from site C4, 8 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455205. Salinity sensor positioned about 2 1/2 ft above bottom of channel; depth of water approximately 7 ft.

DRAINAGE AREA.--Approximately 10,835 acres (16.9 mi^2).

PERIOD OF RECORD.--November 1989 through September 1991.

REMARKS.--mi, mile; ft, foot; mi^2, square mile; ppt, parts per thousand; ---, no data. Maximum recorded salinity (17.5 ppt) occurred on December 6, 1990; minimum recorded salinity (6.6 ppt) occurred on May 5, 1991.

SALINITY, PARTS PER THOUSAND, OCTOBER 1990-SEPTEMBER 1991

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12.3	12.9	16.0	16.5	9.7	13.6	9.8	8.8	10.2	10.1	11.8	9.9
2	12.4	---	16.0	16.6	9.9	13.0	9.9	8.3	10.3	9.8	11.7	9.8
3	12.5	---	15.7	16.7	11.4	13.3	8.4	8.3	10.3	10.6	11.2	9.6
4	12.4	---	15.8	16.6	12.1	12.0	8.3	8.0	10.2	10.6	11.3	10.4
5	12.6	---	15.9	16.4	12.3	12.5	9.9	7.7	10.2	10.6	11.3	11.0
6	12.6	---	16.5	16.5	12.4	12.5	10.0	8.0	10.4	---	10.9	11.0
7	12.8	---	16.4	16.3	12.6	11.6	10.7	8.3	10.4	---	10.9	10.6
8	12.9	---	16.2	16.0	12.6	11.5	10.4	8.3	10.3	---	10.9	10.5
9	12.7	---	15.9	15.5	12.0	11.2	9.7	8.2	10.5	---	10.8	10.5
10	12.7	---	16.1	15.2	12.8	11.0	10.2	8.1	11.1	---	11.1	10.9
11	12.6	---	15.8	14.5	12.7	10.8	11.0	7.8	11.0	---	10.9	11.4
12	12.3	---	---	14.5	12.4	11.8	11.2	8.3	10.8	11.4	---	11.2
13	12.4	---	---	14.8	12.3	11.4	10.0	8.4	11.3	11.4	---	11.1
14	12.3	---	16.5	14.7	12.4	10.7	10.5	8.3	11.5	11.5	---	11.2
15	12.4	---	16.4	14.6	12.7	10.2	10.2	8.9	11.4	11.7	---	11.1
16	12.0	---	16.3	---	13.0	10.2	10.3	8.9	11.3	11.7	11.7	11.3
17	12.2	15.0	16.4	---	14.1	10.4	10.1	8.9	11.6	11.7	11.7	---
18	12.1	15.0	16.3	---	14.0	10.1	10.3	9.0	11.7	11.7	11.2	---
19	12.8	15.0	16.5	12.9	---	10.2	11.5	9.2	11.6	11.6	11.7	---
20	13.6	15.0	16.4	12.3	---	10.2	11.1	9.2	11.4	11.6	11.4	---
21	13.6	14.5	16.4	12.1	---	10.5	9.9	9.0	11.5	11.6	11.3	---
22	13.1	14.7	16.6	11.6	---	10.3	9.9	9.0	11.3	11.5	11.1	---
23	12.7	14.8	16.6	11.8	13.4	10.4	---	9.3	10.4	11.4	10.3	---
24	13.0	15.4	16.5	12.9	13.2	10.9	---	9.2	10.3	11.4	10.3	---
25	13.1	14.9	16.5	11.7	13.4	11.2	---	9.4	10.1	11.5	9.6	---
26	12.4	15.7	16.3	11.7	13.3	---	---	9.3	9.7	11.4	8.9	14.7
27	12.4	16.3	16.5	12.0	13.2	---	---	9.1	9.7	11.3	9.3	14.5
28	12.6	16.3	16.6	12.1	13.4	11.2	---	8.9	9.4	11.5	9.6	14.6
29	12.1	15.9	16.3	11.1	---	11.6	---	---	11.2	11.7	10.5	14.8
30	12.1	16.1	16.5	10.7	---	10.3	8.9	---	10.4	11.7	10.5	14.9
31	12.7	---	16.6	10.5	---	9.2	---	---	---	11.7	10.4	---

