EVALUATION OF SUSPENDED SEDIMENT DISCHARGES FROM THE WILLOW CREEK BASIN

Prepared by

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Associate Professor of Agricultural Engineering

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WATER RESOURCES RESEARCH INSTITUTE
Oregon State University
Corvallis, Oregon 97331

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PROJECT COMPLETION REPORT

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A Research Project Conducted

by

THE OREGON WATER RESOURCES RESEARCH INSTITUTE

at

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INTRODUCTION

With the enactment of Public Law 92-500 and especially Section 208 of that law, interest in control of non-point pollution from suspended sediments has been greatly increased. Here, non-point pollution is defined as pollutants in surface waters from sources that cannot be specifically identified. The Willow Creek basin is one of only two basins within north-central Oregon where a record of daily suspended sediment discharges has been maintained by the U.S. Geological Survey. In addition, within the Willow Creek basin agricultural activities are the primary land uses. Since much of the sediment load of streams in farming areas is attributed to land disturbing or crop cultivation activities, it was appropriate to study this basin in detail to determine what information could be derived from the suspended sediment data and other information available. Daily suspended sediment for Arlington near the lower end of the basin was available from October 1, 1963 to September 30, 1969 (water years 1964-1969. Similar data was available for Willow Creek at Heppner for the period October 1, 1963 through June 30, 1968. Because almost no flow was recorded from July 1 through September 30, 1968, the suspended sediment data for Heppner represented water years 1964-1968.

Objectives

1) To develop sediment rating curve/curves for the daily suspended sediment and water discharge data recorded by the U.S. Geological Survey for the gaging stations near Arlington and Heppner for the Willow Creek basin.

2) To study the nature of the curves as related to watershed characteristics of climate, soil type, land use, topography, and diversion for irrigation.

3) To attempt to answer the following questions for large sediment discharge events:

   a) What were the dominant sources of sediment?

   b) What were the approximate effects of these sources on total sediment yield?

   c) What are or might be the effects of land treatment on the reduction of erosion and sediment yield?

DESCRIPTION OF BASIN

Location

The Willow Creek basin is located in north-central Oregon principally in Morrow County with a portion in eastern Gilliam County. The headwaters rise on the north slopes of the land resource area known as the Northern Rocky Mountains, then flow through a portion of the Palouse and Nez Perce Prairies onward across the Columbia Plateau and finally through the Columbia Basin into the Columbia River on the north (SCS, Soil Conservation Service, 1974). A general map of the area is shown in Figure 1.

Available Hydrological Data

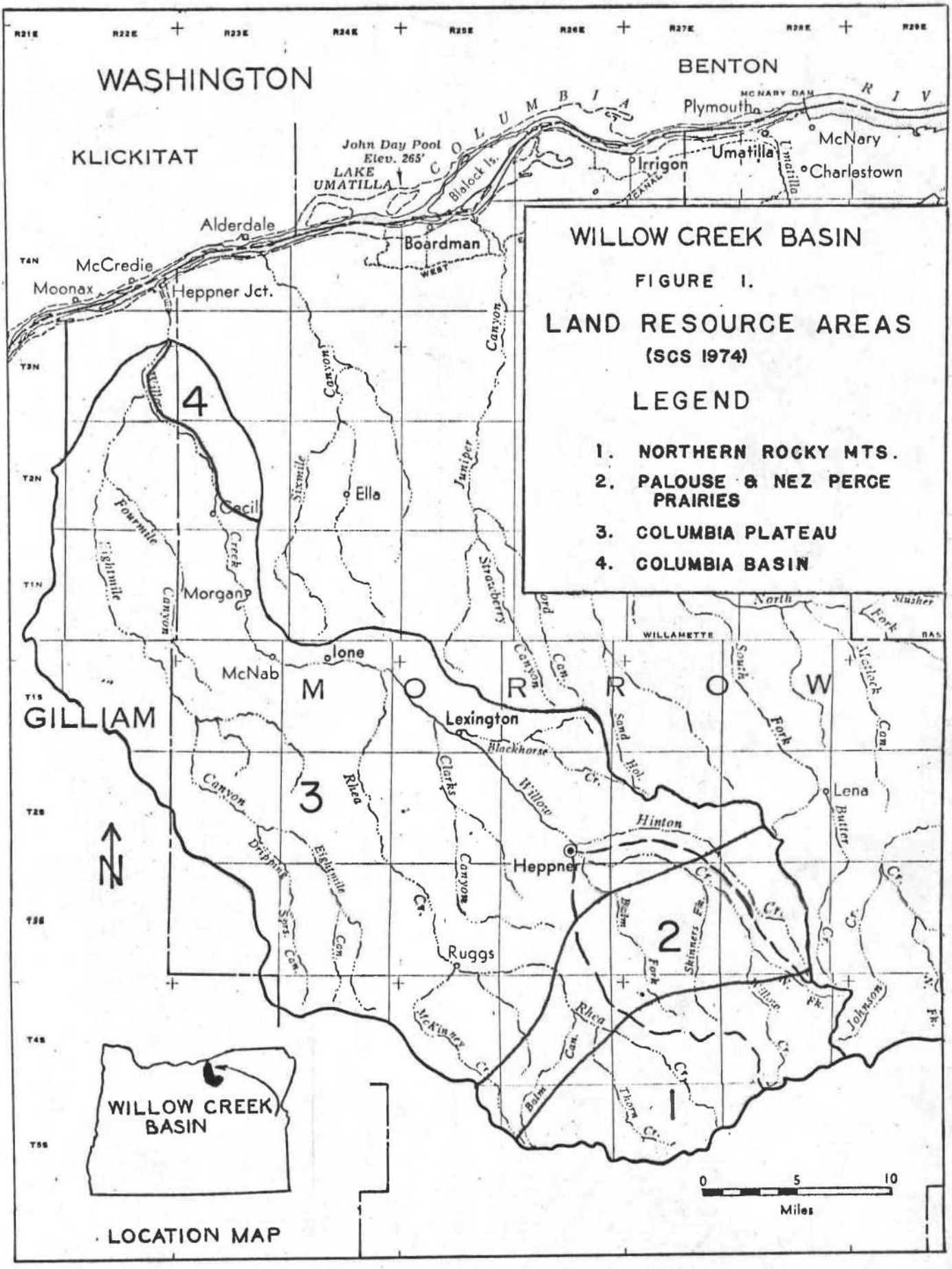
Stream flow records are available for Willow Creek near Arlington, Oregon from August, 1960 to date as collected by the U.S. Geological Survey and routinely reported. A similar set of records is also available for Willow Creek at Heppner. Figure 2 shows the location of these gaging stations. Data of most importance to this study was the suspended sediment records that were available for the two stations as previously described.

