Basic Data on Urban Storm-Water Quality, Portland, Oregon

U.S. GEOLOGICAL SURVEY
Open File Report 76-594



Prepared in cooperation with the
U.S. Army Corps of Engineers and the
Columbia Region Association of Governments

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By Stuart W. McKenzie and Timothy L. Miller

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CONVERSION FACTORS

The following factors may be used to convert the English units published herein to the International System of Units (SI). In the text, the metric equivalents are shown only to the number of significant figures consistent with the values for the English units.

Multiply	By	To obtain
Inches (in)	25.4	Millimeters (mm)
Feet (ft)	.3048	Meters (m)
Miles (mi)	1.609	Kilometers (km)
Square feet (ft^2)	.09290	Square meters (m^2)
Square miles (mi^2)	2.590	Square kilometers (km^2)
Feet per mile (ft/mi)	.1894	Meters per kilometer (m/km)
Gallons (gal)	3.785	Liters (l)
Cubic feet per second (ft^3/s)	28.32	Cubic meters per second (m^3/s)

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ABSTRACT

To assess urban storm-water-quality characteristics in the metropolitan area of Portland, Oreg., seven drainage basins were selected with varying drainage areas, basin slopes, impervious areas, land uses, and active construction areas. Automatic water-quality samplers, rain gages, and stream gages were installed in each basin. From September 1, 1975, to May 1, 1976, data were collected to determine rainfall intensities and define discharge hydrographs. Almost 500 samples from the seven basins were analyzed to describe pollutographs for at least four complete storms on each of the basins. In addition to the storm samples, several base-flow samples were collected and analyzed for each site.

INTRODUCTION

The U.S. Geological Survey, in cooperation with the U.S. Army Corps of Engineers and the Columbia Region Association of Governments (CRAG), is studying the quality of urban storm water in the Portland area. Included in the study area are seven drainage basins with rainfall, stage, and sample-collection equipment to determine water quality for at least five storms in the 1976 fiscal year. Data for four of the storms were obtained prior to May 1, 1976, and are listed in this report. Data collected after May 1 will be available to the cooperators within 2 months after collection. All the data are to be used by the U.S. Army Corps of Engineers, Portland District, to calibrate their Storage, Treatment, Overflow and Runoff Model (STORM).

In addition to the data collected for the seven basins, rainfall and runoff data are also being collected for eight other drainage basins as part of a separate rainfall-runoff study. Data from these 15 stations, as well as data from combined sewered basins monitored by the city of Portland, will be used by the Geological Survey to model urban runoff. This runoff model, to be completed in 1980, will have utility in areas outside of Portland with similar climate.

BASIN LOCATION, CHARACTERISTICS, AND DESCRIPTION

Locations of the seven streamflow and sampling stations are shown in figure 1, and each is identified by an eight-digit station number. The rain gage, where it is not adjacent to the streamflow station, is identified by a different eight-digit station number.

Table 1 gives the station number, name, and location, as determined from Geological Survey 7½-minute series topographic maps. Table 2 includes a listing of drainage area, basin slope, channel slope, impervious area, land use by type, and area under construction. Drainage-area measurements are accurate to within ± 0.01 mi^2 (0.03 km^2). Values for basin slope, impervious area, and land use are only approximations which were used in basin selection and will be determined more accurately by CRAG at a future date. Channel slope and area under construction are both measured values.

Definitions of Basin Characteristics

Following are definitions of basin characteristics used to describe the basins listed in table 2:

Active construction.--Percentage of drainage-basin area with surface disturbed by construction on a specific date.

Basin slope.--The average slope, in feet per mile, for the basin, taken from a coarsely divided slope map compiled by city of Portland personnel.

Channel slope.--The difference in elevation at points 10 percent and 85 percent of the distance along the longest stream channel in the basin, measured from a gaging station upstream to the watershed divide, divided by the distance between the two points. Expressed in feet per mile and determined from Geological Survey 7½-minute series topographic maps.

Drainage area.--Area of the basin, in square miles, planimetered from Geological Survey 7½-minute series topographic maps. Basin boundaries were delineated by outlining drainage divides on 7½-minute maps and then modifying the natural drainage with current storm-sewer information from city and county agencies. A field determination was made where sewered areas were sketchy or where drainage divides could not be determined on 7½-minute maps.

Impervious area.--Percentage of drainage area impervious to the infiltration of rain, such as asphalt roads, paved parking lots, and roofs that have the rainwater piped to the streets. Taken from a preliminary map prepared by city of Portland personnel.

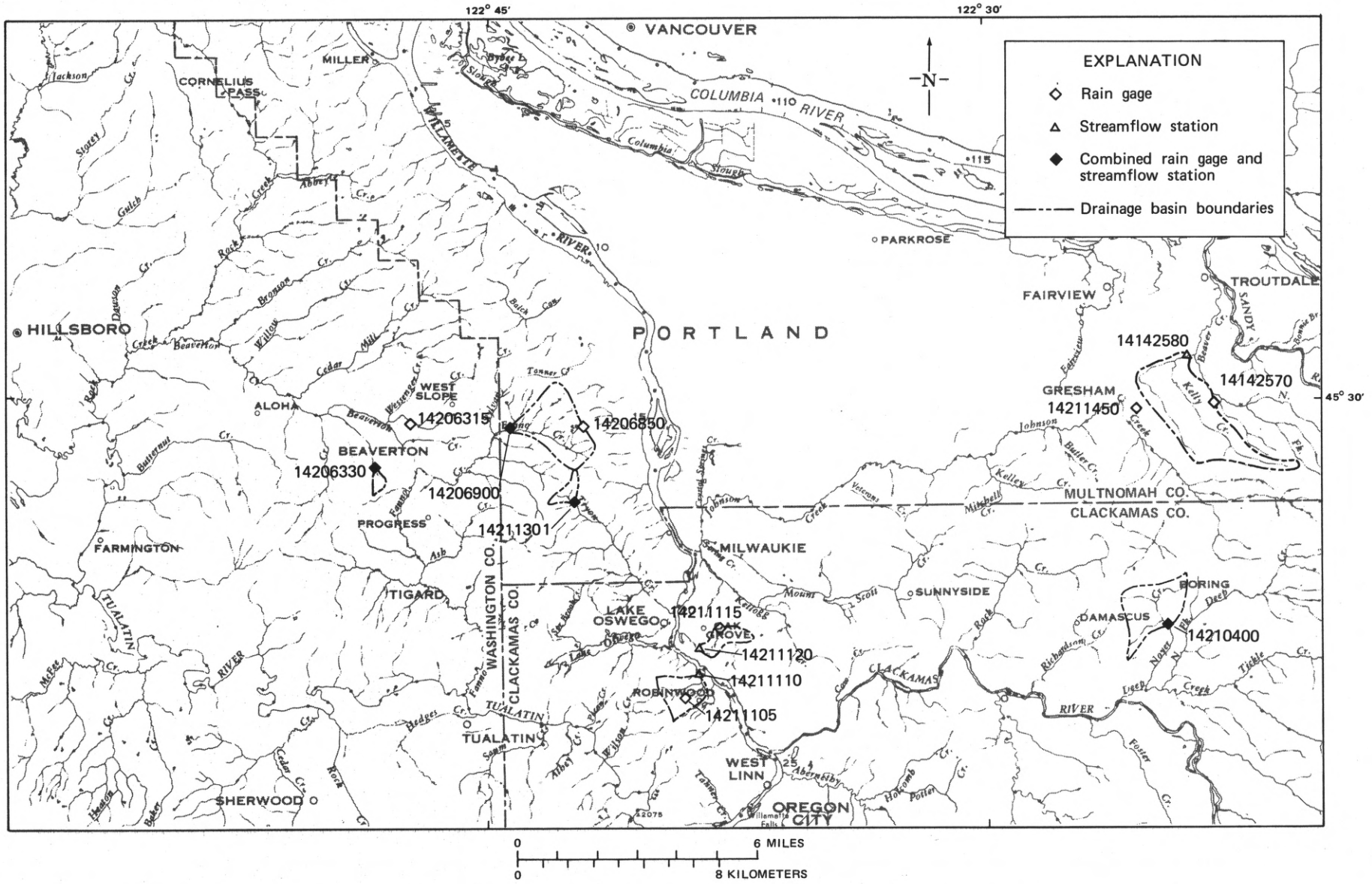


Figure 1—Locations of streamflow stations and rain gages used for urban storm-water-quality study.

Table 1.--Locations of streamflow stations and rain gages

Station no.	Name and location
14142570	Rain gage.--Powell Valley Grade School near Gresham, lat 45°29'26", long 122°22'54", in SW¼ sec.12, T.1 S., R.3 E., Multnomah County.
14142580	Streamflow station.--Kelly Creek on Kane Road near Gresham, lat 45°30'44", long 122°23'56", in NE¼ sec.2, T.1 S., R.3 E., Multnomah County.
14206315	Rain gage.--Beaverton City Hall, lat 45°29'02", long 122°48'11", in SW¼ sec.15, T.1 S., R.1 W., Washington County.
14206330	Rain gage and streamflow station.--Beaverton Creek tributary at SW. Murray Blvd. in Beaverton, lat 45°28'08", long 122°49'28", in SW¼ sec.21, T.1 S., R.1 W., Washington County.
14206850	Rain gage.--KPAM-FM radio station on Council Crest in Portland, lat 45°29'21", long 122°41'41", in NW¼ sec.16, T.1 S., R.1 E., Multnomah County.
14206900	Rain gage and streamflow station.--Fanno Creek at SW. 56th Ave. in Portland, lat 45°29'17", long 122°44'01", in NW¼ sec.18, T.1 S., R.1 E., Multnomah County.
14210400	Rain gage and streamflow station.--Noyer Creek on State Highway 212 near Damascus, lat 45°25'06", long 122°24'31", in SW¼ sec.2, T.2 S., R.3 E., Clackamas County.
14211105	Rain gage.--View Drive in Robinwood, lat 45°23'24", long 122°38'53", in SE¼ sec.14, T.2 S., R.1 E., Clackamas County.
14211110	Streamflow station.--Willamette River tributary on Old River Road in Robinwood, lat 45°23'58", long 122°38'33", in NE¼ sec.14, T.2 S., R.1 E., Clackamas County.
14211115	Rain gage.--Oak Lodge RFPD No. 4 in Oak Grove, lat 45°24'57", long 122°37'53", in NW¼ sec.12, T.2 S., R.1 E., Clackamas County.
14211120	Streamflow station.--Willamette River tributary on SE. River Road in Oak Grove, lat 45°24'34", long 122°38'39", in SE¼ sec.11, T.2 S., R.1 E., Clackamas County.
14211301	Rain gage and streamflow station.--Tryon Creek tributary at Portland, lat 45°27'43", long 122°42'18", in SE¼ sec.20, T.1 S., R.1 E., Multnomah County.
14211450	Rain gage.--Johnson Creek tributary on Roberts Ave. in Gresham, lat 45°29'26", long 122°25'22", in SE¼ sec.10, T.1 S., R.3 E., Multnomah County.

Table 2.--Basin characteristics

Station no. and name	Drainage area (mi^2)	Basin slope (percent)	Channel slope (ft/mi)	Impervious area (percent)	Land use by type (percent)					Active construction (percent)
					I	II	III	IV	V	
14142580 Kelly Creek	4.16	8	47	17	50	40	5	3	2	0.7
14206330 Murray Blvd.	.21	8	270	27	10	90	0	0	0	.2
14206900 Fanno Creek	2.37	21	260	24	26	67	4	2	1	.2
14210400 Noyer Creek	2.04	15	130	5	90	10	0	0	0	.05
14211110 Robinwood	1.03	25	430	13	70	30	0	0	0	.7
14211120 Oak Grove	.74	28	250	31	13	75	0	6	6	.2
14211300 Tryon Creek	.36	16	270	31	10	78	12	0	0	.4

Land use.--Percentage of drainage area with land uses of types I through V as mapped by the city of Portland and defined below:

I. Rural or undeveloped (includes natural and agricultural areas and parks).

II. Light to normal residential.

III. Dense residential.

IV. Apartments, commercial areas with some lawn, and industrial areas with gravel lots.

V. Downtown business, shopping centers, and industrial areas with paved lots (U.S. Army Corps of Engineers, 1974; U.S. Environmental Protection Agency, 1975; and U.S. Army Corps of Engineers, 1975).