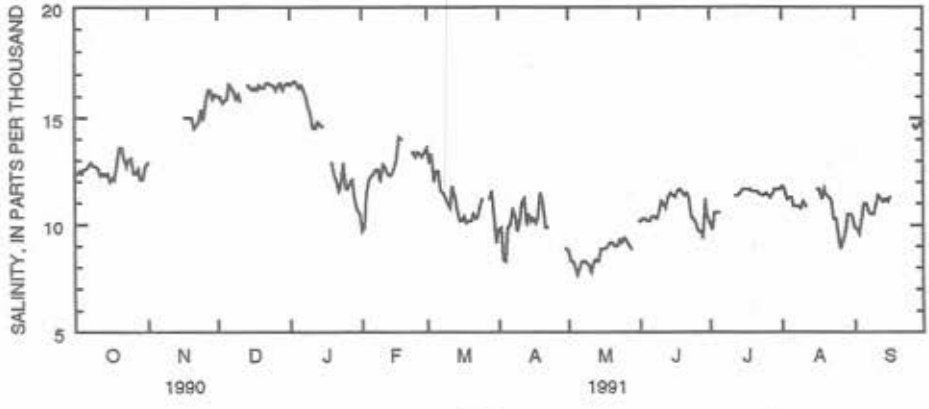


Table 54.--*Daily mean values of salinity at site C6, October 1990-September 1991*

LOCATION.--Lat 35°17'12", long 76°37'23"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3; 0.80 mi downstream from site C5, 9 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455220. Salinity sensor positioned about 2 1/2 ft above bottom of channel; depth of water approximately 7 ft.

DRAINAGE AREA.--Approximately 12,755 acres (19.9 mi^2).

PERIOD OF RECORD.--November 1989 through September 1991.

REMARKS.--mi, mile; ft, foot; mi^2, square mile; ppt, parts per thousand; ---, no data. Maximum recorded salinity (17.9 ppt) occurred on December 6, 1990; minimum recorded salinity (6.3 ppt) occurred on May 2, 1991.

SALINITY, PARTS PER THOUSAND, OCTOBER 1990-SEPTEMBER 1991

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12.5	13.7	16.6	17.0	11.1	14.0	10.7	9.0	9.7	9.7	12.7	10.7
2	12.4	---	16.5	17.0	10.2	13.9	10.5	8.0	10.2	9.4	12.4	11.0
3	12.5	---	16.3	17.3	10.8	14.1	10.0	7.9	10.0	10.2	12.3	11.0
4	12.6	---	15.8	17.1	11.3	12.5	9.9	8.3	9.7	10.6	12.1	11.9
5	12.7	---	16.7	16.9	11.5	13.0	10.9	8.0	10.0	10.5	12.1	12.2
6	12.7	---	17.1	16.6	11.9	12.8	10.6	8.7	10.1	---	11.6	11.9
7	13.0	---	16.9	16.6	12.2	12.0	10.7	8.7	10.1	---	12.0	11.9
8	13.1	---	16.5	15.7	13.0	12.2	10.0	8.6	10.1	---	12.0	11.9
9	13.0	---	16.3	15.3	12.7	11.9	9.9	8.5	10.7	---	12.0	11.8
10	13.1	---	16.6	15.3	12.4	11.9	10.6	9.0	11.6	---	11.9	12.1
11	13.2	---	16.3	14.7	12.1	11.5	10.9	9.2	10.9	---	11.5	12.5
12	13.2	---	---	15.1	11.9	12.2	10.3	9.0	10.8	12.8	---	12.5
13	13.0	---	---	14.8	11.8	11.9	10.0	8.0	11.3	12.6	---	12.5
14	13.2	---	16.7	14.7	12.1	11.0	10.5	8.3	11.2	12.5	---	12.4
15	13.2	---	16.7	14.7	12.9	10.8	10.1	9.2	11.1	12.3	---	12.1
16	13.3	---	16.7	---	13.7	11.1	10.3	9.4	11.1	12.2	13.2	12.0
17	13.1	15.1	16.7	---	13.8	11.1	10.4	9.3	11.3	12.1	13.1	---
18	12.9	15.1	16.5	---	13.7	10.7	10.5	9.5	11.5	12.3	12.7	---
19	13.3	15.3	16.8	13.8	---	10.7	10.5	9.6	11.2	12.4	12.7	---
20	13.5	15.3	16.7	13.5	---	10.7	10.4	9.4	11.1	12.2	12.4	---
21	13.4	15.1	16.8	12.7	---	10.8	10.7	9.2	11.1	12.1	12.4	---
22	13.5	14.9	17.1	12.9	---	10.4	10.4	9.6	10.9	12.2	12.3	---
23	13.3	15.7	16.8	12.9	13.7	10.5	---	9.6	9.4	12.8	11.6	---
24	13.4	15.8	16.4	12.8	13.6	11.2	---	9.6	9.2	12.8	11.6	---
25	13.1	15.8	16.9	12.8	13.7	11.5	---	9.4	9.9	12.9	11.3	---
26	12.7	16.5	16.9	12.6	13.6	11.4	---	9.0	10.0	13.1	10.9	14.4
27	13.0	16.5	16.9	12.3	13.7	11.1	---	8.6	10.3	12.9	10.3	14.5
28	13.1	16.0	17.1	11.7	13.8	11.3	---	9.0	11.0	13.1	11.0	14.4
29	12.7	16.1	17.1	10.1	---	11.3	---	---	11.3	12.6	11.2	14.2
30	12.8	16.3	17.0	10.3	---	10.6	10.0	---	10.4	12.8	11.4	14.4
31	13.7	---	16.9	10.6	---	10.8	---	---	---	12.8	11.5	---

Table 55.--*Daily mean values of salinity at site C6, near surface, October 1991-May 1992*

LOCATION.--Lat 35°17'12", long 76°37'23"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3; 0.80 mi downstream from site C5, 9 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455220. Salinity sensor positioned about 4 1/2 ft above bottom of channel; depth of water approximately 7 ft.