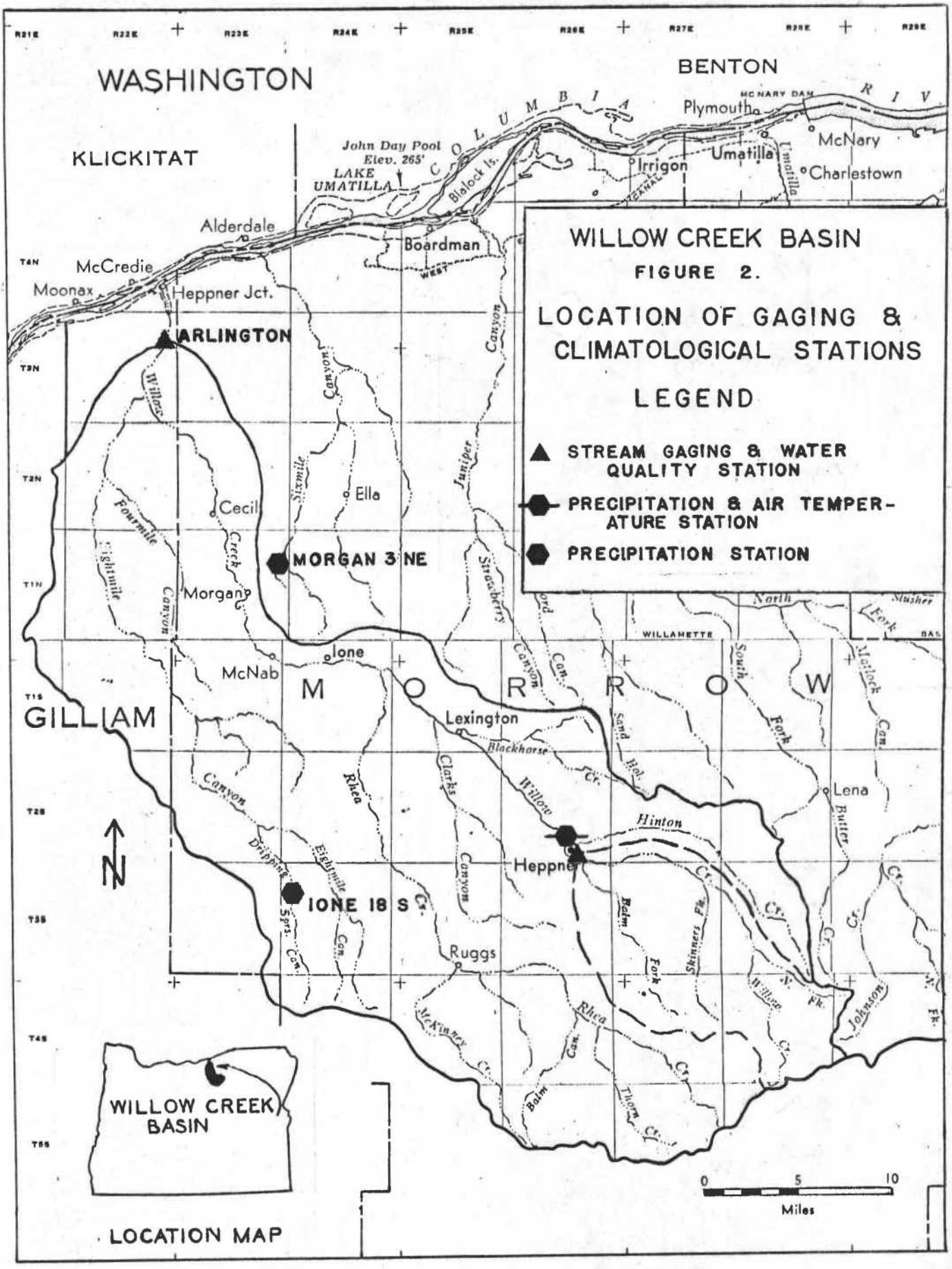
Climatological data (NOAA) of daily precipitation and air temperature was available only at Heppner. Daily precipitation was also available from Morgan 3 NE and from Ione 18 S as shown on Figure 2.

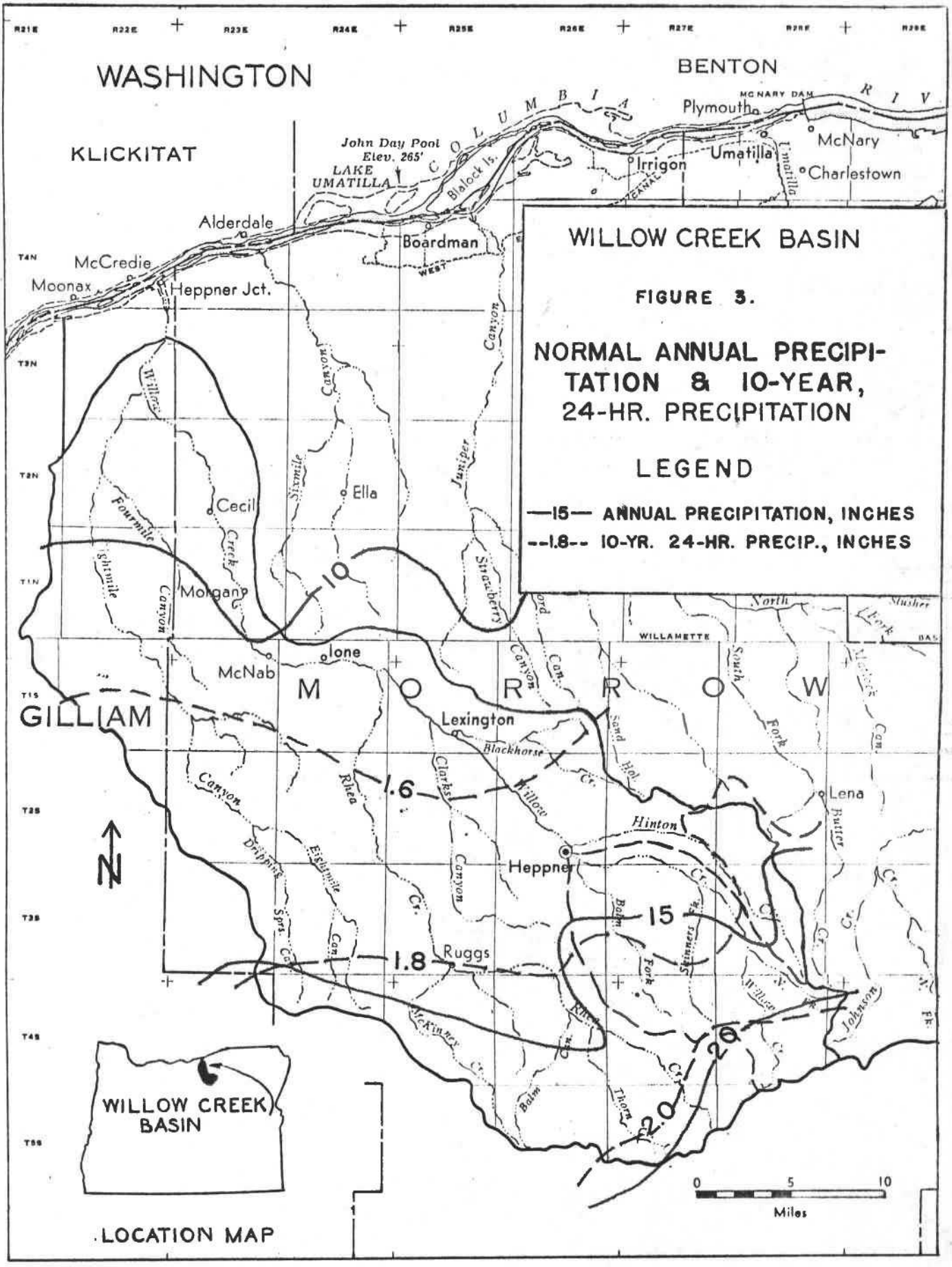
Climate

The climate of the basin is characterized by hot, dry summers and cold winters. Precipitation varies from less than 7.5 inches near Arlington at the Columbia River to over 20 inches in the headwaters of the basin (Figure 3). Average annual precipitation at Heppner is 11.5 inches. Most of the precipitation occurs during the November to March period. Summer may have periods of more than a month with no shower activity. However, intense summer storms with rainfall rates of several inches per hour can occur and occasionally cause severe flood damage but usually cover very localized areas.