Basin Descriptions

14142580.--The Kelly Creek basin east of Gresham has a length of about 4 mi (6.4 km) and an average width of 1 mi (1.6 km). Runoff flows northwesterly in two tributaries of about equal length. The upper part of the basin is rural with some residential development, whereas the lower basin is mostly light residential and contains small areas of dense residential, commercial, and light industrial development near Gresham. Active construction on February 4, 1976, included 24 homes, 1 church, 1 apartment complex, 1 large cleared area, 2 streets, and 1 shopping center, totaling approximately 850,000 ft^2 (79,000 m^2). The streamflow and sampling stations are on the south bank across Kane Road from Mount Hood Community College. The stage-discharge relation at this site is insensitive and unstable; therefore, discharge records should be considered only fair (within about 15 percent). Two rain gages could be used with this basin--one at the Powell Valley Grade School 1.6 mi (2.6 km) southeast of the streamflow station (14142570) and a second in the adjoining Johnson Creek basin 1.8 mi (2.9 km) to the southwest (station 14211450).

14206330.--The tributary to Beaverton Creek at SW. Murray Boulevard is in the southwestern part of Beaverton. The basin is triangular in shape with water flowing in a northwesterly direction. Recently, the basin has been developed as light residential, and all homes are connected to a sewage-treatment system. Active construction on February 5, 1976, included two new homes involving approximately 12,000 ft^2 (1,100 m^2) of disturbed ground. The streamflow, rainfall, and sampling stations are on the south bank upstream from Murray Boulevard. A supplemental rain gage is 1.45 mi (2.3 km) northeast in Beaverton Creek basin (station 14206315).

14206900.--The Fanno Creek basin is on the southwest edge of Portland, with most of the basin within Portland city limits. The basin is circular in shape with the main stream flowing in a westerly direction and tributaries draining southwestward to the main creek. There is a fairly even distribution of light residential development in the

basin. Active construction on February 5, 1976, included 29 new homes totaling approximately 150,000 ft^2 (14,000 m^2). The streamflow station and rain gage are on the south bank opposite the sampling station and upstream from a culvert under SW. 56th Avenue. A second rain gage (station 14206850) in the Fanno Creek basin is about 1.9 mi (3.0 km) east of the sampling station.

14210400.--The Noyer Creek basin is triangular in shape and is about 2 mi (3.2 km) east of Damascus and 2 mi (3.2 km) west of Boring. The basin is comprised of three parts. The northwestern part of the basin is primarily in rural use and drains southeastward. The northeastern part of the basin is largely in rural use with some established light residential use and drains southwestward. Streams draining these two segments join about 0.5 mi (0.8 km) north of the streamflow station. The southwestern part of the basin, which includes rural areas and most of the active residential construction, drains northeastward. The tributary draining this latter part of the basin transports most of the suspended sediment and joins the main stream about 300 ft (90 m) upstream from the streamflow station. Active construction on February 4, 1976, included four new homes and one cleared lot totaling about 26,000 ft^2 (2,400 m^2). The streamflow, rainfall, and sampling stations are upstream (north) from the culvert that passes under State Highway 212. Supplemental rain gages are 5 mi (8.0 km) north in Johnson Creek basin (station 14211450) and 5 mi (8.0 km) north in Kelly Creek basin (station 14142570).

14211110.--The Willamette River tributary basin in Robinwood is on the west bank of the Willamette River, about 2 mi (3.2 km) southeast of Lake Oswego, and on the northwest edge of West Linn. The basin is trapezoidal in shape. Small tributaries flow eastward to the main stream which flows northwestward parallel to Old River Road. The basin drains a part of Marylhurst College and includes both old and new residential areas and some steep, naturally vegetated area. Active construction on May 26, 1976, included 18 homes totaling about 210,000 ft^2 (20,000 m^2). The streamflow and sampling stations are on the south bank upstream from the culvert that passes under Old River Road and about 100 ft (30 m) upstream from the confluence of the stream with the Willamette River. The rain gage is above a water tank about 0.8 mi (1.3 km) southwest of the streamflow station (14211105). A supplemental rain gage is 1.25 mi (2.0 km) northeast in Oak Grove basin (station 14211115).

14211120.--The Willamette River tributary basin in Oak Grove is on the east bank of the Willamette River, about 1 mi (1.6 km) east of Lake Oswego and 2 mi (3.2 km) south of Milwaukie. The basin is elongated, about 1.5 mi (2.4 km) long and 0.5 mi (0.8 km) wide, with the stream flowing southwestward. The basin has uniform light residential development except along McLoughlin Boulevard, where there is commercial and light industrial development. Active construction on February 5, 1976, included five homes totaling about 35,000 ft^2 (3,300 m^2). The streamflow and sampling stations are on the south bank upstream from the culvert that passes under River Road. The rain gage is on the Oak Lodge Rural Fire Department No. 4 Fire Station, about 0.75 mi (1.2 km) northeast of the streamflow station and near the centroid of the basin (station

14211115). A supplemental rain gage (station 14211105) is 1.4 mi (2.3 km) to the south in Robinwood basin.

14211301.--The Tryon Creek tributary basin is just south of the Fanno Creek basin, about 4 mi (6.4 km) northwest of Lake Oswego and inside the Portland city limits. The basin shape is elongated, with an average length of 0.9 mi (1.4 km) and width of 0.4 mi (0.6 km). The basin has fairly uniform light residential development plus a small amount of dense residential development. Active construction on May 28, 1976, included two homes and a cleared lot totaling 44,000 ft^2 (4,100 m^2). The streamflow, rainfall, and sampling station are on the east bank upstream from a culvert that passes under Dolph Court. A supplemental rain gage (station 14206900) is about 2.3 mi (3.7 km) northwest in Fanno Creek basin.

EQUIPMENT

Rainfall.--Rain gages are located near the stream gages or near the centroid of most basins. For larger basins, two or more rain gages are located so as to roughly define the areal distribution of rainfall over the basin. The rain-gage shelter is mounted on a 5-ft (1.5-m) long, 3-in (76-mm) inner-diameter metal pipe. It houses a timer, battery, and recorder that punches a 16-channel paper tape at 5-minute intervals to record rainfall to within 0.01 in (0.3 mm). Rainwater is collected in a funnel on top of the metal shelter and drains into the pipe supporting the structure. A float attached to a wire translates the elevation of the water surface in the pipe to the recorder. When the collection pipe reaches its capacity, automatic syphoning occurs and lowers the water surface to some minimum level. When a rain gage is not working during a storm, the rainfall may be estimated from the record for a nearby basin, as indicated under basin description in this report.

Discharge.--A 4-in (100-mm) inner-diameter pipe with holes in the cap on the bottom acts as a stilling well. A metal shelter on top of the pipe houses a recorder that registers stage using a float. Stage is recorded to the nearest 0.01 ft (0.003 m) on a 16-channel paper tape every 5 minutes. This stage is converted to discharge by use of a stage-discharge relation. At almost all sites, a culvert controls streamflow; hence, a theoretical rating could be established. The ratings were and will continue to be verified by standard discharge measurements using a current meter.

Water-quality sampler.--Water-quality samples were taken by a SERCO_/ automatic-point sampler. The SERCO sampler consists of 24 0.5-gal (1.9-l) glass bottles which are evacuated and sealed by means of individual pressure switches. A 12-volt, direct-current timing motor rotates a tripper which releases one pressure switch at a time. The

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_/ The use of brand names in this report is for identification purposes only and does not imply endorsement by the U.S. Geological Survey.

size of the sample could be changed easily by changing the size of the containers. Sampling intervals can be selected in 1-minute increments from 1 minute to 17 hours. The sampler is capable of collecting 24 evenly distributed samples over a sampling duration ranging from 24 minutes to 17 days. Samples generally were collected at 15-minute, 30-minute, 1-hour, or 2-hour intervals. Between storms, the sampling tubes were flushed with distilled water before a new vacuum was pulled on the bottles to set the sampler for the next storm.

Depth-integrating sampler.--A manually operated depth-integrating suspended-sediment sampler is used to collect additional samples. This sampler, US DH-48TM, a wading-type hand sampler, is epoxy painted, equipped with silicone rubber gasket and teflon nozzle, and uses pint glass containers. It is used by personnel working in the field during the storm to obtain a depth- and width-integrated water sample. These hand-collected samples, one to five per storm, are used to check the representation of the point samplers, to collect extra sample volume for various analytical tests, and to collect samples for microbiological analysis of indicator bacteria.

DATA COLLECTION

Sampling Guidelines

One objective of the study was to collect sufficient data during five storms in the 1976 fiscal year to define rainfall, discharge hydrograph, and pollutographs of designated constituents. Another objective was to collect sufficient data on other constituents during storms that might indicate if they caused problems associated with urban runoff. To fulfill these objectives, the Geological Survey established sampling guidelines designating a "storm event" as being rainfall that significantly changes water-quality constituent loads. Changes in the constituent load might result either from a significant change in concentration, or in discharge, or both. Decisions to collect samples during a variety of storm conditions were based on predicted rainfall intensities and amounts, base-flow conditions, and number of antecedent dry days. When 24-hour advance notice of a storm was possible, the sample bottles were evacuated prior to the storm, thereby increasing the reliability of the samplers.

Because of the geographical location of the basins, it was most efficient to have three people in the field during a storm, each person responsible for two or three samplers in his area. Responsibilities included (1) turning the samplers on, (2) seeing that the samplers performed correctly during the storm, (3) collecting depth- and width-integrated check samples, (4) collecting microbiological samples and extra volumes of water for special tests, (5) checking to see that rain and streamflow gages were operating correctly, and (6) measuring dissolved-oxygen concentration and temperature. When the storm event lasted for more than 6 hours, the first person in the field transported the collected samples to the Geological Survey district laboratory and a second person replaced him in the field. The first person then

measured, prepared for analysis, or preserved the samples according to Brown, Skougstad, and Fishman (1970); Slack, Averett, Greeson, and Lipscomb (1973); Guy (1969); and American Public Health Association and others (1975) Standard Methods. When the samples arrived at the laboratory, specific conductance and turbidity were measured on each sample, which indicated the relative dissolved and suspended concentrations, respectively, of material in the samples. A sufficient number of samples were then selected for analysis of settleable solids, suspended sediment, and biochemical oxygen demand to describe the pollutographs. Alkalinity and pH were measured over the range of specific conductance. Samples taken near the beginning, at the peak, and near the end of the storm were analyzed for fecal coliform, and occasionally fecal streptococci or total coliform. To minimize cost, only a few analyses were made of nutrients, chemical oxygen demand, and dissolved solids. These data will be correlated with other constituents, including suspended sediment and specific conductance to extend their values over the hydrograph. Because of equipment problems or errors in rainfall prediction, some data collected did not cover a complete storm period. These data are included in table 4 following the data for complete storms.

Laboratory Methods

A brief listing of the analytical methods used includes (1) a reference to the method, (2) the laboratory performing the work (USGS, U.S. Geological Survey district laboratory in Portland, Oreg.; CE, U.S. Army Corps of Engineers), and (3) significant remarks concerning the analysis.

Specific conductance at 25°C (micromhos/cm).--(1) Brown, Skougstad, and Fishman, p. 148); (2) USGS; (3) a Lab-Line Portable Lectro Mho-meter Mark IV was used.

Settleable solids (ml/1).--(1) American Public Health Association and others (1975, p. 95), (2) USGS, (3) 500 to 1,000 ml of sample was used in an Imhoff cone. A few average and individual dry-weight densities (gm/ml) of the settled material were determined and are listed in the Remarks section of the basic data.

Turbidity (Jackson turbidity unit, or JTU).--(1) Brown, Skougstad, and Fishman (1970, p. 29), and American Public Health Association and others (1975, p. 132); (2) USGS; (3) a Hack Model 2100 turbidimeter was used. After April 8, 1976, it was found necessary to dilute samples until their turbidities were below 40 JTU or the calculated turbidities remained constant upon further dilution. Because of this change in technique, a remark "D" indicates those samples that were diluted when measured. The dilution usually resulted in higher reported turbidity values.

Suspended sediment (mg/1).--(1) Guy (1969), (2) USGS, (3) values in parentheses in the basic-data tables are depth- and width-integrated, hand-collected samples. (See basic data in the back of this report.)

Biochemical oxygen demand, 5-day (BOD_5) (mg/l).--(1) Hines, McKenzie, Rickert, and Rinella (1976, app. C); (2) USGS; (3) dilutions and biological seeds were not used. Yellow Springs Instrument (YSI) dissolved-oxygen meter and self-stirring probe were used to measure the concentration of dissolved oxygen. Those samples that had just a BOD_5 value were incubated only 5 days. The BOD_5 value was calculated in a manner consistent with the calculation of ultimate BOD values.

Biochemical oxygen demand-ultimate (BOD_u) (mg/l).--(1) Hines, McKenzie, Rickert, and Rinella (1976, app. C); (2) USGS; (3) nitrification inhibitor, 1-Allyl-2-thiourea was added to selected samples to check for nitrification.