DRAINAGE AREA.--Approximately 12,755 acres (19.9 mi^2).

PERIOD OF RECORD.--October 1991 through May 1992.

REMARKS.--mi, mile; ft, foot; mi^2, square mile; ppt, parts per thousand; ---, no data. Maximum recorded salinity (19.9 ppt) occurred on December 22 and 23, 1991; minimum recorded salinity (8.5 ppt) occurred on February 3, 1992.

SALINITY, PARTS PER THOUSAND, OCTOBER 1991-MAY 1992

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
1	14.5	14.0	---	17.5	11.1	11.6	11.1	11.5
2	14.4	12.5	---	17.6	10.9	11.3	11.2	11.8
3	14.4	12.9	---	17.3	10.1	11.6	11.4	10.6
4	14.6	13.2	18.3	15.6	9.7	12.0	11.3	10.9
5	14.4	14.2	19.0	15.1	11.0	11.8	11.4	---
6	14.1	14.3	18.6	14.6	11.3	11.4	11.3	---
7	14.8	14.5	18.8	14.5	11.5	12.3	---	---
8	15.5	14.6	18.7	---	11.6	11.8	---	---
9	14.8	14.1	18.4	---	11.7	11.6	---	---
10	14.4	13.1	18.6	---	11.8	11.2	---	---
11	14.6	13.4	18.5	---	11.9	---	11.5	---
12	14.9	13.8	18.4	---	---	---	11.9	---
13	14.7	13.4	18.6	---	---	---	11.0	---
14	14.1	13.5	18.5	---	---	11.6	10.9	---
15	13.9	13.5	18.8	---	11.1	11.4	10.8	---
16	13.8	14.4	18.9	---	10.9	11.5	11.0	---
17	13.0	14.4	18.9	---	11.5	11.5	11.4	---
18	13.1	14.2	19.1	---	11.0	11.7	11.6	---
19	13.6	14.4	19.4	---	11.3	11.8	11.6	---
20	13.4	15.1	19.5	---	11.4	11.8	11.6	---
21	13.4	15.4	19.3	---	11.8	11.6	11.6	---
22	---	16.2	19.4	---	12.2	11.7	11.7	---
23	---	16.6	19.3	---	12.6	11.7	11.5	---
24	12.7	17.0	19.0	---	11.9	11.6	11.5	---
25	12.9	16.5	19.2	11.0	11.1	11.6	11.4	---
26	12.7	16.8	18.7	11.3	11.1	11.5	11.6	---
27	12.5	---	18.5	11.2	11.4	11.4	12.0	---
28	12.9	---	18.1	10.7	11.2	11.6	12.1	---
29	13.6	---	17.7	10.6	11.3	11.3	11.7	---
30	13.3	---	17.8	11.6	---	11.3	10.7	---
31	14.0	---	17.5	11.3	---	11.5	---	---

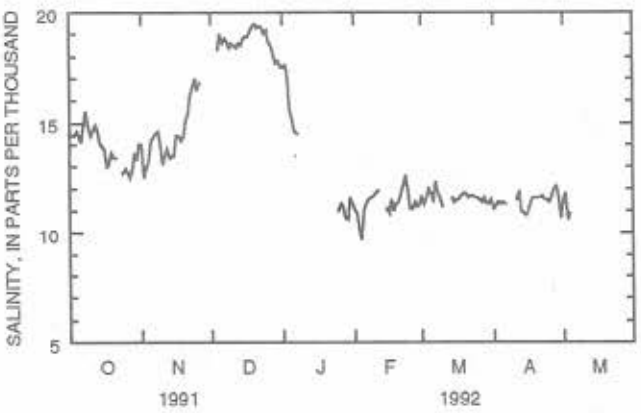


Table 56.--*Daily mean values of salinity at site C6, near bottom, October 1991-May 1992*

LOCATION.--Lat 35°17'12", long 76°37'23"; Beaufort County, on left side of channel in Campbell Creek, which receives drainage from agricultural drainage canals B2 and B3; 0.80 mi downstream from site C5, 9 mi east of Aurora; Hydrologic Unit 03020104; USGS downstream order identification number 0208455220. Salinity sensor positioned about 2 ft above bottom of channel; depth of water approximately 7 ft.