Most of the winter precipitation at higher altitudes occurs as snow which provides for stream flows during late spring and early summer. Annual snowfall averages vary from over 100 inches in the headwaters to less than 10 inches at the lower elevations near the Columbia River.


WASHINGTON
BENTON
KLICKITAT
GILLIAM
MORROW
WILLOW CREEK BASIN
FIGURE 1.
LAND RESOURCE AREAS
(SCS 1974)
LEGEND
1. NORTHERN ROCKY MTS.
2. PALOUSE & NEZ PERCE PRAIRIES
3. COLUMBIA PLATEAU
4. COLUMBIA BASIN
John Day Pool
Elev. 265'
LAKE UMATILLA
COLUMBIA RIVER
MCNARY DAM
Plymouth
McNary
Umatilla
Irrigon
Charlestown
Blalock Is.
Alderdale
Boardman
McCredie
Moonax
Heppner Jct.
Ella
Cecil
Morgan
Lone
McNab
Lexington
Heppner
Lena
Ruggs
Hinton
Blackhorse
Willow
Rhea
Clarks
Canyon
Juniper
Strawberry
Fourmile
Eightmile
Sixmile
Butter
Johnson
Skinners Fk.
Balm
Thorn
North Fork
South Fork
WILLAMETTE
LOCATION MAP
0 5 10
Miles


WASHINGTON
BENTON
KLICKITAT
GILLIAM
MORROW
WILLAMETTE
John Day Pool
Elev. 265'
LAKE
UMATILLA
COLUMBIA R I V
McNARY DAM
Plymouth
McNary
Umatilla
Irrigon
Charlestown
Alderdale
Boardman
McCredie
Moonax
Heppner Jct.
ARLINGTON
Cecil
Ella
MORGAN 3 NE
Morgan
McNab
Ione
Lexington
Heppner
Lena
Hinton
IONE 18 S
Ruggs
Blackhorse
Willow
Rhea
Clarks
Canyon
Juniper
Strawberry
Sixmile
Fourmile
Eightmile
Dripping
Spr.
Sand Hol.
Butter
Balm
Skinners Fk.
McKinney
Johnson
Thorn
North
South
Fork
Matlock
Slusher
WILLOW CREEK BASIN
LOCATION MAP
WILLOW CREEK BASIN
FIGURE 2.
LOCATION OF GAGING & CLIMATOLOGICAL STATIONS
LEGEND
STREAM GAGING & WATER QUALITY STATION
PRECIPITATION & AIR TEMPERATURE STATION
PRECIPITATION STATION
0 5 10
Miles


WASHINGTON
BENTON
KLICKITAT
GILLIAM
MORROW
WILLOW CREEK BASIN
FIGURE 3.
NORMAL ANNUAL PRECIPITATION & 10-YEAR, 24-HR. PRECIPITATION
LEGEND
—15— ANNUAL PRECIPITATION, INCHES
--1.8-- 10-YR. 24-HR. PRECIP., INCHES
Plymouth
McNary
Umatilla
Irrigon
Charlestown
Boardman
Alderdale
McCredie
Moonax
Heppner Jct.
Cecil
Ella
Morgan
McNab
Ione
Lexington
Lena
Hinton
Heppner
Ruggs
10
1.6
1.8
15
2.0
2.6
N
0
5
10
Miles
LOCATION MAP
WILLOW CREEK BASIN

Mean annual temperature averages about 50°F for the basin. Temperature extremes have varied from 40°F to 114°F in the basin. January to July monthly temperature averages will increase nearly 40°F throughout the basin. Growing seasons will average about 60 days at higher elevations, 120 to 150 days in dryland farming areas, and about 200 days near the Columbia River.

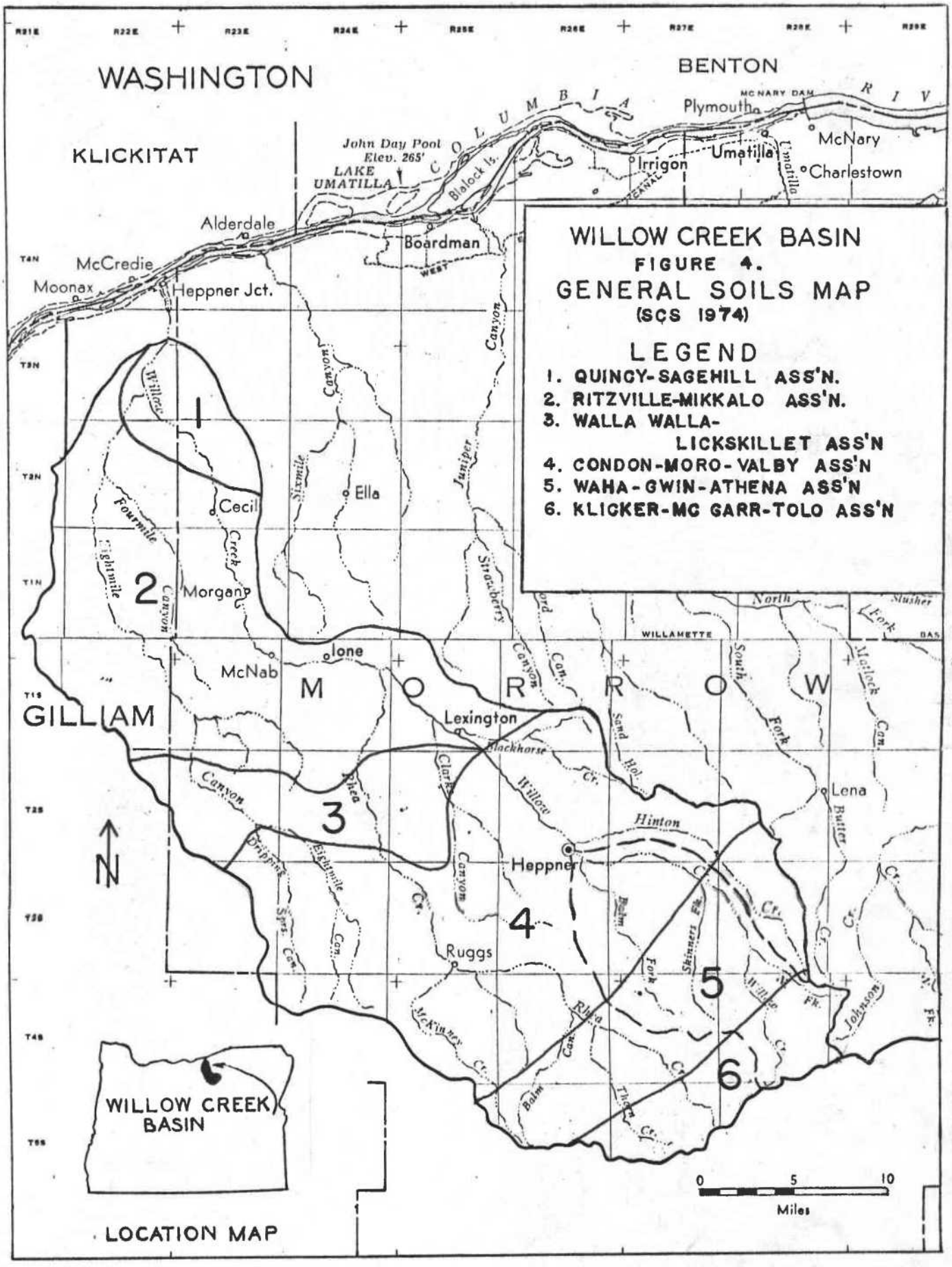
Topography

The general topography of the basin is characterized by steep, forested mountains in the upper reaches of the watershed, sloping into a grassland foothill range. This changes into rolling hills and finally undulating flats. The flood plain of the basin represents less than 2 percent of the total area in the basin.