Rate of BOD satisfaction, k (day^{-1}).--(1) Hines, McKenzie, Rickert, and Rinella (1976, app. C), and Velz (1970); (2) USGS; (3) the direct extrapolation of test results to actual stream oxygen demands is questionable because the laboratory environment does not reproduce stream conditions such as temperature, sunlight, biological population, water movement, and oxygen concentration (American Public Health Assoc. and others, 1975).

Fecal coliform (colonies/100 ml).--(1) Slack, Averett, Greeson, and Lipscomb (1973, p. 45); (2) USGS; (3) a membrane filter on M-FC agar was used. Samples that did not have one or a combination of filters with a colony count between the ideal of 20 to 60 are reported with the remark "B" to indicate "Estimated count based on nonideal colony count."

Fecal streptococci (colonies/100 ml).--(1) Slack, Averett, Greeson, and Lipscomb (1973, p. 50); (2) USGS; (3) a membrane filter on M-Enterococcus agar was used. Samples that did not have one or a combination of filters with a colony count between the ideal of 20 to 100 are reported by the remark "B."

Total coliform (count/100 ml).--(1) Slack, Averett, Greeson, and Lipscomb (1973, p. 35); (2) USGS; (3) a membrane filter on M-Endo agar was used. Samples that did not have one or a combination of filters with a colony count between the ideal of 20 and 80 are reported by the remark "B." Values for this test will be included under the Remarks heading.

Temperature (degrees Celsius, or °C).--(1) American Public Health Association (1975, p. 125), (2) USGS, (3) a mercury thermometer or YSI thermister was used.

Dissolved oxygen (mg/l).--(1) Hines, McKenzie, Rickert, and Rinella (1976, app. B); (2) USGS; (3) a YSI model 57 dissolved-oxygen meter and probe calibrated using a YSI air-calibration chamber provided most of the values. Some additional values were obtained by filling BOD bottles in the field and analyzing by the modified Winkler method within 6 hours in the laboratory.

pH (unit).--(1) Brown, Skougstad, and Fishman (1970, p. 129); (2) USGS; (3) a Beckman Zeromatic meter and combination electrode were used.

Alkalinity (mg/l as $CaCO_3$).--(1) Brown, Skougstad, and Fishman (1970, p. 41); (2) USGS; (3) a pH end point of 4.5 was used.

Chemical oxygen demand (COD) (mg/l).--(1) American Public Health Association (1975, p. 550), (2) CE, (3) samples were chilled.

Dissolved solids (mg/l).--(1) American Public Health Association (1975, p. 95), (2) CE, (3) samples were filtered through a 0.45-micrometer (um) membrane filter and the residue was dried at 180°C.

Total phosphorus as P (mg/l).--(1) American Public Health Association (1975, p. 474), (2) CE, (3) an unfiltered, chilled water sample was used.

Total organic nitrogen as N (mg/l).--(1) American Public Health Association (1975, p. 437), (2) CE, (3) an unfiltered, chilled water sample was used to measure total Kjeldahl. Ammonia subtracted from total Kjeldahl provides a measurement of total organic nitrogen.

Ammonia as N (mg/l).--(1) U.S. Environmental Protection Agency (1974, p. 165), (2) CE, (3) Nesslerization was tried but, because of turbidity interference, was discontinued in favor of the selective ion electrode method with unfiltered chilled samples.

Dissolved nitrate plus nitrite as N (mg/l).--(1) American Public Health Association (1975, p. 423), (2) CE, (3) samples were filtered through a 0.45-um membrane filter.

Silica as SiO_2 (mg/l).--(1) American Public Health Association (1975, p. 490), (2) CE.

Calcium (mg/l).--(1) American Public Health Association (1975, p. 189), (2) CE.

Magnesium (mg/l).--(1) American Public Health Association (1975, p. 223), (2) CE.

Iron (mg/l).--(1) American Public Health Association (1975, p. 208), (2) CE.

Potassium (mg/l).--(1) American Public Health Association (1975, p. 234), (2) CE.

Sodium (mg/l).--(1) American Public Health Association (1975, p. 250), (2) CE.

Chloride (mg/l).--(1) American Public Health Association (1975, p. 304), (2) CE.

Sulfate (mg/l).--American Public Health Association (1975, p. 496, (2) CE.

Analyses of Base Flow

Several base-flow samples were collected at each site during the year. Base flow is the sustained or fair-weather runoff and is composed of ground-water runoff and delayed subsurface runoff (Chow, 1964). All base-flow samples were collected using the depth-integrating suspended-sediment hand sampler. An attempt was made to collect samples at each site during a high- and a low-base flow. The results of analyses of base-flow samples are tabulated in table 3.

Table 3.--Base-flow data

Parameter	Kelly Creek	Murray Blvd.	Fanno Creek	Robinwood	Oak Grove	Tryon Creek
Date sampled	9-3-75	9-3-75	9-3-75	9-3-75	9-3-75	9-3-75
Stage (ft)	0.52	0.06	--	-0.06	0.28	0.29
Discharge (ft^3/s)	.30	.07	1.5	.02	.15	.64
Specific conductance at 25°C (micromhos/cm)	144	253	194	179	217	207
Turbidity (JTU)	30	6	10	7	30	10
Suspended sediment (mg/l)	15	11	15	4	43	7
BOD_5 (mg/l)	1.2	.8	.8	.9	.9	.9
BOD_u (mg/l)	3.4	2.2	2.3	1.8	2.5	2.6
Rate of BOD satisfaction, k (day^{-1})	.04	.04	.04	.06	.04	.04
Fecal coliform (count/100 ml)	530	84	190	1,100	980	70
Fecal streptococci (count/100 ml)	--	--	800	--	--	--
Temperature (°C)	14	16	14	13	16	14
Dissolved oxygen (mg/l)	8.6	7.2	8.8	9.7	8.3	4.9
pH (units)	6.7	6.9	7.2	7.6	7.6	6.7
Alkalinity (mg/l as $CaCO_3$)	63	95	72	73	100	79
COD (mg/l)	17.5	8.0	7.5	4.1	6.3	9.0
Dissolved solids (mg/l)	114	166	112	142	148	138
Total phosphorus as P (mg/l)	.06	.12	.07	.04	.05	.06
Total organic nitrogen as N (mg/l)	N.D.[1/]	N.D.[1/]	N.D.[1/]	N.D.[1/]	N.D.[1/]	1.8
Ammonia as N (mg/l)	.38	.33	.22	.22	.31	.4
Dissolved nitrate and nitrite as N (mg/l)	1.36	.80	.92	1.5	1.0	.6
Dissolved silica (mg/l)	1.0	1.5	1.1	1.7	1.5	1.0
Dissolved chloride (mg/l)	7.5	22.5	10.0	10.0	10.0	7.5
Dissolved sulfate (mg/l)	6.0	6.0	6.5	6.0	6.5	17.5
Dissolved calcium (mg/l)	16.0	24.0	18.0	16.0	18.0	20.0
Dissolved magnesium (mg/l)	3.6	8.4	4.8	7.2	6.0	6.0
Dissolved iron (mg/l)	Trace	.01	Trace	.01	.01	.02
Dissolved sodium (mg/l)	5	14	8	6	13	8
Dissolved potassium (mg/l)	1	1	1	1	3	1

1/ Not detectable.

Table 3.--Base-flow data--Continued

Parameter	Kelly Creek		Murray Blvd.		Noyer Creek	Fanno Creek		Robinwood	Oak Grove	Tryon Creek	
Date sampled	1-13-76	2-11-76	1-16-76	2-11-76	1-13-76	1-16-76	2-11-76	1-16-76	1-16-76	1-16-76	2-11-76
Stage (ft)	1.83	1.61	0.16	0.21	1.55	0.58	0.18	0.07	0.58	0.39	0.20
Discharge (ft^3/s)	34	4.1	.23	.32	12	4.5	1.4	4.7	2.0	.95	.41
Specific conductance at 25°C (micromhos/cm)	87	145	192	255	46	164	200	78	162	168	166
Turbidity (JTU)	--	11	--	25	--	--	15	--	--	--	25
Suspended sediment (mg/l)	21	--	--	--	11	9	--	--	--	20	--
BOD_5 (mg/l)	--	1.2	--	2.2	--	--	--	--	--	--	--
BOD_u (mg/l)	--	3.2	--	4.3	--	--	--	--	--	--	--
Rate of BOD satisfaction, k (day^{-1})	--	.04	--	.06	--	--	--	--	--	--	--
Fecal coliform (count/100 ml)	420 B	--	260	--	17 B	170	--	14 B	29 B	140 B	--
Fecal streptococci (count/100 ml)	230	--	7 B	--	10 B	760	--	110 B	72 B	79 B	--
Temperature (°C)	--	--	10.5	--	--	9	--	10	11	10	--
pH (units)	--	--	--	7.3	--	--	7.5	--	--	--	--
Alkalinity (mg/l as $CaCO_3$)	--	--	--	87	--	--	67	--	--	--	--

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BASIC DATA

Basic data collected during storms are tabulated in table 4. The table is organized in sequential station-number order. For each station, the data on complete storm events are listed in chronological order, followed by incomplete storm events, also listed in chronological order. Each storm is listed on a separate page, with complete storm events given a Roman numeral following the station name at the top of the page.

Table 4.--Basic data collected during storms

Station number and name 14142580 Kelly Creek Storm I Date 10-17-75

Rainfall: Starting time 1700 Ending time 2130 Total 0.57 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1830	1.09	4.6	100	2.0	60	(205)	8.9	20	0.06	2,100	--
1900	1.29	9.2	116	2.5	70	--	11	23	.06	--	--
1910	1.34	11	108	2.0	70	(261)	--	--	--	6,200	--
1930	1.40	13	106	1.3	75	(239)	12	24	.06	--	--
1950	1.39	13	107	.8	70	--	--	--	--	5,800	--
2010	1.37	12	101	.4	75	(189)	--	--	--	--	--
2035	1.31	9.9	81	.2	75	--	--	--	--	--	--
2115	1.21	7.1	72	.1	75	(176)	--	--	--	--	--
2145	1.17	6.1	72	<.1	70	--	--	--	--	--	--
2215	1.12	5.1	72	<.1	65	(159)	10.5	21.3	.06	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1830	--	--	7.0	40	--	--	--	--	--	--	--
1900	--	--	6.9	89	67	88	0.74	4.2	0.24	2.4	--
1910	--	--	6.9	47	--	--	--	--	--	--	--
1930	--	--	7.1	93	63	82	.51	3.8	.16	1.6	--
1950	--	--	7.4	46	--	--	--	--	--	--	--
2010	--	--	8.2	44	--	--	--	--	--	--	--
2035	--	--	7.8	35	--	--	--	--	--	--	--
2115	--	--	7.5	30	--	--	--	--	--	--	--
2145	--	--	7.2	30	--	--	--	--	--	--	--
2215	--	--	7.2	29	82	58	.23	2.8	.14	1.7	--

Table 4.--Basic data collected during storms--Continued

Station number and name 14142580 Kelly Creek Storm II Date 10-29-75

Rainfall: Starting time 1530 Ending time 1915 Total 0.36 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1515	1.04	3.7	130	<0.1	25	(28)	2.1	4.2	0.06	470 B	--
1530	1.07	4.2	122	--	35	--	--	--	--	--	--
1615	1.30	9.6	112	.6	40	86	--	--	--	--	--
1645	1.42	14	115	.6	35	100	2.4	6.7	.04	1,200 B	--
1700	1.48	16	95	.8	60	--	--	--	--	--	--
1715	1.55	20	88	.5	55	127	--	--	--	--	--
1745	1.63	24	67	.9	85	--	--	--	--	--	--
1800	1.66	25	62	.8	95	218	5.5	11	.06	--	--
1815	1.66	25	58	1.1	110	--	--	--	--	--	--
1830	1.68	26	54	.6	120	235	--	--	--	--	--
1845	1.65	24	50	.5	120	229	4.0	7.9	.06	3,800	13,000
1900	1.63	24	49	.6	140	--	--	--	--	--	--
1935	1.55	20	49	.6	160	271	--	--	--	--	--
2005	1.52	18	52	.4	--	--	--	--	--	--	--
2040	1.51	18	55	.2	140	(218)	2.2	4.4	.06	--	--
2110	1.51	18	65	.8	140	--	--	--	--	--	--
2140	1.49	17	66	.1	120	(137)	--	--	--	--	--
2225	1.40	13	64	.1	110	--	--	--	--	--	--
2300	1.35	11	66	.1	120	114	2.7	5.5	.06	3,300	--