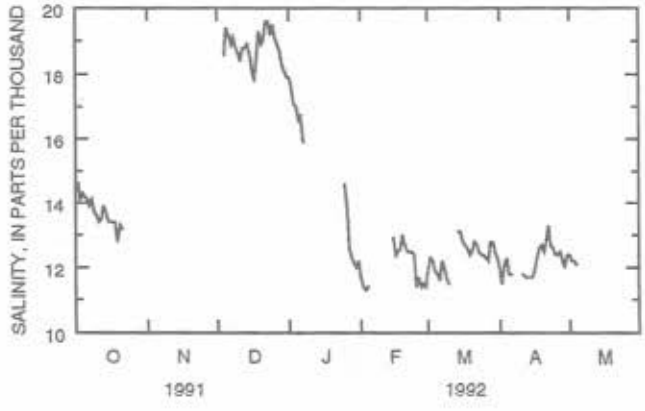
DRAINAGE AREA.--Approximately 12,755 acres (19.9 mi^2).

PERIOD OF RECORD.--October 1991 through May 1992.

REMARKS.--mi, mile; ft, foot; mi^2, square mile; ppt, parts per thousand; ---, no data. Maximum recorded salinity (20.1 ppt) occurred on December 23, 1991; minimum recorded salinity (9.1 ppt) occurred on February 4, 1992.

SALINITY, PARTS PER THOUSAND, OCTOBER 1991-MAY 1992

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
1	14.5	---	---	17.9	11.7	11.9	11.9	12.4
2	14.6	---	---	17.6	11.4	12.3	11.5	12.2
3	14.1	---	---	17.1	11.3	12.2	12.1	12.2
4	14.3	---	18.6	17.0	11.4	11.9	12.3	12.1
5	14.2	---	19.4	16.6	---	11.8	11.8	---
6	14.1	---	19.2	16.7	---	11.6	11.8	---
7	13.9	---	18.9	15.9	---	12.2	---	---
8	14.1	---	19.1	---	---	12.0	---	---
9	13.7	---	18.8	---	---	11.7	---	---
10	13.6	---	18.7	---	---	11.5	---	---
11	13.4	---	18.4	---	---	---	11.8	---
12	13.5	---	18.8	---	---	---	11.7	---
13	13.9	---	18.8	---	---	---	11.7	---
14	13.7	---	18.9	---	---	13.1	11.7	---
15	13.4	---	18.6	---	12.9	13.1	11.7	---
16	13.4	---	18.2	---	12.4	12.8	11.9	---
17	13.4	---	17.8	---	12.5	12.7	12.3	---
18	13.4	---	18.4	---	12.6	12.6	12.6	---
19	12.8	---	19.3	---	13.0	12.4	12.7	---
20	13.3	---	18.9	---	12.7	12.5	12.5	---
21	13.2	---	19.0	---	12.5	12.8	12.8	---
22	---	---	19.6	---	12.5	12.7	13.3	---
23	---	---	19.6	---	12.5	12.5	12.7	---
24	---	---	19.2	---	12.4	12.4	12.6	---
25	---	---	19.5	14.6	11.4	12.4	12.4	---
26	---	---	19.1	13.8	11.7	12.3	12.4	---
27	---	---	18.9	12.6	11.4	12.2	12.5	---
28	---	---	18.7	12.3	11.5	12.8	12.2	---
29	---	---	18.3	12.1	11.4	12.8	12.0	---
30	---	---	18.1	12.0	---	12.5	12.4	---
31	---	---	17.9	12.2	---	12.3	---	---



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*U.S. GOVERNMENT PRINTING OFFICE: 1993-752-187-60920

CONVERSION FACTORS, VERTICAL DATUM, TEMPERATURE, AND DEFINITIONS

Multiply	by	To obtain
	Length	
inch (in.)	25.4	millimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
	Area	
square mile (mi^2)	2.590	square kilometer
acre	4,047	square meter
	Volume	
gallon (gal)	3.785	liter
	Flow	
cubic foot per second (ft^3/s)	0.02832	cubic meter per second
cubic foot per second per square mile $[(ft^3/s)/mi^2]$	0.01093	cubic meter per second per square kilometer $[(m^3/s)/km^2]$
	Mass	
ounce, avoirdupois (oz)	28.35	gram
	Specific Conductance	
micromho per centimeter at 25 degrees Celsius (µmho/cm at 25 °C)	1.000	microsiemens per centimeter at 25 degrees Celsius

Sea level: In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929--a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

Temperature: In this report, temperature is given in degrees Celsius (°C), which can be converted to degrees Fahrenheit (°F) by the following equation:

$$°F = 1.8\ (°C) + 32$$

Definitions used in this report:

Water year - The period October 1 through September 30, determined by the calendar year in which it ends.


ALBERGHI PALACE