The headwaters rise near 6,000 feet MSL and descend to less than 300 feet at the discharge of Willow Creek into the Columbia River. The channel gradient above Heppner at mile 52.2 to the headwaters averages more than 2 percent. From Heppner to the mouth, the average channel gradient is 0.6 percent. Because the mainstream and tributaries are rather deeply incised, relief is generally great. Land slopes are generally from 3 to 50 percent. Average land slope is about 8 percent.

Soils

Soils in the Willow Creek basin have been greatly influenced in their formation by the Columbia River and its geological activities. Nearly all of the surface soils are of loessial origin. Wind action has carried soil materials from the Columbia River area out over the basin and deposited them on top of the underlying basaltic materials. In many locations, the underlying material has been exposed either by erosion or lack of original deposition of soil. Generally, materials closer to the Columbia River or in the northern part of the basin are the most coarse and the gradation of materials is to finer particles in the south toward the headwaters of Willow Creek. Figure 4 is a general soils map of the basin. The soils near the Columbia River are coarse and moderately coarse textured and excessively to well drained. These soils support only scant desert-type vegetation. Texture decreases to very fine sandy loam to silt loams as you proceed up the basin to the Heppner area. These soils are primarily used for cropland unless too steep or shallow in which case they are rangeland. Above Heppner, the soils are a mixture of silt loams and silty clay loam textures. These are used for some cropland but primarily range and grassland. Finally, in the headwaters, the soils



WILLOW CREEK BASIN

FIGURE 4.

GENERAL SOILS MAP

(SCS 1974)

LEGEND

1. QUINCY-SAGEHILL ASS'N.
2. RITZVILLE-MIKKALO ASS'N.
3. WALLA WALLA-LICKSKILLET ASS'N
4. CONDON-MORO-VALBY ASS'N
5. WAHA-GWIN-ATHENA ASS'N
6. KLICKER-MC GARR-TOLO ASS'N

are a stony silt loam with subsoils that range from clay to loam. These soils are primarily used for forest production and the surface soils have characteristics of soils formed under forest conditions.

General values of the average annual soil erosion by water for cropland is shown on Figure 5. These have been calculated by the SCS (1974). These values are estimates of the amount of soil that would be eroded down slope on typical cropland as estimated from the Universal Soil Loss Equation (Wischmeier and Smith, 1965). This method considers the erosion factor (Figure 5) associated with the precipitation, the soil type, length and slope of the field, the type of cropping and how it is managed, and the erosion control practices, if any, used in the field. This is in-field erosion as compared to sediment yield which will be discussed later.

The erosion factor is a measure of the energy contained in the rainfall and its ability to cause soil erosion. Compared to most areas of the United States the erosion factor is very small in the Willow Creek basin. Throughout the wheat-fallow production area of the Great Plains of the United States, the erosion factor is about five to ten times the value for this basin.

Land Use

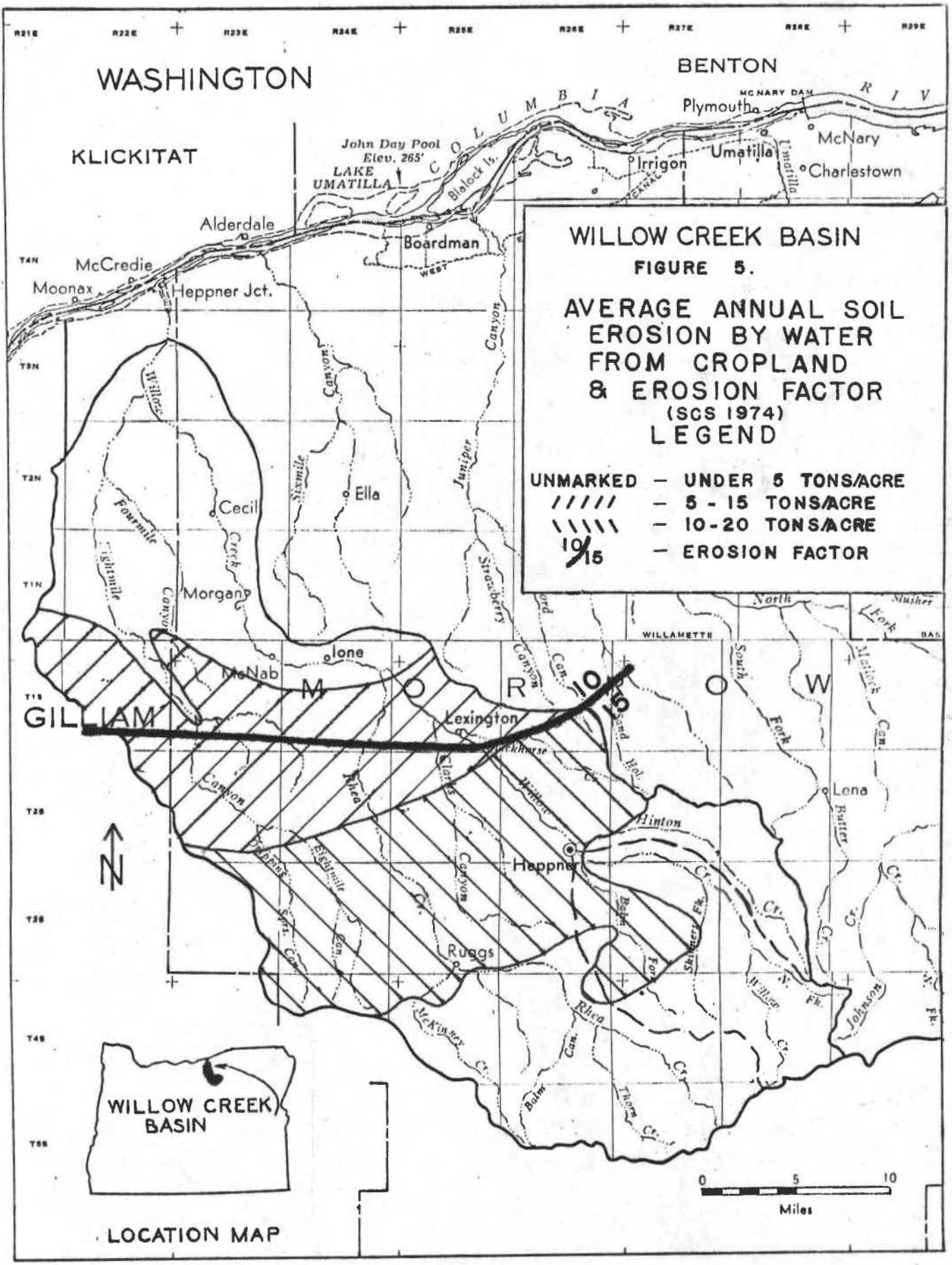
Nearly all of the Willow Creek basin is used for agricultural production as rangeland and cropland. Figure 6 shows the dominant land use in the various portions of the basin. Table 1 lists the total area used for each purpose.