Table 4.--Basic data collected during storms--Continued

Station number and name 14142580 Kelly Creek--Continued Storm II Date 10-29-75

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1515	--	--	7.4	36	--	--	--	--	--	--	Total Coliform (count/100 ml) 14,000 at 1845
1645	--	--	7.2	34	--	--	--	--	--	--	
1715	--	--	7.2	30	--	--	--	--	--	--	
1800	--	--	7.3	21	--	48	--	--	--	--	
1845	--	--	7.0	19	34	38	0.36	1.0	0.03	2.9	
1935	--	--	7.1	16	--	--	--	--	--	--	
2040	--	--	7.1	20	--	--	--	--	--	--	
2300	--	--	7.1	23	--	84	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14142580 Kelly Creek Storm III Date 12-3, 4-75

Rainfall: Starting time 1915 Ending time 0720 Total 1.89 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1540	1.52	18	91	--	25	27	2.1	4.2	0.06	1,400	--
1740	1.49	17	84	1.0	55	--	--	--	--	--	--
1840	1.47	16	78	--	60	179	--	--	--	--	--
1940	1.48	16	94	--	65	--	4.7	--	--	--	--
2040	1.63	24	85	--	75	264	--	--	--	--	--
2140	1.78	31	67	--	100	--	--	--	--	--	--
2240	1.80	33	61	--	150	368	4.8	9.6	.06	--	--
2340	1.80	33	70	1.1	140	--	6.0	--	--	--	--
0040	2.25	68	58	1.7	160	(195)	2.3	--	--	--	--
0145	2.60	102	49	2.0	210	--	5.6	11	.06	--	--
0245	2.87	131	50	2.0	210	848	--	--	--	--	--
0345	3.03	151	52	--	180	--	6.3	--	--	--	--
0445	3.46	197	48	2.0	200	(934)	3.1	8.4	.04	3,400	7,200
0540	3.60	213	56	1.4	180	--	4.6	--	--	--	--
0640	3.83	241	58	--	170	642	--	--	--	--	--
0745	3.81	239	57	1.8	160	--	4.9	--	--	--	--
0845	3.71	226	63	--	140	503	--	--	--	--	--
0945	3.43	193	62	--	120	536	6.4	--	--	--	--
1050	3.05	153	64	.8	95	330	--	--	--	--	--
1150	2.72	114	68	--	110	619	4.8	--	--	--	--
1255	2.41	84	71	1.0	85	--	--	--	--	--	--
1500	2.28	70	76	--	70	243	2.1	4.3	.06	--	--

Table 4.--Basic data collected during storms--Continued

Station number and name 14142580 Kelly Creek--Continued Storm III Date 12-3, 4-75

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1540	10.4	--	7.2	25	17	84	0.08	0.81	0.12	2.6	Total Coliform (Count/100 ml) 7,200 at 0440
1840	--	--	7.3	23	--	--	--	--	--	--	
2140	--	--	7.1	18	--	--	--	--	--	--	
2240	10.4	10.8	7.0	20	--	--	--	--	--	--	
0045	10.4	10.8	7.0	18	--	--	--	--	--	--	
0145	--	--	6.9	15	--	--	--	--	--	--	
0440	--	--	6.9	13	63	30	1.1	2.5	<.03	1.6	
0540	--	--	6.6	13	--	--	--	--	--	--	
0640	--	--	--	--	--	32	--	--	--	--	
1050	--	--	6.8	15	--	--	--	--	--	--	
1510	--	--	6.8	16	27	50	.26	1.1	<.03	2.9	

Table 4.--Basic data collected during storms--Continued

Station number and name 14142580 Kelly Creek Storm IV Date 3-30, 31-76

Rainfall: Starting time 2120 Ending time 0200 Total 0.08 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
2255	1.69	20	92	0.4	20	(37)	3.4	7.0	0.06	17,000 B	--
2355	1.76	23	74	.3	25	(49)	--	--	--	--	--
0110	1.72	21	59	.2	45	(60)	4.1	8.3	.06	--	--
0205	1.78	24	58	.2	60	(74)	3.4	6.9	.06	1,700	9,000
0420	1.71	20	66	.3	40	64	3.5	7.1	.06	--	--
0520	1.68	19	74	.9	50	--	--	--	--	--	--
0810	1.63	16	75	.5	45	(31)	3.5	9.7	.04	--	--
0910	1.61	16	74	.4	50	--	--	--	--	--	--
1010	1.59	15	77	.7	45	--	4.0	11	.04	--	--
1130	1.56	13	81	.1	30	(20)	--	--	--	800	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
2255	--	--	7.3	34	--	--	--	--	--	--	Total Coliform (Count/100 ml) 1,900 at 0205
0205	--	--	6.9	20	--	--	--	--	--	--	
1130	7.5	12.2	--	--	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14142580 Kelly Creek Date 2-11, 12-76

Rainfall: Starting time 1610 Ending time 2000 Total 0.10 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1700	1.60	3.9	141	0.3	25	87	3.5	--	--	460 B	--
1800	1.65	4.8	127	.5	40	--	--	--	--	--	--
1900	1.70	5.8	122	.6	50	196	6.7	--	--	--	--
2000	1.72	6.2	112	.5	55	--	--	--	--	--	--
2100	1.73	6.4	112	.3	60	--	--	--	--	--	--
2200	1.71	6.0	106	.1	55	74	5.6	11	0.06	--	--
2305	1.68	5.3	103	.6	70	--	5.4	--	--	--	--
0005	1.66	5.0	93	.2	95	245	8.4	18	.06	540	--
0030	1.64	4.6	94	.6	75	--	--	--	--	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1800	--	--	--	--	--	108	--	--	--	--	
1900	6	11.5	--	--	--	--	--	--	--	--	
0005	--	--	7.0	36	--	--	--	--	--	--	
0030	--	--	--	--	--	80	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14142580 Kelly Creek Date 3-13-76

Rainfall: Starting time 1615 Ending time 2130 Total 0.64 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1920	2.15	24	48	--	100	186	--	--	--	--	--
1953	2.16	25	44	--	85	--	--	--	--	--	--
2020	2.18	25	44	--	110	230	--	--	--	--	--
2053	2.22	28	45	--	130	--	6.2	12	0.06	--	--
2230	2.21	27	44	--	120	189	--	--	--	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1920	--	--	7.2	20	--	--	--	--	--	--	
2230	--	--	7.1	18	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14206330 Murray Blvd. Storm I Date 12-3, 4-75

Rainfall: Starting time 1900 Ending time 0600 Total 1.89 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1708	0.25	0.40	122	--	30	44	--	--	--	580	--
1808	.25	.40	141	0.14	30	--	3.4	6.9	0.06	--	--
1915	.32	.56	135	.24	60	90	3.6	7.3	.06	--	--
2015	.82	3.0	51	.76	100	256	5.8	12	.06	--	--
2120	.84	3.4	70	.30	70	122	--	--	--	1,200	--
2220	.70	2.4	76	.28	55	89	5.1	--	--	--	--
2320	1.19	6.6	50	--	110	306	6.1	12	.06	--	--
0020	1.46	9.3	65	--	85	--	--	--	--	--	--
0225	1.24	7.1	66	.35	70	137	5.0	--	--	3,900	22,700
0325	1.16	6.3	68	.50	100	229	--	--	--	--	--
0425	1.05	5.2	76	.25	70	--	5.6	--	--	--	--
0540	.93	4.2	82	--	55	103	--	--	--	--	--
0715	.62	1.9	115	.30	50	67	5.3	--	--	--	--
0840	.56	1.6	142	--	45	70	4.4	8.9	.06	3,100	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1708	--	--	7.2	42	23	64	0.15	0.72	<0.03	1.6	Total Coliform (Count/100 ml) 6,400 at 1708
1808	--	--	7.2	48	--	--	--	--	--	--	
1915	11.5	8.6	7.2	46	--	--	--	--	--	--	Average Settleable Solids density (gm/ml) 0.19
2015	--	--	6.9	18	--	--	--	--	--	--	
2220	--	--	7.0	21	--	--	--	--	--	--	
2320	--	--	6.9	15	--	20	--	--	--	--	
0020	--	--	--	--	39	56	.49	1.2	<.03	1.8	
0325	--	--	6.8	16	--	--	--	--	--	--	
0540	--	--	6.7	22	--	38	--	--	--	--	
0840	--	--	7.2	39	32	78	.22	.98	<.03	3.0	

Table 4.--Basic data collected during storms--Continued

Station number and name 14206330 Murray Blvd. Storm II Date 2-11, 12-76

Rainfall: Starting time 1620 Ending time 0320 Total 0.24 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1815	--	0.29	136	0.17	40	52	7.4	20	0.04	43 B	--
1915	--	.47	140	.90	75	205	--	--	--	--	--
2015	--	.40	79	.14	30	42	6.4	13	.06	--	--
2120	--	.30	99	.50	20	25	5.3	--	--	--	--
2220	--	.30	155	.18	15	--	--	--	--	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
0930	--	--	7.3	87	--	--	--	--	--	--	Average settleable solids density (gm/ml)
2015	--	--	7.0	26	--	--	--	--	--	--	0.12
2120	--	--	--	--	--	112	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14206330 Murray Blvd. Storm III Date 2-17-76

Rainfall: Starting time 0220 Ending time 1230 Total 0.40 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1015	0.66	2.2	46	0.24	40	70	3.5	7.1	0.06	371 B	--
1050	.57	1.6	46	.27	40	72	--	--	--	--	--
1120	.84	3.4	40	.86	85	227	4.8	13	.04	--	--
1150	.75	2.8	46	.50	55	101	--	--	--	--	--
1220	.83	3.4	42	.69	85	205	4.5	9.2	.06	620	4,200
1250	.60	1.8	97	.20	50	60	--	--	--	--	--
1320	.49	1.2	97	.20	55	--	3.9	--	--	--	--
1350	.43	.96	115	.28	50	--	--	--	--	--	--
1420	.39	.80	125	.24	50	50	5.4	--	--	660	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1120	--	--	--	--	--	50	--	--	--	--	Total Coliform (Count/100 ml) 977 B at 1220
1220	--	--	7.0	16	43	--	0.29	0.7	0.09	--	
1420	--	--	7.1	42	--	--	--	--	--	--	Average Settleable solids density (gm/ml) 0.23

Table 4.--Basic data collected during storms--Continued

Station number and name 14206330 Murray Blvd. Storm IV Date 3-22-76

Rainfall: Starting time 0245 Ending time 0500 Total 0.23 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
0035	0.21	0.32	170	--	15	--	--	--	--	--	--
0220	.21	.32	170	0.2	15	38	4.6	13	0.04	2,200	240 B
0330	.44	1.00	80	.9	50	138	11	23	.06	--	--
0430	.62	1.9	40	--	65	220	8.4	14	.08	1,670	2,300
0529	.36	.70	50	.2	35	69	4.8	13	.04	--	--
0640	.23	.36	102	--	30	49	10	29	.04	1,730	14,500

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
0035	--	--	7.9	79	--	166	--	--	--	1.2	Average Settleable Solids density (gm/ml)
0220	10.8	8.6	--	--	--	--	--	--	--	--	0.13
0430	--	--	7.1	16	37	--	0.24	0.84	0.02	--	
0640	9.0	9.3	--	--	--	100	--	--	--	1.6	

Table 4.--Basic data collected during storms--Continued

Station number and name 14206330 Murray Blvd. Storm V Date 4-23-76

Rainfall: Starting time 1130 Ending time 1630 Total 0.33 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1045	0.22	0.34	238	--	4	(5)	1.2	3.2	0.04	29 B	--
1230	.53	1.4	51	--	95 D	(188)	12	24	.06	1,100	4,800
1300	.71	2.5	32	1.6	55 D	--	--	--	--	--	--
1330	.71	2.5	33	1.0	70 D	123	7.6	--	--	--	--
1410	.62	1.9	47	.4	50 D	62	--	--	--	--	--
1445	.53	1.4	62	1.0	30	--	--	--	--	--	--
1515	.53	1.4	95	--	30	58	5.3	15	.04	--	--
1615	.53	1.4	122	.6	30	--	--	--	--	--	--
1630	.29	.48	116	.6	30	59	8.2	--	--	--	--
1730	.24	.38	138	.5	25	45	--	--	--	--	--
1830	.23	.36	159	--	25	46	7.1	14	.06	3,100	--

Time (2400) hour	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1045	--	--	7.7	84	--	150	--	--	--	0.8	Total Coliform (Count/100 ml) 2,600 at 1230
1230	12	9.9	--	--	50	40	0.46	0.75	0.18	.08	
1300	--	--	6.7	12	--	26	--	--	--	--	Average Settleable Solids density (gm/ml) 0.12
1410	10.5	--	6.8	15	--	--	--	--	--	--	
1445	--	--	--	--	--	52	--	--	--	--	
1515	--	--	6.9	31	--	92	--	--	--	--	
1830	--	--	7.3	56	--	130	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14206330 Murray Blvd. Date 10-21-75