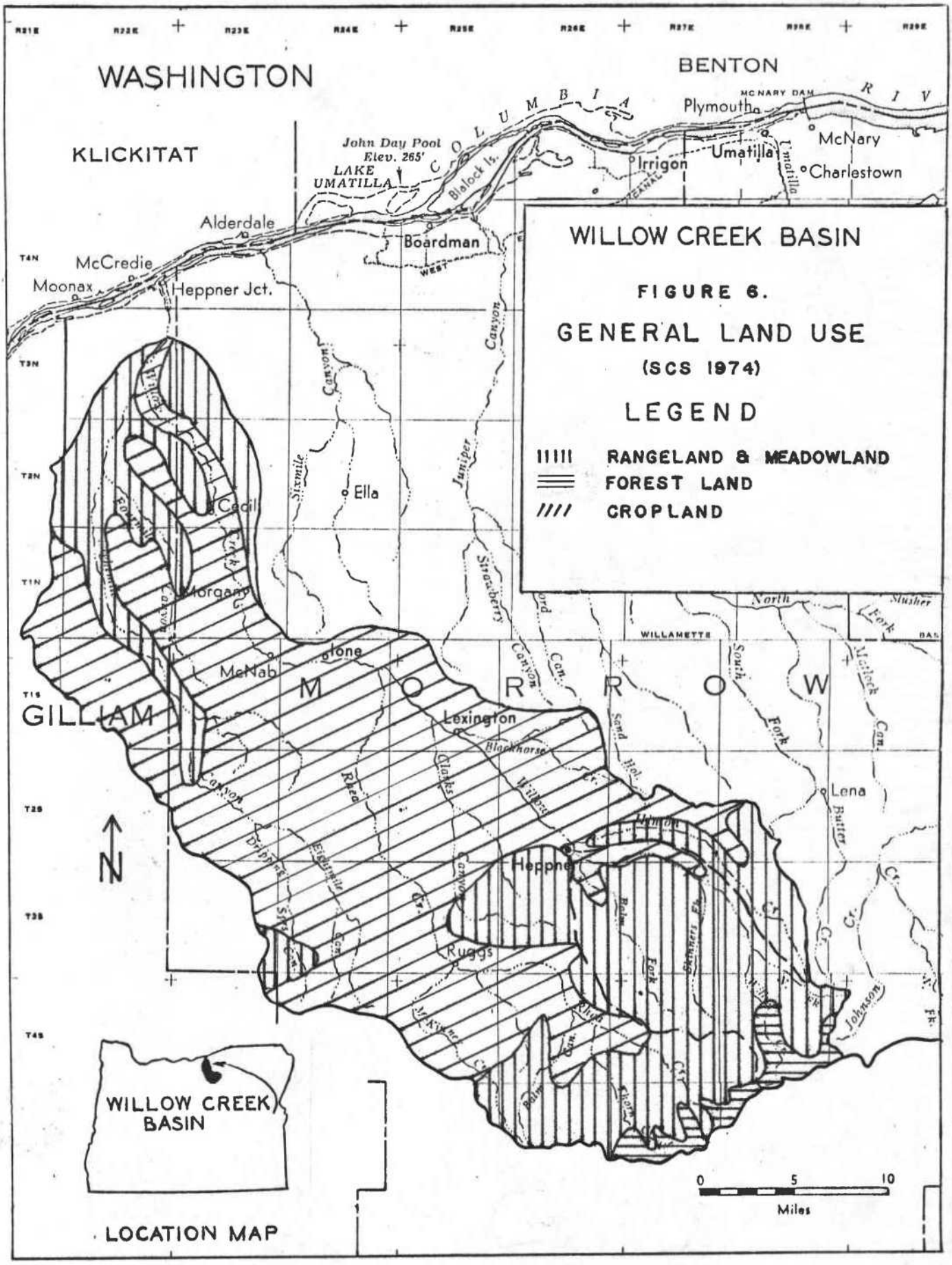
Table 1. Land Use Data for Willow Creek Basin, 1970[a]

Land Use	Area, acres
Forest land, grazed	34,200
Forest land, not grazed	12,200
Cropland[b]	203,800
Rangeland	285,200
Other	8,600
Total	544,000

[a]From USDA, Soil Conservation Service. 1974. Columbia-Blue Mountain Resource Conservation and Development Project. Portland, Oregon. 110 pp. Adjusted to coincide with area above the Arlington gaging station.

[b]6,500 acres irrigated.


WASHINGTON
BENTON
KLICKITAT
GILLIAM
MORROW
WILLOW CREEK BASIN
FIGURE 5.
AVERAGE ANNUAL SOIL EROSION BY WATER FROM CROPLAND & EROSION FACTOR
(SCS 1974)
LEGEND
UNMARKED — UNDER 5 TONS/ACRE
///// — 5 - 15 TONS/ACRE
\\\\\ — 10 - 20 TONS/ACRE
10/15 — EROSION FACTOR
John Day Pool
Elev. 265'
LAKE UMATILLA
COLUMBIA RIV
MCNARY DAM
Plymouth
McNary
Umatilla
Irrigon
Charlestown
Boardman
Alderdale
McCredie
Moonax
Heppner Jct.
Cecil
Ella
Morgan
Lone
McNab
Lexington
Heppner
Lena
Minton
Ruggs
Willow
Rhea
Sixmile
Juniper
Strawberry
Eightmile
Fourmile
Butter
Johnson
Balm
Thorn
WILLOW CREEK BASIN
LOCATION MAP
0 5 10
Miles


WASHINGTON
BENTON
KLICKITAT
GILLIAM
MORROW
WILLAMETTE
John Day Pool
Elev. 265'
LAKE
UMATILLA
COLUMBIA
RIV
MCNARY DAM
Plymouth
McNary
Umatilla
Irrigon
Charlestown
Blalock Is.
Alderdale
Boardman
McCredie
Moonax
Heppner Jct.
Ella
Cecil
Morgan
McNab
Ione
Lexington
Heppner
Lena
Ruggs
Sixmile
Juniper
Strawberry
Rhea
Clarks
Willow
Butter
Johnson
N
WILLOW CREEK BASIN
LOCATION MAP
0 5 10
Miles
WILLOW CREEK BASIN
FIGURE 6.
GENERAL LAND USE
(SCS 1974)
LEGEND
RANGELAND & MEADOWLAND
FOREST LAND
CROPLAND

About 52 percent of the watershed is in rangeland, while about 37 percent is used for cropland. The rangeland is nearly all grazed for beef cattle production. Rangeland production of forage is generally limited by the amount of precipitation. Rangeland improvement in species and other practices has not been very successful within the basin. Over 80 percent of the cropland is used for small grain production of wheat and barley. Nearly all small grain production is in a crop-fallow cycle. This means that half of the land is left uncropped each year to increase the amount of moisture and nutrients available for the crop planted the following year. Use of cropland in the Willow Creek basin is similar to the use of cropland in Morrow County as shown in Table 2.

Table 2. Use of Cropland in Morrow County, Oregon, 1969[a].

Cropland Use	% of Total
Wheat and barley	41
Fallow	41
Set aside (government)	9
Hay	5
Other	4
Total	100

[a]U.S. Department of Commerce. 1976. 1974 Census of Agriculture, preliminary report, Morrow County, OR. AG74-P-41-049 Bureau of the Census, Washington, D.C.

Irrigation of cropland and range or pasture land is limited in the basin by the availability of suitable water supplies. The small amount of irrigation practiced is primarily along the main course of Willow Creek and its larger tributaries where there is sufficient surface flow and some alluvial ground water that is available in quantities substantial enough to be economically feasible for practicing irrigation. Much of the base flow in Willow Creek during the spring and summer months is diverted for irrigation purposes. Much of the time of the year during the growing season, there is little or no flow in Willow Creek because of low yield and diversion for irrigation.

DATA ANALYSES

All discharge, suspended sediment concentration, and sediment yield information that was available on a daily basis from the U.S. Geological Survey was placed on computer cards for further use. A complete listing of this data is contained in Appendix A. Comparison calculations were made to verify that the weight of daily suspended sediment yield published agreed with the value calculated based upon the mean concentration and discharge value published. If all three values of discharge, mean concentration of sediment, and suspended sediment yield in tons were available and there was a disagreement between the calculated value and the published value, the sediment yield in tons was corrected to the value that resulted from the calculation of sediment yield from the concentration and discharge data. If either the concentration of suspended sediment or the daily yield were missing, the missing value was calculated using the other two values.

The measurements made by the U.S. Geological Survey were of suspended sediment only. However, information from the Bureau of Reclamation (1973) indicates that for soil and streambed conditions found in the Willow Creek basin that at Heppner the bed load would be from 2 to 12 percent of the suspended sediment load in the stream. At Arlington the bed load would be expected to contain less than 2 percent of the load contained as suspended sediment. Therefore, in these analyses no contribution from bed load to the total sediment yield was included. Appendix B contains representative particle-size analyses for suspended sediment found in Willow Creek as reported by the U.S. Geological Survey. No particles greater than 0.5 mm were reported and very few larger than 0.125 mm were found.

Once the daily suspended sediment values had been checked and verified, monthly and annual totals were calculated. Results of these calculations on an annual basis are shown in Table 3. These data indicate that sediment yield above Heppner was .18 tons per acre per year. At Arlington the average annual sediment yield during the six years of record was .66 tons per acre.

These measured sediment yields are about one-third less than the sediment yield predicted by Langbein and Schumm (1958) from their now classical analysis of sediment yield as a function of mean annual precipitation. The

Table 3. Annual Suspended Sediment and Runoff Yield for Willow Creek at Heppner and Arlington, Oregon, 1964-1969

Water Year	Heppner[a]		Arlington[a]	
	Susp. Sed., Ton	Runoff, cfs-day	Susp. Sed. Ton	Runoff, cfs-day
1964	1,385	4,003	7,000	1,988
1965	63,999	11,950	1,615,882	29,089
1966	549	1,970	3,030	1,558
1967	3,566	6,122	19,965	7,971
1968	108[b]	944	11	132
1969	---	---	503,781	17,748
Total	69,607	24,989	2,149,669	58,486
Average	13,921	4,998	358,278	9,748
Water yield, in.		1.55		0.43
Sediment yield, ton/ac	0.18		0.66	

[a]Drainage area for Heppner station approximately 120 sq. mi. and 850 sq. mi. for Arlington station

[b]Suspended sediment data collection ceased July 1, 1968. July - September 1968 discharge data did not indicate significant events that would have yielded large amounts of suspended sediment. Therefore, value used as annual amount.

difference might be attributed to variations between basins. However, I believe that the difference can be accounted for by the different nature of the precipitation within Willow Creek basin as compared to that of the basins used in the above authors' study. Regardless of the source of difference, this basin does appear to yield less sediment than might be expected.

Further investigation into days with large discharge of sediment revealed that much of the sediment discharge from this basin was related primarily to unusual precipitation events. Tables 4 and 5 are summaries of the discharge data for the two stations when there were unusually large sediment discharges. This summation notes that 97 percent of the total sediment for the six-year period at Arlington was delivered in only one percent of the total time of record and was carried in only 30 percent of the total flow. This would indicate that the amount of sediment in the runoff or basin yield is generally rather low except for infrequent events. However, during periods of high flow, the sediment concentrations can exceed ten percent by weight of the water that is discharged. These data would indicate that in order to reduce the sediment yield from the Willow Creek basin that sediment concentrations and/or discharge from unusual events must be addressed. For large discharges at the Heppner station, the same general relationships appeared to hold.

An investigation of the climatic events which resulted in large sediment discharges indicated that the primary cause was rainfall precipitation. From December 21 to 24, 1964 all three reporting stations within the basin measured rainfall that was from two to three times the normal precipitation for the entire month of December. For the entire month of December, Heppner recorded 3.2 times normal December precipitation while Morgan 3 NE recorded 4.5 times as much precipitation as the normal period. Based upon these values, the December, 1964 storm would be in the order of magnitude of a once-in-100-year occurrence. In addition, the basin had some snow on it prior to the December 21 to 24 storm. Heppner reported five inches of snow on December 20 and zero on December 23. A combination of unusually high rainfall plus some snowmelt likely made this event even greater than a once-in-100-year recurrence of precipitation.

The January 1965 discharge period could be related somewhat to the December period. The soils in the basin likely remained near saturation during the period from late December to late January. Some of this discharge could certainly be related to melting snow. However,

Table 4. Discharge Data for Arlington Station for Days Having Suspended Sediment Discharges in Excess of 6,000 Tons

Date	Discharge, cfs	Susp. Sed. Conc., ppm	Susp. Sed., ton
Dec. 22, 1964	3,240	112,000	980,000
23	1,040	23,000	64,481
24	1,080	24,000	69,872
25	973	14,000	36,721
26	750	6,400	12,919
27	610	4,900	8,057
Jan. 21, 1965	230	21,000	13,020
22	200	22,000	11,861
24	592	25,000	39,896
27	570	30,000	46,096
28	568	18,700	28,632
29	992	13,800	36,903
30	1,650	24,000	106,749
31	1,100	15,000	44,479
Feb. 1, 1965	720	6,050	11,742
Aug. 22, 1965	14	257,000	9,700
23	269	67,000	48,584
Jan. 5, 1969	550	10,900	16,161
6	300	10,600	8,572
Feb. 12, 1969	404	16,900	18,405
Mar. 18, 1969	309	11,400	9,496
June 10, 1969	1,510	97,600	397,279
11	136	29,000	10,632
Total 23 days	17,808		2,095,027
Total for period of record 2192 days	58,486		2,149,669
Percent of total 1	30		97

Table 5. Discharge Data for Heppner Station for Days Having Suspended Sediment Discharges in Excess of 300 Tons

Date	Discharge, cfs	Susp. Sed. Conc., ppm	Susp. Sed., ton
Dec. 21, 1964	40	10,400	1,121
22	285	25,500	19,591
23	288	5,900	4,580
24	369	4,600	4,576
25	280	2,200	1,661
26	250	1,170	788
27	170	807	370
Jan. 28, 1965	278	12,000	8,991
29	368	3,970	3,918
30	486	7,700	10,088
31	353	2,600	2,474
Feb. 1, 1965	235	1,100	697
2	164	710	314
Apr. 20, 1965	98	1,300	343
21	130	1,070	375
May 17, 1967	72	1,820	353
Total 16 days	3,866		60,262
Total for period of record 1735 days	24,989		69,607
Percent of total 1	15		87

this period was characterized by almost daily occurrences of light to moderate rains from the 20th to the 25th. From the 25th to the 28th the rainfall amounts increased again as the December period, and temperatures well above freezing extended to high elevations, melting large portions of the mountain snowpack. In this basin, however, the amount of snow available for melting was limited to the few areas of higher elevations.

For the Arlington station, the August, 1965 discharge appears to be related to a rather local storm near the outlet of the stream. The low flow, and very high sediment concentration, and short duration of flow would likely have resulted from flow entering the basin very near the outlet. A special weather summary for August 1965 indicated that nearly all stations in the area received record rainfalls for the month.