Rainfall: Starting time 0430 Ending time 0730 Total 0.30 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
0930	0.32	0.56	70	0.1	20	(16)	2.8	7.7	0.04	2,300	--
1005	.31	.53	82	.15	25	--	--	--	--	--	--
1050	.27	.44	90	.05	20	(25)	--	--	--	--	--
1135	.22	.34	96	.15	45	--	--	--	--	--	--
1230	.18	.27	115	.15	20	(14)	2.8	8.1	.04	--	--
1340	.25	.40	--	--	--	(48)	--	--	--	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
0930	11.7	8.9	7.1	27	--	--	--	--	--	--	
1005	11.5	9.1	7.0	30	--	--	--	--	--	--	
1050	12.0	8.5	7.0	33	--	--	--	--	--	--	
1135	12.0	8.2	7.0	35	--	--	--	--	--	--	
1230	12.2	7.8	7.3	40	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14206330 Murray Blvd. Date 10-29-75

Rainfall: Starting time 1220 Ending time 2110 Total 0.44 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1610	0.64	2.0	58	0.15	30	--	--	--	--	--	--
1640	.67	2.2	50	.10	30	64	4.1	8.4	0.06	--	--
1715	.55	1.5	60	.10	25	53	--	--	--	960	11,000
1745	.48	1.2	73	.05	20	--	2.8	8.3	.06	--	--
1820	.53	1.4	81	.10	20	38	--	--	--	--	--
1855	.52	1.4	76	.10	20	--	--	--	--	--	--
1930	.54	1.5	95	.20	35	--	--	--	--	--	--
2010	.57	1.6	78	.15	30	81	--	--	--	1,500	--
2130	.35	.66	95	.10	20	27	--	--	--	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1640	--	--	6.5	20	--	76	--	--	--	--	Total Coliform (Count/100 ml) 4,000 at 1715
1715	10.6	10.4	--	--	--	--	--	--	--	--	
1745	--	--	6.4	25	--	--	--	--	--	--	
1930	--	--	6.5	30	--	--	--	--	--	--	
2010	11.0	10.3	--	--	--	--	--	--	--	--	
2130	--	--	6.7	31	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14206900 Fanno Creek Storm I Date 12-3, 4-1975

Rainfall: Starting time 1900 Ending time 0600 Total 1.66 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1557	0.64	5.0	118	2.3	28	16	25.0	120	0.02	600 B	--
1657	.62	4.9	122	.10	26	--	--	--	--	--	--
1800	.59	4.6	125	--	25	--	--	--	--	--	--
1900	.56	4.4	128	.10	25	18	3.0	5.9	.06	--	--
2003	.56	4.4	128	.22	36	42	3.6	--	--	--	--
2110	1.64	22	127	.80	90	230	--	--	--	--	--
2210	1.78	25	72	1.0	100	--	5.6	11	.06	--	--
2310	1.62	21	73	.60	76	164	5.5	--	--	1,900	--
0010	2.95	65	54	--	155	1,841	6.5	18	.04	--	--
0110	3.68	98	58	5.2	145	2,224	8.3	--	--	4,800	20,000
0250	3.64	96	68	--	180	--	--	--	--	--	--
0310	3.72	100	69	2.2	185	1,200	6.2	13	.06	--	--
0450	3.26	79	76	2.0	155	945	7.0	--	--	--	--
0550	2.85	61	80	1.8	155	--	--	--	--	--	--
0645	2.88	62	82	--	115	523	4.8	--	--	--	--
0740	2.22	38	82	.90	114	369	5.0	--	--	--	--
0815	1.88	28	95	.80	110	--	--	--	--	--	--
0905	1.63	21	105	--	78	206	4.8	9.9	.06	4,000	--

Table 4.--Basic data collected during storms--Continued

Station number and name 14206900 Fanno Creek-Continued Storm I Date 12-3, 4-75

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1557	--	--	7.4	39	--	--	--	--	--	--	Total Coliform (Count/100 ml) 5,100 B at 0110
1800	10.5	10.0	7.4	42	18	--	<0.01	0.54	<0.03	--	
2003	--	--	7.3	39	--	--	--	--	--	--	
2210	--	--	7.2	25	--	--	--	--	--	--	
0010	--	--	7.0	23	--	58	--	--	--	--	
0250	--	--	--	--	76	70	1.0	2.3	.08	2.1	
0310	--	--	7.0	16	--	--	--	--	--	--	
0450	--	--	6.8	17	--	--	--	--	--	--	
0645	--	--	--	--	--	88	--	--	--	--	
0740	--	--	6.9	18	--	--	--	--	--	--	
0905	--	--	6.9	24	33	96	.32	1.2	<.03	2.3	

Table 4.--Basic data collected during storms--Continued

Station number and name 14206900 Fanno Creek Storm II Date 2-17-76

Rainfall: Starting time 0910 Ending time 1210 Total 0.29 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1040	1.04	8.9	117	0.6	60	141	4.2	8.4	0.06	7,600	--
1110	1.35	15	80	1.5	130	773	--	--	--	--	--
1240	2.13	35	60	1.8	150	817	6.9	14	.06	3,300	5,800
1500	1.11	9.8	82	.7	110	279	5.0	10	.06	--	--
1535	.99	8.1	91	.4	90	160	3.2	9.0	.04	--	--
1605	.94	7.5	96	.3	75	134	4.2	--	--	--	--
1635	.90	7.1	114	.3	55	--	--	--	--	--	--
1705	.86	6.8	118	.4	60	--	--	--	--	--	--
1735	.83	6.5	126	.3	60	103	3.8	--	--	1,400	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1040	--	--	7.1	38	--	84	--	--	--	--	Total Coliform (Count/100 ml) 8,900 at 1240
1240	--	--	--	--	81	--	0.36	1.8	0.04	--	
1500	--	--	--	--	47	70	.35	1.0	.02	1.2	Average Settleable Solids density (gm/ml) 0.34
1535	--	--	7.0	27	--	90	--	--	--	--	
1735	--	--	--	--	--	94	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14206900 Fanno Creek Storm III Date 3-22-76

Rainfall: Starting time 0230 Ending time 0500 Total 0.22 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
0100	0.28	2.2	150	--	15	--	--	--	--	--	--
0240	.28	2.2	148	0.2	20	66	2.2	3.5	0.08	480 B	1,000
0350	.36	2.8	140	.4	20	--	--	--	--	--	--
0450	.71	5.6	130	.4	30	95	2.4	6.0	.04	--	--
0545	1.62	21	110	--	110	495	6.2	13	.06	1,600	2,400
0620	1.26	13	77	1.4	120	402	--	--	--	--	--
0700	.87	6.8	61	1.1	110	291	6.2	12	.06	--	--
0800	.90	7.1	71	--	150	556	6.6	13	.06	--	--
1025	.94	7.4	73	1.2	80	--	--	--	--	--	--
1140	.69	5.4	78	.4	60	118	3.9	7.9	.06	1,700	4,800

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
0100	--	--	7.8	63	--	128	--	--	--	1.2	Average Settleable Solids density (gm/ml) 0.17
0545	--	--	--	--	53	--	0.40	1.3	0.03	--	
0617	8.5	11.0	--	--	--	--	--	--	--	--	
0658	--	--	7.4	26	--	--	--	--	--	--	
0800	--	--	--	--	61	--	.40	1.3	.03	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14206900 Fanno Creek Storm IV Date 4-23, 24-76

Rainfall: Starting time 1150 Ending time 1420 Total 0.29 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1120	0.26	1.1	180	0.6	10	(17)	8.1	22	0.04	16,000 B	--
1220	.30	1.4	178	2.0	55	265	10	21	.06	--	--
1300	.40	2.1	155	.8	40	(118)	6.4	13	.06	8,200	--
1345	1.17	11	134	1.9	220 D	547	12	--	--	--	--
1355	1.19	11	148	--	240 D	--	--	--	--	--	--
1425	1.19	11	94	2.7	230 D	(937)	12	24	.06	5,600	16,000
1455	1.19	11	66	2.5	240 D	--	--	--	--	--	--
1525	1.21	12	61	5.5	190 D	434	8.3	17	.06	--	--
1555	1.08	9.4	63	1.3	170 D	--	--	--	--	--	--
1625	.94	7.4	68	.8	150 D	217	6.4	13	.06	--	--
1740	.74	5.2	108	.5	100 D	160	6.8	--	--	--	--
1940	.69	4.7	110	.4	60 D	77	5.3	11	.06	--	--
2040	.66	4.4	114	2.1	80 D	289	--	--	--	--	--
2140	.60	3.9	114	.4	55	90	5.9	--	--	--	--
2240	.75	5.3	123	.5	60	106	4.8	--	--	--	--
2340	.73	5.1	122	.4	45	74	4.6	9.2	.06	--	--
0040	.66	4.4	125	.3	42	78	5.6	--	--	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1120	--	--	7.6	65	--	136	--	--	--	--	Total Coliform (count/100 ml) 38,000 at 1425
1300	9.5	11.3	7.5	54	--	124	--	--	--	--	
1425	--	--	7.2	35	--	60	--	--	--	--	Average Settleable Solids density (gm/ml) 0.18
1525	--	--	6.9	22	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14206900 Fanno Creek Date 10-21-75

Rainfall: Starting time 0400 Ending time 0800 Total 0.34 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
0915	1.08	9.4	58	0.4	85	--	7.5	15	0.06	14,000 B	--
1055	.88	6.9	69	.2	60	--	--	--	--	--	--
1130	.79	6.2	72	.2	50	--	--	--	--	--	--
1200	.68	5.3	75	.2	45	--	--	--	--	--	--
1230	.58	4.5	78	.1	40	--	--	--	--	--	--
1300	.51	4.0	80	.1	40	--	--	--	--	--	--
1330	.45	3.5	82	.1	35	40	--	--	--	--	--
1350	.42	3.3	82	.1	40	42	3.2	8.8	.04	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
0915	--	--	7.3	18	--	--	--	--	--	--	
1130	--	--	7.3	21	--	--	--	--	--	--	
1350	--	--	7.4	25	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14206900 Fanno Creek Date 10-29-75

Rainfall: Starting time 1510 Ending time 1920 Total 0.36 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1710	1.71	23	63	1.7	130	--	6.6	13	0.06	9,800	16,000
1820	1.55	19	58	.8	120	331	--	--	--	--	--
1850	1.41	16	60	.8	110	--	--	--	--	--	--
1920	1.30	14	64	.6	95	--	--	--	--	--	--
1950	1.20	11	69	.5	80	--	--	--	--	--	--
2020	1.27	13	72	.3	75	--	--	--	--	--	--
2050	1.36	15	77	.4	65	131	--	--	--	--	--
2120	1.22	12	78	.2	60	--	--	--	--	--	--
2150	1.02	8.5	78	.2	60	--	--	--	--	--	--
2200	.87	6.8	80	.2	55	--	--	--	--	--	--
2250	.79	6.2	83	.2	50	80	3.8	7.6	.06	1,900	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1820	10.4	10.4	7.2	20	--	58	--	--	--	2.4	Total Coliform (Count/100 ml) 20,000 at 1710
1920	--	--	7.2	20	--	--	--	--	--	--	
2020	--	--	7.2	21	--	--	--	--	--	--	
2120	--	--	7.4	24	--	--	--	--	--	--	
2250	10.5	10.3	7.4	24	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14206900 Fanno Creek Date 2-11, 12-76

Rainfall: Starting time 1630 Ending time 2000 Total 0.13 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1730	0.43	2.4	178	0.1	30	--	3.3	6.8	0.06	600	--
1930	.52	3.1	175	.3	70	135	5.5	--	--	--	--
1935	.52	3.1	172	.4	70	--	--	--	--	--	--
2035	.70	4.8	165	.6	90	--	--	--	--	6,000	--
2135	.60	3.8	155	.3	60	98	6.2	12	.06	--	--
0025	.35	1.8	146	.2	60	--	--	--	--	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1730	--	--	7.3	62	--	--	--	--	--	--	Average settleable solids density (gm/ml) 0.18
2035	--	--	--	--	--	124	--	--	--	--	
2135	--	--	7.3	50	--	--	--	--	--	--	
0025	--	--	--	--	--	89	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14210400 Noyer Creek Storm I Date 3-30, 31-76

Rainfall: Starting time 2100 Ending time 0600 Total 0.47 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
2230	1.10	4.1	44	0.14	35	(10)	11	18	0.08	380	--
2330	1.21	5.6	43	--	220	489	3.2	6.5	.06	330	--
0030	1.25	6.2	43	.15	85	(73)	--	--	--	--	--
0140	1.30	7.0	42	.20	100	(134)	1.2	3.5	.04	1,070	750 B
0240	1.34	7.8	42	.15	55	(51)	1.3	3.4	.04	--	--
0425	1.34	7.8	42	.50	40	71	2.8	12	.06	--	--
0440	1.34	7.8	42	--	35	--	--	--	--	--	--
0540	1.33	7.6	41	.10	25	40	8.7	14	.08	--	--
0640	1.33	7.6	42	.30	20	--	--	--	--	--	--
0740	1.32	7.4	42	.60	20	55	6.7	11	.08	--	--
0840	1.30	7.0	43	.60	20	--	--	--	--	--	--
1040	1.25	6.2	43	.03	10	(7)	.6	1.6	.04	930 B	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
2230	--	--	6.9	12	--	--	--	--	--	--	Total Coliform (Count/100 ml) 630 B at 0140
2330	--	--	6.6	12	45	34	0.43	1.6	0.04	1.4	
0030	7.0	11.3	--	--	--	--	--	--	--	--	Average Settleable Solids density (gm/ml) 0.11
0240	--	--	6.6	13	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14210400 Noyer Creek Storm II Date 4-8-76

Rainfall: Starting time 1640 Ending time 1705 Total 0.16 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1720	1.14	4.6	42	--	180	(1,580)	9.0	18	0.06	--	1,300
1750	.98	2.9	44	1.0	920 D	1,390	--	--	--	--	--
1820	.96	2.7	42	.25	270 D	393	2.7	5.5	.06	--	--
1850	.99	3.0	43	.50	140	229	11	18	.08	--	--
1920	.98	2.9	43	.71	75	206	6.3	10	.08	--	860
1950	.99	3.0	45	.12	30	--	--	--	--	--	--
2010	1.00	3.1	44	--	25	40	6.4	13	.06	--	--
2110	.98	2.9	44	.22	20	31	6.0	12	.06	--	--
2210	.97	2.8	45	.20	20	29	4.3	8.6	.06	--	--
0045	.95	2.6	45	.25	15	1	5.4	9.0	.08	--	360

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1720	--	--	--	--	83	38	0.67	1.9	0.04	2.0	Average Settleable Solids density (gm/ml) 0.37
1950	--	--	6.7	14	--	--	--	--	--	--	
2010	--	--	--	--	44	--	.09	.4	.04	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14210400 Noyer Creek Storm III Date 4-14, 15-76

Rainfall: Starting time 1630 Ending time 2100 Total 0.41 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1710	0.80	1.5	45	--	5	4	4.9	8.2	0.08	--	70 B
1815	.82	1.6	47	--	9	--	--	--	--	--	--
1915	.88	2.0	230	--	60	--	5.2	10	.06	--	340
2110	.98	2.9	106	--	65	66	5.0	10	.06	--	--
2115	.99	3.0	104	--	65	71	5.6	--	--	--	--
2145	1.22	5.8	140	--	210 D	391	3.4	6.8	.06	--	1,670
2340	1.20	5.5	53	--	90 D	68	2.0	--	--	--	--
0115	1.13	4.5	45	--	25	71	3.3	6.7	.06	--	--
0215	1.09	4.0	45	--	20	--	--	--	--	--	--
0415	1.04	3.4	45	--	15	25	--	--	--	--	--
0515	1.02	3.2	45	--	15	--	--	--	--	--	--
0715	1.00	3.0	44	--	9	--	.8	2.2	.04	--	510 B

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1710	--	--	7.0	15	21	--	0.95	--	0.21	--	Total Coliform (Count/100 ml) 325 at 1710
1915	--	--	7.0	17	--	106	--	--	--	1.0	
2110	--	--	7.0	16	--	--	--	--	--	--	5240 at 2145
2115	7.0	11.0	--	--	--	162	--	--	--	1.0	
2145	--	--	6.8	14	27	70	.95	5.4	.98	1.4	
2340	--	--	6.8	15	--	38	.22	--	--	1.2	

Table 4.--Basic data collected during storms--Continued

Station number and name 14210400 Noyer Creek Storm IV Date 4-23-76

Rainfall: Starting time 1230 Ending time 1600 Total 0.30 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/1)	Turbidity (JTU)	Suspended sediment (mg/1)	BOD_5 (mg/1)	BOD_u (mg/1)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1340	1.18	5.2	45	0.1	9	(11)	3.5	--	--	190	--
1440	1.36	8.2	62	--	270 D	(375)	3.0	15	0.02	--	--
1540	1.39	8.7	47	.2	60 D	--	--	--	--	--	--
1548	1.39	8.7	49	--	55 D	(63)	1.6	7.6	.02	1,200	1,200 B
1648	1.40	8.9	46	.1	35	33	--	--	--	--	--
1724	1.38	8.5	45	.1	20	(29)	1.4	--	--	--	--
1824	1.37	8.3	45	.1	15	22	--	--	--	--	--
1924	1.36	8.2	46	.1	20	22	9.9	49	.02	--	--
2005	1.36	8.2	46	--	15	(16)	--	--	--	370	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/1)	pH (units)	Alkalinity (mg/1 as $CaCO_3$)	COD (mg/1)	Dissolved solids (mg/1)	Total phosphorus as P (mg/1)	Total organic nitrogen as N (mg/1)	Ammonia as N (mg/1)	Dissolved nitrate and nitrite as N (mg/1)	Remarks
1440	--	--	6.8	12	--	50	--	--	--	1.6	Total Coliform (Count/100 ml) 3100 at 1548
1548	9.5	11.2	--	--	13	40	0.26	0.51	0.41	1.8	
1724	--	--	6.9	14	--	--	--	--	--	--	Average Settleable Solids density (gm/ml) 0.08
2005	--	--	--	--	--	38	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14210400 Noyer Creek Date 2-11-76

Rainfall: Starting time 1715 Ending time 2015 Total 0.04 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1730	0.25	0.10	46	--	10	6	6.0	12	0.06	60	--
1830	.27	.10	47	--	15	--	--	--	--	--	--
1920	.28	.10	48	--	10	--	--	--	--	--	--
2030	.28	.10	50	--	10	--	--	--	--	--	--
2130	.27	.10	50	--	8	11	7.5	11	.10	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1730	--	--	6.7	12	--	--	--	--	--	--	
2030	6.0	11.1	--	--	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14210400 Noyer Creek Date 3-13, 14-76

Rainfall: Starting time 1400 Ending time 2120 Total 0.58 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1645	0.78	3.1	42	0.10	10	9	0.8	2.3	0.04	210 B	10,700
1945	--	6.2	41	.27	100	172	3.1	6.3	.06	1,800	14,000
2053	--	7.5	38	.30	80	--	--	--	--	--	--
2125	--	7.8	38	.80	60	126	24	65	.04	--	--
2209	--	7.7	41	.18	55	--	--	--	--	--	--
2243	--	7.7	41	.43	40	116	--	--	--	--	--
2315	--	7.7	41	.03	20	(21)	1.2	3.4	.04	--	--
0020	--	7.7	41	.21	30	53	12	20	.08	--	--
0120	--	7.7	41	.31	35	--	--	--	--	--	--
0220	--	7.5	41	.22	25	61	4.0	8.1	.06	--	--
0320	--	7.2	41	.12	20	--	--	--	--	--	--
0420	--	6.8	42	.10	10	10	1.1	2.9	.04	1,300 B	10,800 B

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Settleable Solids density (gm/ml)
1645	--	--	6.9	13	--	--	--	--	--	--	--
1945	--	--	--	--	--	--	--	--	--	--	0.33
2053	--	--	7.1	14	--	--	--	--	--	--	.29
2125	--	--	--	--	--	40	--	--	--	--	.08
2209	--	--	--	--	--	--	--	--	--	--	.23
2243	--	--	--	--	--	--	--	--	--	--	.21
2315	--	--	--	--	--	--	--	--	--	--	.22
0020	--	--	--	--	--	--	--	--	--	--	.16
0120	--	--	--	--	--	--	--	--	--	--	.23
0220	--	--	--	--	--	--	--	--	--	--	.20
0320	--	--	--	--	--	--	--	--	--	--	.21

Table 4.--Basic data collected during storms--Continued

Station number and name 14210400 Noyer Creek Date 3-18-76

Rainfall: Starting time 1215 Ending time 1240 Total 0.06 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1035	--	4.1	42	--	10	10	5.2	11	0.06	--	--
1240	--	4.1	42	--	6	--	--	--	--	--	--
1410	--	4.3	41	--	25	46	7.9	12	.10	--	--
1510	--	4.3	45	--	35	--	5.8	9.5	.08	--	--
1610	--	4.4	45	--	15	--	--	--	--	--	--
1840	--	4.4	46	--	15	11	9.9	16	.08	--	--

Table 4.--Basic data collected during storms--Continued

Station number and name 14211110 Robinwood Storm I Date 10-29-75

Rainfall: Starting time 1420 Ending time 2100 Total 0.63 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1657	0.46	1.4	102	0.6	50	116	3.8	7.6	0.06	3,200	4,100
1729	.54	2.3	98	1.0	90	--	--	--	--	--	--
1757	.61	3.4	94	1.9	120	617	--	--	--	--	--
1810	.63	3.6	95	1.8	130	--	7.9	16	.06	--	--
1826	.65	3.9	110	2.0	125	556	--	--	--	--	--
1857	.68	4.4	94	1.8	120	523	5.1	14	.04	--	--
1908	.68	4.4	101	1.7	125	--	--	--	--	--	--
2025	.62	3.5	92	.55	95	--	--	--	--	--	--
2055	.62	3.5	97	.4	75	--	--	--	--	5,000	--
2125	.58	2.9	99	.35	70	--	--	--	--	--	--
2155	.55	2.4	99	.24	65	--	--	--	--	--	--
2255	.52	2.0	102	.20	55	--	--	--	--	1,500 B	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1657	10.7	10.6	7.3	34	--	--	--	--	--	--	Total Coliform (Count/100 ml)
1757	--	--	7.1	31	--	--	--	--	--	--	13,000 at 1657
1810	--	--	7.0	30	92	94	0.85	2.2	0.15	2.4	
1826	--	--	7.5	39	--	--	--	--	--	--	
1857	--	--	7.1	30	--	--	--	--	--	--	
2025	--	--	7.1	30	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211110 Robinwood Storm II Date 12-3, 4-75

Rainfall: Starting time 1730 Ending time 0645 Total 1.95 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1700	0.64	3.8	87	0.22	35	49	--	--	--	--	--
1805	.62	3.5	82	.20	35	--	2.4	--	--	--	--
1905	.64	3.8	80	.26	25	26	2.5	--	--	--	--
2005	.73	5.1	80	.23	35	68	3.4	--	--	400 B	--
2105	1.13	14	71	--	85	264	3.7	7.5	0.06	--	--
2206	1.50	23	63	2.6	170	--	6.8	14	.06	--	--
2307	1.34	19	65	1.2	110	350	3.7	--	--	--	--
0008	1.53	23	65	--	100	--	--	--	--	--	--
0109	2.22	41	54	5.3	140	1,276	6.4	18	.04	--	--
0135	2.49	48	55	--	180	1,738	5.1	14	.04	4,460 B	16,500
0210	2.63	52	54	3.0	200	1,094	4.5	12	.04	--	--
0311	2.73	55	64	2.5	120	369	--	--	--	--	--
0412	2.77	56	58	3.8	120	--	7.6	13	.08	--	--
0614	2.51	49	67	.9	140	300	8.8	--	--	--	--
0715	2.20	40	70	--	95	--	5.2	--	--	--	--
0745	2.12	38	69	--	90	381	--	--	--	1,533	--
0940	1.75	29	74	--	75	348	3.2	--	--	--	--
1040	1.67	27	75	--	140	--	--	--	--	--	--
1140	1.57	24	76	--	65	--	2.8	--	--	--	--
1300	1.45	21	76	--	45	123	1.4	--	--	510 B	--

Table 4.--Basic data collected during storms--Continued

Station number and name 14211110 Robinwood Storm II Date 12-3, 4-75

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1700	--	--	7.2	34	--	--	--	--	--	--	Total Coliform (Count/100 ml) 8,400 at 0135
1805	--	--	7.2	32	--	--	--	--	--	--	
1905	--	--	7.3	25	--	--	--	--	--	--	Average Settleable Solids density (gm/ml) 0.44
2005	10.8	10.6	7.3	24	--	--	--	--	--	--	
2105	--	--	7.3	23	19	64	0.14	0.69	0.04	2.1	
2206	--	--	7.0	21	--	--	--	--	--	--	
0008	--	--	--	--	--	71	--	--	--	--	
0135	--	--	--	--	125	68	1.1	3.6	.05	1.9	
0210	--	--	6.9	16	--	--	--	--	--	--	
0412	--	--	6.8	14	--	--	--	--	--	--	
0614	--	--	6.8	15	--	--	--	--	--	--	
0715	--	--	6.8	15	--	--	--	--	--	--	
1040	--	--	6.7	17	--	--	--	--	--	--	
1300	8.0	11.8	6.8	16	19	70	.14	.71	.04	2.7	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211110 Robinwood Storm III Date 2-17-76