The sediment discharges during the three days in January and February of 1969 were related directly to rapid snowmelt. The discharge on March 18, 1969 was a result of rainfall runoff. The June 10 and 11 storm in 1969 resulted in greater than the 10-year, 24-hour precipitation falling at both Morgan 3 NE and Ione 18 S.

From these observations it is apparent that large sediment discharges from the Willow Creek basin are expected only from unusual precipitation events. Rapid snowmelt runoff results in increased sediment discharges. However, the magnitude of sediment discharges is much lower than from rainfall runoff either alone or in combination with snowmelt.

To determine if there were mathematical relationships between suspended sediment concentration and discharge rate of water from the basin, Figures 6 and 7 were prepared. These figures are logarithmic plots. A least-squares line of best fit using $\log_{10}$ transformation of the variates was computed for each set of data and is displayed on each figure.

The equations of daily suspended sediment concentration versus discharge (Figures 6 and 7) are as follows:

at Heppner

$$D = 0.263\ S^{0.829},\ r = 0.52 \qquad (1)$$

at Arlington

$$D = 0.228\ S^{0.765},\ r = 0.56 \qquad (2)$$

where, D = water discharge, cfs
S = suspended sediment concentration, ppm
r = correlation coefficient

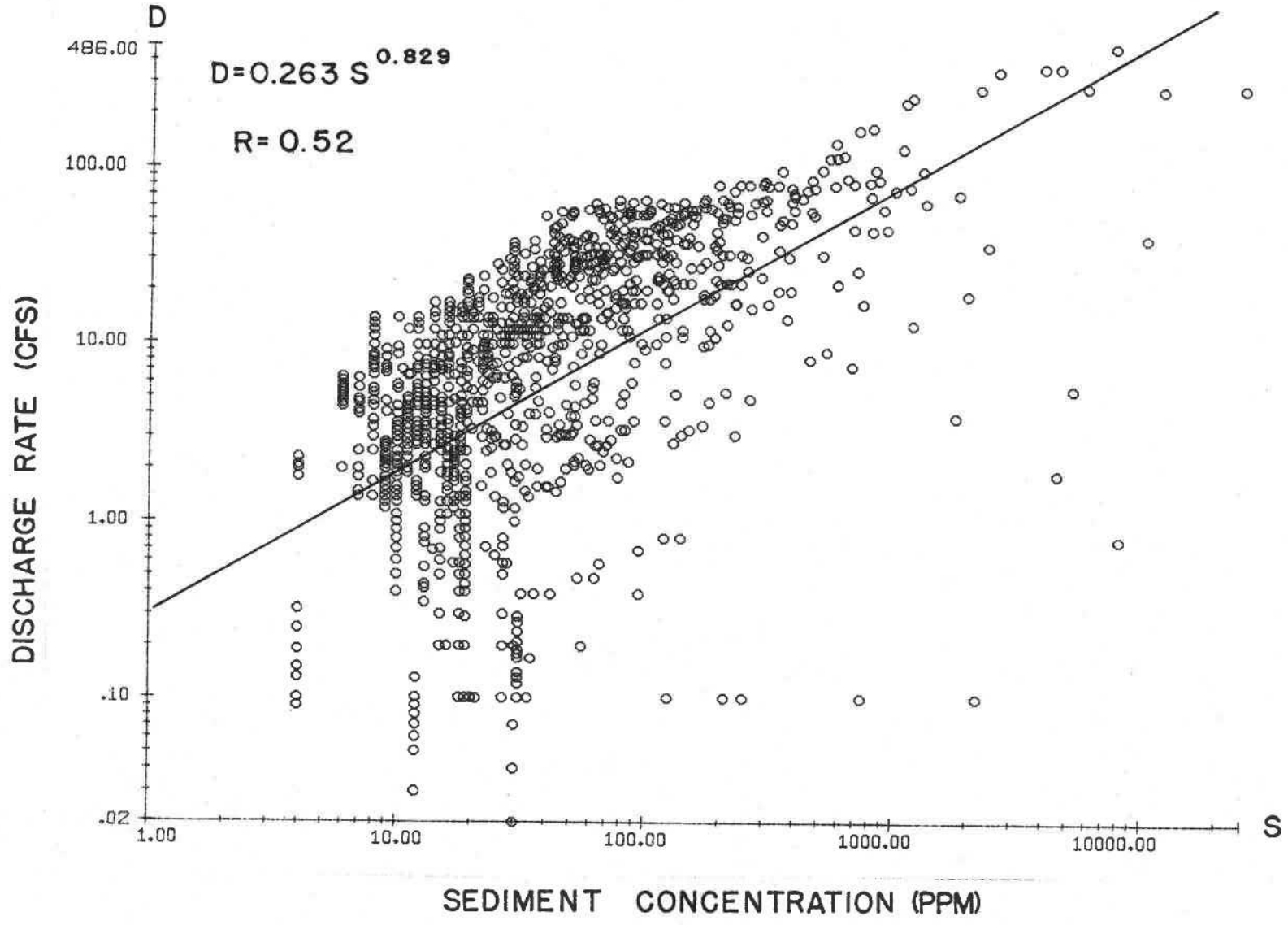


Figure 7. Willow Creek Basin at Heppner, Relationship between Discharge and Suspended Sediment Concentration