Rainfall: Starting time 0700 Ending time 1230 Total 0.41 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD (mg/l)	BOD (mg/l)	Rate of BOD satisfaction, k (day)	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1130	1.05	12	71	0.30	60	(154)	1.0	5.3	0.02	240 B	--
1240	1.42	21	63	1.2	120	--	--	--	--	--	--
1345	1.45	21	61	.90	120	320	3.2	9.0	.04	1,000 B	4,400
1410	1.23	16	63	.60	110	--	--	--	--	--	--
1510	1.05	12	71	.50	70	--	2.4	--	--	--	--
1610	.99	10	77	.30	50	--	--	--	--	--	--
1640	.96	9.7	78	.20	45	--	1.7	--	--	--	--
1740	.93	9.0	78	.10	50	109	--	--	--	--	120 B

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1345	--	--	6.9	17	51	--	0.31	1.2	0.03	--	Total Coliform (Count/100 ml) 2400 at 1345
1640	--	--	7.0	20	--	--	--	--	--	--	Average Settleable Solids density (gm/ml) 0.31

Table 4.--Basic data collected during storms--Continued

Station number and name 14211110 Robinwood Storm IV Date 3-30, 31-76

Rainfall: Starting time 2130 Ending time 0530 Total 0.46 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
2330	0.49	1.7	95	0.3	20	53	2.1	4.2	0.06	280 B	610 B
0030	.57	2.8	87	.35	40	(62)	--	--	--	--	--
0120	.59	3.1	78	.3	40	(60)	2.2	6.1	.04	--	--
0210	.61	3.4	79	.4	45	--	--	--	--	--	--
0310	.61	3.4	78	.3	45	(39)	2.1	5.7	.04	1,300	16,000
0405	.60	3.2	78	.63	50	(32)	--	--	--	--	--
0640	.52	2.0	86	.10	20	(11)	.9	2.5	.04	--	--
0910	.49	1.7	89	.10	15	(13)	1.0	2.7	.04	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
2330	--	--	7.2	29	--	--	--	--	--	--	Total Coliform (Count/100 ml) 1400 B at 0310
0030	--	--	--	--	--	92	--	--	--	1.6	
0405	7.5	11.9	7.2	25	--	--	--	--	--	--	Average Settleable Solids density (gm/ml) 0.23
0910	7.0	12.0	--	--	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211110 Robinwood Date 10-21-75

Rainfall: Starting time 0345 Ending time 0945 Total 0.64 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
0945	0.54	2.3	88	0.5	90	161	3.6	9.8	0.04	7,800	--
1150	.43	1.1	101	.25	85	(134)	--	--	--	--	--
1205	.42	1.0	103	.2	85	120	--	--	--	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
0945	11.5	10.3	7.3	25	--	--	--	--	--	--	
1205	--	--	7.4	30	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211110 Robinwood Date 2-11-76

Rainfall: Starting time 1630 Ending time 0230 Total 0.19 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1740	0.54	2.3	134	--	10	30	1.7	--	--	260 B	--
1845	.53	2.2	133	--	15	--	--	--	--	--	--
1945	.53	2.2	133	--	15	--	--	--	--	--	--
2043	.53	2.2	134	--	10	21	1.8	3.7	0.06	--	--
2050	.53	2.2	136	--	10	--	--	--	--	--	--
2145	.53	2.2	130	--	15	--	--	--	--	--	--
2245	.53	2.2	128	--	15	--	--	--	--	--	--
2345	.53	2.2	126	--	25	61	3.0	6.1	.06	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1740	6	11.8	7.2	45	--	--	--	--	--	--	
2050	--	--	--	--	--	120	--	--	--	--	
2345	--	--	7.4	45	--	122	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211120 Oak Grove Storm I Date 12-3, 4-75

Rainfall: Starting time 1800 Ending time 0415 Total 2.00 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1630	0.68	3.0	117	0.39	30	32	4.7	--	--	650 B	--
1800	.58	2.0	118	.21	25	18	2.6	5.3	0.06	--	--
1840	.60	2.2	118	.15	25	--	--	--	--	--	--
1940	.80	4.6	118	.40	25	--	3.7	--	--	--	--
2040	1.18	11	56	1.6	90	263	5.2	11	.06	--	--
2400	1.61	21	80	.85	65	195	4.2	--	--	3,000	13,100
0030	1.88	27	56	2.8	120	611	5.6	--	--	--	--
0100	2.03	30	53	--	110	548	4.0	11	.04	--	--
0240	2.25	36	60	1.9	100	366	3.9	11	.04	--	--
0340	2.20	34	66	1.2	95	--	--	--	--	--	--
0440	2.20	34	67	--	80	233	4.1	--	--	--	--
0540	1.93	28	76	.8	60	161	--	--	--	--	--
0640	1.69	22	85	.5	50	--	--	--	--	--	--
0700	1.64	22	88	--	45	169	2.8	5.7	.06	4,000	--
0740	1.50	18	92	.4	45	--	--	--	--	--	--
0840	1.26	13	109	--	45	--	4.2	--	--	--	--
1340	.97	7.6	136	--	25	36	1.8	--	--	1,120 B	--

Table 4.--Basic data collected during storms--Continued

Station number and name 14211120 Oak Grove Storm I Date 12-3, 4-75

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1630	--	--	7.5	42	--	--	--	--	--	--	Total Coliform (Count/100 ml) 6,150 at 2400
1805	--	--	--	--	16	80	0.14	--	<0.03	2.2	
1940	--	--	7.4	31	--	--	--	--	--	--	
2040	--	--	7.2	21	--	--	--	--	--	--	Average settleable solids density (gm/ml) 0.20
2400	--	--	7.2	26	--	--	--	--	--	--	
0100	--	--	7.2	18	83	51	1.1	2.3	.05	1.6	
0245	--	--	7.0	18	--	--	--	--	--	--	
0340	--	--	6.9	19	--	--	--	--	--	--	
0440	--	--	--	--	--	62	--	--	--	--	
0700	--	--	7.0	24	33	74	.26	--	<.03	1.8	
0840	--	--	7.3	30	--	--	--	--	--	--	
1340	9.0	11.3	6.9	37	--	88	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211120 Oak Grove Storm II Date 3-30, 31-76

Rainfall: Starting time 2215 Ending time 0315 Total 0.35 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
2300	0.89	6.1	155	--	50	(175)	3.5	7.0	0.06	93 B	--
2355	.84	5.2	71	0.8	45	--	--	--	--	--	--
0055	.83	5.1	87	.3	30	(58)	4.5	9.1	.06	--	--
0145	.80	4.6	73	.3	30	--	--	--	--	--	--
0235	.75	3.9	74	.15	25	(41)	2.2	6.0	.04	--	--
0340	.66	2.8	83	.10	20	(26)	--	--	--	--	--
0430	.64	2.6	88	.10	20	--	1.8	5.0	.04	--	--
0705	.55	1.7	117	.03	15	(15)	1.5	4.2	.04	--	--
1000	.50	1.2	135	.01	10	(9)	1.3	3.7	.04	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
2300	--	--	7.5	54	25	106	0.14	0.9	0.03	1.4	Average settleable solids density (gm/ml) 0.10
2355	--	--	7.3	28	--	--	--	--	--	--	
0340	--	--	--	--	--	72	--	--	--	1.0	
0430	8.2	11.2	--	--	--	--	--	--	--	--	
1000	9	11.7	--	--	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211120 Oak Grove Storm III Date 4-8-76

Rainfall: Starting time 1625 Ending time 1710 Total 0.33 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1650	1.0	8.2	100	--	120	699	11	30	0.04	--	10,400
1750	.95	7.2	53	--	90	281	7.6	16	.06	--	--
1820	.82	4.9	62	0.75	75	--	--	--	--	--	--
1850	.67	2.9	62	.35	65	119	4.6	--	--	--	28,000
1920	.60	2.2	70	.35	55	--	--	--	--	--	--
1950	.55	1.7	79	.22	50	79	4.1	11	.04	--	--
2020	.56	1.8	89	.25	55	--	--	--	--	--	--
2050	.58	2.0	100	--	55	52	3.7	10	.04	--	11,000
2150	.67	2.9	113	.30	35	60	3.6	--	--	--	--
2250	.55	1.7	105	.10	30	38	3.3	9.0	.04	--	--
0010	.50	1.2	116	.03	25	24	2.7	--	--	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1650	--	--	7.1	36	139	78	0.15	2.1	0.03	1.6	Average Settleable Solids density (gm/ml) 0.17
1750	--	--	--	--	61	54	.27	1.2	.03	1.0	
1850	--	--	6.7	21	--	--	--	--	--	--	
1950	--	--	6.8	30	--	--	--	--	--	--	
2050	--	--	7.0	37	31	76	.13	.6	.03	.6	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211120 Oak Grove Storm IV Date 4-23-76

Rainfall: Starting time 1150 Ending time 1430 Total 0.35 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1305	0.42	0.63	139	0.2	20	(32)	3.1	6.3	0.06	220	--
1410	1.04	8.8	114	1.8	75	(309)	11	23	.06	1,100	8,400
1515	.83	5.1	66	.7	50	(125)	6.5	13	.06	--	--
1640	.54	1.6	77	.5	35	(50)	3.6	7.5	.06	--	--
1740	.50	1.2	96	.2	35	--	--	--	--	--	--
1800	.50	1.2	104	.2	30	(34)	2.5	6.9	.04	3,600	--
1915	.49	1.1	136	.2	25	(33)	--	--	--	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1305	--	--	7.5	56	--	--	--	--	--	--	Total Coliform (Count/100 ml) 10,000 at 1410
1515	--	--	7.1	20	--	--	--	--	--	--	
1640	11	10.1	--	--	--	72	--	--	--	--	Average settleable solids density (gm/ml) 0.23
1740	--	--	7.0	33	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211120 Oak Grove Date 10-21-75

Rainfall: Starting time 0345 Ending time 0945 Total 0.64 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
0850	0.91	6.4	44	0.35	65	164	3.1	8.4	0.04	6,000	--
1030	.85	5.4	51	.15	40	125	--	--	--	--	--
1040	.83	5.1	53	--	40	102	--	--	--	--	--
1100	.74	3.8	56	.18	25	84	--	--	--	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
0850	11.0	10.6	7.2	15	--	--	--	--	--	--	
1030	11.5	--	--	--	--	--	--	--	--	--	
1100	11.5	--	7.2	18	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211120 Oak Grove Date 10-29-75

Rainfall: Starting time 1420 Ending time 2100 Total 0.63 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1755	1.10	9.9	49	0.8	95	343	6.0	12	0.06	5,000 B	16,000
1823	1.12	10	49	.5	70	--	--	--	--	--	--
1842	1.15	11	49	.4	70	--	4.6	9.3	.06	--	--
1908	1.00	8.2	49	.5	70	205	--	--	--	3,500	--
1920	.96	7.4	55	.3	60	--	--	--	--	--	--
1932	.92	6.6	54	.3	50	--	--	--	--	--	--
1955	.88	5.9	56	.2	50	--	--	--	--	--	--
2015	.90	6.2	63	.2	50	--	--	--	--	3,300	--
2033	.94	7.0	67	.3	45	--	--	--	--	--	--
2100	.88	5.9	66	.3	40	--	--	--	--	--	--
2130	.75	3.9	69	.2	40	--	--	--	--	--	--
2200	.66	2.8	77	.2	35	--	2.5	6.7	.04	3,800	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1755	11.3	10.3	6.8	18	37	56	0.43	0.9	0.01	--	Total Coliform (Count/100 ml) 18,000 at 1755
1823	11.0	10.4	--	--	--	--	--	--	--	--	
1908	--	--	6.8	17	--	--	--	--	--	--	
1920	10.6	10.4	--	--	--	--	--	--	--	--	
1955	--	--	6.7	18	--	--	--	--	--	--	
2015	10.6	10.2	--	--	--	--	--	--	--	--	
2100	--	--	6.8	21	--	--	--	--	--	--	
2200	10.8	10.0	6.8	24	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211120 Oak Grove Date 2-11, 12-76

Rainfall: Starting time 1730 Ending time 2400 Total 0.11 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1700	0.28	0.15	173	0.2	30	31	4.8	--	--	--	--
1835	.38	.44	168	.2	35	--	--	--	--	600	--
2000	.38	.44	168	.25	35	61	5.2	11	0.06	--	--
2100	.39	.49	168	.25	30	--	--	--	--	--	--
2155	.39	.49	158	.05	40	--	--	--	--	--	--
2205	.39	.49	154	.25	50	209	5.5	11	.06	--	--
2300	.40	.53	144	.50	55	--	--	--	--	--	--
2400	.40	.53	139	.25	50	--	6.4	--	--	230 B	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1700	7.5	11.0	7.0	62	--	--	--	--	--	--	Average settleable solids density (gm/ml) 0.20
2155	--	--	--	--	--	126	--	--	--	--	
2205	--	--	7.2	53	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211120 Oak Grove Date 3-13, 14-76

Rainfall: Starting time 1330 Ending time 2400 Total 0.66 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1730	0.69	3.1	120	0.6	70	(260)	8.0	16	0.06	91 B	3,850 B
1810	.97	7.6	96	.7	110	434	11	22	.06	--	--
2020	.97	7.6	53	.35	50	130	5.3	11	.06	--	--
2100	.84	5.2	53	.45	50	--	--	--	--	--	--
2400	.66	2.8	86	.12	20	28	3.4	9.3	.04	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Settleable solids density (gm/ml)
1730	--	--	7.6	44	--	--	--	--	--	--	0.24
1810	--	--	--	--	--	--	--	--	--	--	.28
2020	--	--	--	--	--	--	--	--	--	--	.23
2100	--	--	6.9	19	--	--	--	--	--	--	(
											(.19
2400	--	--	--	--	--	--	--	--	--	--	(

Table 4.--Basic data collected during storms--Continued

Station number and name 14211300 Tryon Creek Storm I Date 12-3, 4-75

Rainfall: Starting time 1900 Ending time 0630 Total 1.68 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1617	0.45	1.2	122	0.15	35	39	3.4	6.8	0.06	1,550	--
1717	.42	1.1	137	--	30	--	--	--	--	--	--
1824	.39	.95	143	.10	25	25	3.8	--	--	--	--
1924	.48	1.3	127	.30	45	89	4.3	--	--	--	--
2025	1.08	6.1	63	1.8	120	531	9.1	19	.06	3,700	--
2130	1.18	7.2	62	.80	85	--	--	--	--	--	--
2230	.94	4.8	86	.50	65	132	5.4	--	--	--	--
2330	1.30	8.6	62	.90	85	--	5.3	--	--	--	--
0030	1.86	16	64	--	140	607	7.2	14	.06	12,000 B	26,700
0130	1.92	17	77	1.2	130	470	5.6	--	--	--	--
0230	1.79	15	79	--	95	315	5.4	--	--	--	--
0330	2.18	21	66	1.3	140	606	6.3	13	.06	--	--
0430	1.66	13	99	--	90	333	5.2	--	--	--	--
0530	1.44	10	91	.60	70	--	--	--	--	--	--
0635	1.42	10	81	.50	65	187	--	--	--	--	--
0735	1.06	5.9	115	.50	60	--	4.3	--	--	--	--
0835	.93	4.7	134	--	50	--	--	--	--	--	--
0925	.85	4.0	134	.40	50	114	4.0	--	--	5,000	--

Table 4.--Basic data collected during storms--Continued

Station number and name 14211300 Tryon Creek Storm I Date 12-3, 4-75

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1617	--	--	7.2	36	--	--	--	--	--	--	Total Coliform (Count/100 ml) 13,600 B at 0030
1717	--	--	7.2	40	25	110	0.11	0.74	0.04	1.6	
1824	10.2	8.6	7.1	41	--	--	--	--	--	--	Average settleable solids density (gm/ml) 0.28
1924	--	--	7.1	40	--	--	--	--	--	--	
2025	--	--	6.9	21	--	--	--	--	--	--	
2230	--	--	7.0	22	--	--	--	--	--	--	
0030	--	--	--	--	74	58	1.1	2.0	.05	1.2	
0130	--	--	7.0	16	--	--	--	--	--	--	
0230	--	--	--	--	--	78	--	--	--	--	
0330	--	--	6.7	14	--	--	--	--	--	--	
0431	--	--	6.8	20	--	91	--	--	--	--	
0735	--	--	6.8	26	--	--	--	--	--	--	
0835	--	--	6.7	28	30	96	.37	1.2	<.03	2.9	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211300 Tryon Creek Storm II Date 2-11, 12-76

Rainfall: Starting time 1630 Ending time 2000 Total 0.13 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1710	0.15	0.29	164	0.07	25	33	7.1	22	0.04	1,300 B	--
1805	.35	.82	152	.70	45	--	--	--	--	--	--
1900	.23	.50	114	.16	85	139	28	75	.04	--	--
1955	.54	1.6	88	2.6	120	421	--	--	--	4,000	--
2055	.27	.59	75	.20	70	119	12	--	--	--	--
2155	.22	.47	117	.11	50	--	--	--	--	--	--
0055	.24	.52	116	.10	35	--	--	--	--	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1710	--	--	6.9	45	--	--	--	--	--	--	Average Settleable Solids density (gm/ml) 0.10
2055	--	--	6.9	20	--	--	--	--	--	--	
0055	--	--	--	--	--	92	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211300 Tryon Creek Storm III Date 2-17-76

Rainfall: Starting time 0910 Ending time 1210 Total 0.29 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1110	0.83	3.8	64	1.0	80	234	7.1	--	--	600 B	--
1140	1.28	8.3	47	2.7	140	741	11	32	0.04	--	--
1210	1.05	5.8	60	--	120	--	8.0	22	.04	--	--
1240	1.55	12	48	5.0	140	1,548	11	56	.02	--	--
1310	.97	5.1	80	1.5	140	528	6.2	17	.04	3,300	8,300
1340	.77	3.3	93	1.0	110	--	--	--	--	--	--
1410	.67	2.5	104	--	85	230	6.6	18	.04	--	--
1440	.59	1.9	113	.5	72	--	--	--	--	--	--
1510	.55	1.7	121	.5	62	--	--	--	--	--	--
1540	.50	1.4	122	.4	55	164	4.4	--	--	740 B	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1110	--	--	6.8	19	--	--	--	--	--	--	Total Coliform (Count/100 ml) 14,000 at 1310
1140	--	--	6.7	18	--	56	--	--	--	--	
1210	--	--	--	--	73	56	0.40	1.3	0.03	1.0	Average settleable solids density (gm/ml) 0.30
1310	--	--	--	--	69	--	.50	1.6	.03	--	
1410	--	--	--	--	48	80	.33	1.0	.02	1.0	
1540	--	--	6.9	35	--	100	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211300 Tryon Creek Storm IV Date 3-22-76

Rainfall: Starting time 0315 Ending time 0515 Total 0.23 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
0118	0.18	0.36	150	--	30	--	--	--	--	--	--
0302	.18	.36	148	0.63	30	183	3.5	7.1	0.06	140 B	1,500 B
0404	.56	1.8	128	1.0	45	191	7.4	15	.06	--	--
0503	1.11	6.4	44	--	130	754	11	29	.04	1,830	4,800
0558	.60	2.0	60	1.0	110	(199)	6.7	14	.06	--	--
0710	.41	1.0	82	.8	75	265	5.3	11	.06	1,400	12,500
0815	.97	5.1	38	1.6	120	559	9.0	18	.06	--	--
0915	.65	2.4	66	.75	100	--	5.4	11	.06	--	--
1015	.49	1.4	85	.8	80	--	--	--	--	--	--
1115	.39	.96	104	.92	75	352	6.0	12	.06	--	--
1215	.74	3.1	108	1.4	90	--	--	--	--	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
0118	--	--	7.5	58	--	139	--	--	--	1.6	Average settleable solids density (gm/ml) 0.32
0302	9.0	9.6	--	--	--	--	--	--	--	--	
0503	--	--	--	--	110	--	0.48	2.00	0.03	--	
0815	--	--	6.8	14	--	40	--	--	--	1.0	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211300 Tryon Creek Storm V Date 4-23-76

Rainfall: Starting time 1130 Ending time 1430 Total 0.24 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1150	0.23	0.31	173	0.1	6	(5)	1.2	3.4	0.04	60	--
1230	.51	1.4	150	1.8	45	255	4.2	12	.04	--	--
1325	.91	4.5	54	1.7	110 D	(488)	10	21	.06	2,000	--
1330	.97	5.1	52	2.0	150 D	--	--	--	--	--	--
1345	1.10	6.3	44	2.1	180 D	602	--	--	--	--	--
1415	1.17	7.0	50	1.4	260 D	345	8.4	--	--	11,000 B	41,000
1455	.87	4.1	58	1.0	160 D	(256)	7.5	15	.06	--	--
1525	.62	2.1	71	1.5	150 D	--	--	--	--	--	--
1555	.56	1.7	83	1.0	100 D	167	7.5	15	.06	--	--
1625	.50	1.4	93	.8	85 D	--	--	--	--	--	--
1655	.46	1.2	100	1.9	75 D	125	8.6	--	--	--	--
1805	.46	1.2	108	.6	55 D	85	--	--	--	--	--
1905	.40	.95	110	.6	55 D	68	5.5	--	--	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1150	--	--	7.4	62	--	--	--	--	--	--	Total Coliform (Count/100 ml) 34,000 at 1415
1230	--	--	7.2	55	--	120	--	--	--	--	
1325	11.0	10.1	6.9	16	--	--	--	--	--	--	Average settleable solids density (gm/ml) 0.19
1345	--	--	6.8	17	--	--	--	--	--	--	
1525	--	--	6.8	25	--	--	--	--	--	--	
1655	--	--	6.9	35	--	88	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211300 Tryon Creek Date 10-21-75

Rainfall: Starting time 0400 Ending time 0800 Total 0.34 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
0940	0.56	1.8	69	0.1	45	--	4.2	8.5	0.06	4,000	--
0953	.58	1.9	67	.1	50	--	--	--	--	--	--
1035	.51	1.5	68	.1	50	--	--	--	--	--	--
1050	.46	1.2	67	.1	45	--	--	--	--	--	--
1105	.44	1.2	70	.05	45	--	--	--	--	--	--
1120	.42	1.1	75	.05	40	--	--	--	--	--	--
1135	.40	.99	80	.03	40	--	--	--	--	--	--
1150	.37	.88	84	.05	40	--	--	--	--	--	--
1205	.34	.79	90	.10	40	--	--	--	--	--	--
1220	.32	.73	94	.05	35	--	--	--	--	--	--
1235	.32	.73	99	.05	35	--	--	--	--	--	--
1240	.32	.73	103	.07	35	27	--	--	--	--	--
1300	.32	.73	108	.07	35	27	3.6	7.3	.06	--	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
0940	--	--	7.1	16	--	--	--	--	--	--	
0953	11.4	9.6	--	--	--	--	--	--	--	--	
1205	--	--	7.1	22	--	--	--	--	--	--	
1300	--	--	7.3	26	--	--	--	--	--	--	

Table 4.--Basic data collected during storms--Continued

Station number and name 14211300 Tryon Creek Date 10-29-75

Rainfall: Starting time 1515 Ending time 1730 Total 0.11 in.

Time (2400 hour)	Stage (ft)	Discharge (ft^3/s)	Specific conductance at 25°C (micromhos/cm)	Settleable solids (ml/l)	Turbidity (JTU)	Suspended sediment (mg/l)	BOD_5 (mg/l)	BOD_u (mg/l)	Rate of BOD satisfaction, k (day^{-1})	Fecal coliform (count/100 ml)	Fecal streptococci (count/100 ml)
1750	0.84	3.9	57	0.35	90	--	5.9	13	0.06	4,400	22,000
1820	.80	3.6	66	.50	95	365	--	--	--	--	--
1850	.70	2.7	69	.25	70	--	--	--	--	--	--
1920	.62	2.1	79	.15	60	--	--	--	--	--	--
1950	.74	3.1	79	.15	60	--	--	--	--	--	--
2020	.81	3.6	65	.25	60	131	5.0	10	.06	--	--
2050	.65	2.4	69	.15	55	--	--	--	--	--	--
2120	.51	1.5	90	.15	50	--	--	--	--	--	--
2150	.45	1.2	108	.15	50	--	--	--	--	--	--
2220	.44	1.2	117	.05	50	59	3.5	7.1	.06	2,470	--

Time (2400 hour)	Temp. (°C)	Dissolved oxygen (mg/l)	pH (units)	Alkalinity (mg/l as $CaCO_3$)	COD (mg/l)	Dissolved solids (mg/l)	Total phosphorus as P (mg/l)	Total organic nitrogen as N (mg/l)	Ammonia as N (mg/l)	Dissolved nitrate and nitrite as N (mg/l)	Remarks
1750	--	--	7.1	16	--	58	--	--	--	1.9	Total Coliform (Count/100 ml) 4,700 B at 1750
1820	10.5	10.3	--	--	--	--	--	--	--	--	
1920	--	--	7.2	20	--	--	--	--	--	--	
2020	--	--	7.2	19	--	--	--	--	--	--	
2120	--	--	7.2	23	--	--	--	--	--	--	
2220	11.3	9.0	7.4	28	--	--	--	--	--	--	