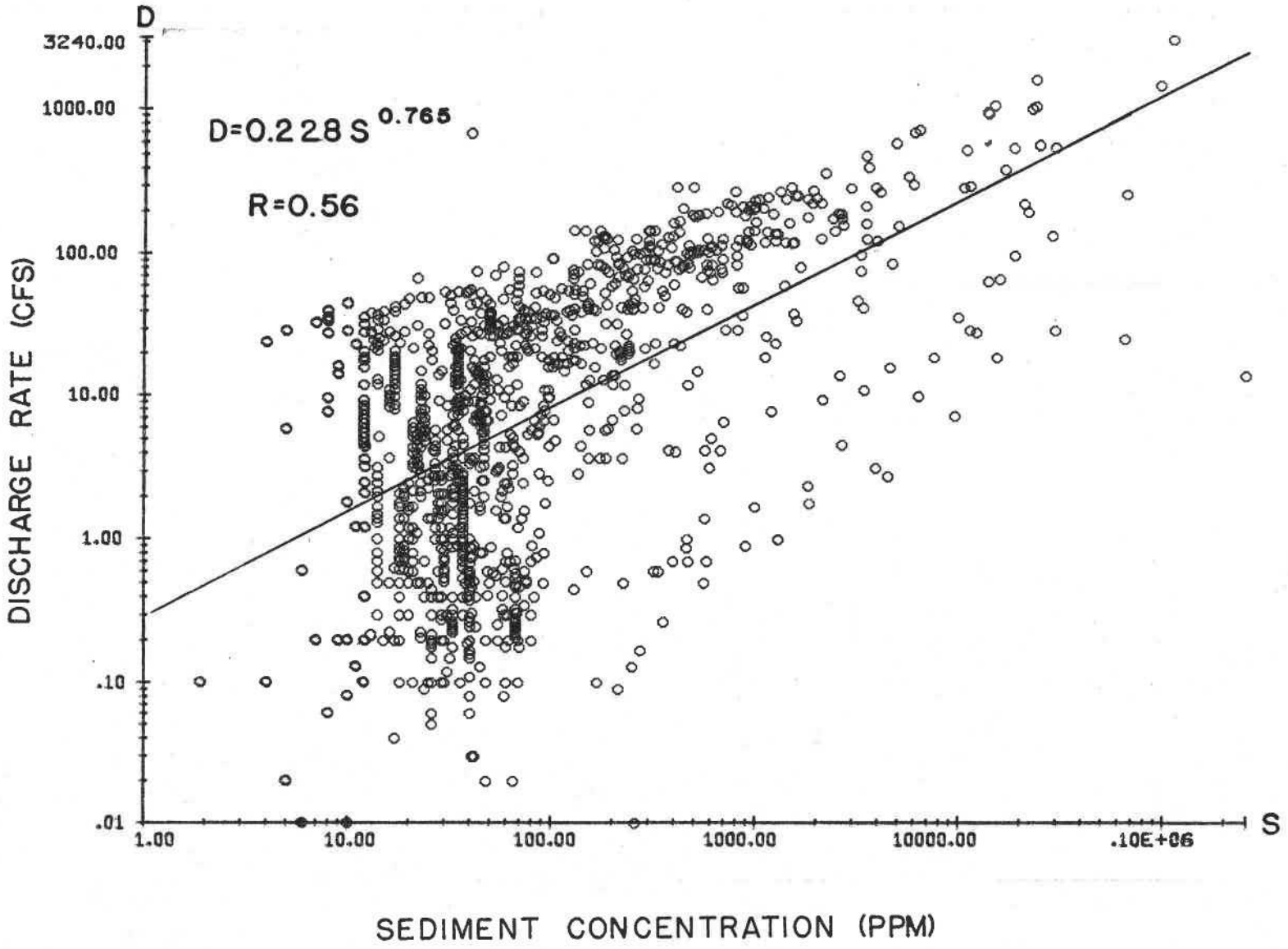


Figure 8. Willow Creek at Arlington, Relationship Between Discharge and Suspended Sediment Concentration

The correlation coefficient, r, measures the "degree of fit" of the given points to the least-squares straight line. When r equals ± 1 , the correlation is said to be exact. When r = 0, the variables are said to be uncorrelated with the linear equation.

The r's are quite low for these relationships. As can be seen from visual inspection of Figures 6 and 7, there is considerable scatter in the data from the fitted straight line. Two reasons can be noted for this poor fit. First, there were a few events that had very high sediment concentrations for the particular discharge. For example, for Heppner at 0.1 cubic feet per second (cfs) sediment concentrations from the range of from 4 to over 2,000 parts per million (ppm) were reported. Such high concentration of sediments must have resulted from either large disturbances within the stream channel a short distance above the sampling station including irrigation return flow, or from a very localized inflow of runoff from the steeper tributaries directly above the sampling station. Secondly, below a discharge rate of about ten cfs the sediment concentration deviates drastically from the straight-line relationship. At first glance, the apparent reason for this deviation was thought to be irrigation return flow within the basin. However, further observation of the data indicate that sediment concentrations in this range are typical of discharges throughout the year. Since irrigation is generally practiced only from May through September, it cannot account for all of the higher sediment concentrations at the low flows. This deviation apparently must be a characteristic of the watershed or of the sampling and measurement techniques used by the U.S. Geological Survey.

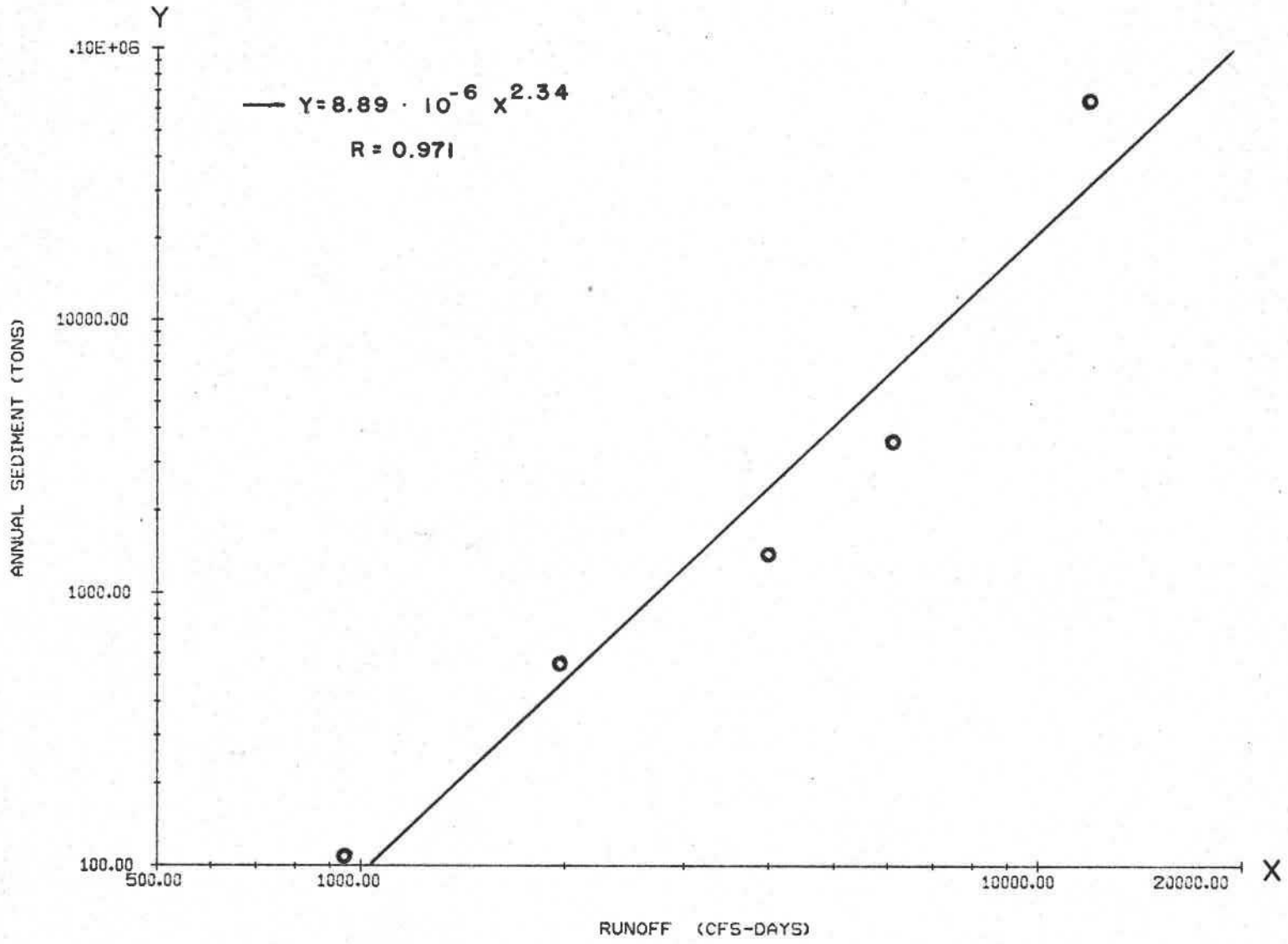
A report by Flaxman (1972) showed that for the Walla Walla River near Touchet, Washington a complex relationship between sediment concentration and water discharge existed for that stream. A similar relationship of a nearly straight-line decrease in water discharge with little decrease in sediment discharge at the lower values of water discharge was found for that stream, as well. This particular relationship may be a phenomenon associated with basins in the Northwest that contain loessial soils.

Relationships between annual sediment yield and annual runoff within the basin show very good linear relationship on a logarithmic plot as shown in Figures 8 and 9. For Heppner, the equation is

$$Y = 8.69 \times 10^{-6} X^{2.34}, \quad r = 0.971 \qquad (3)$$

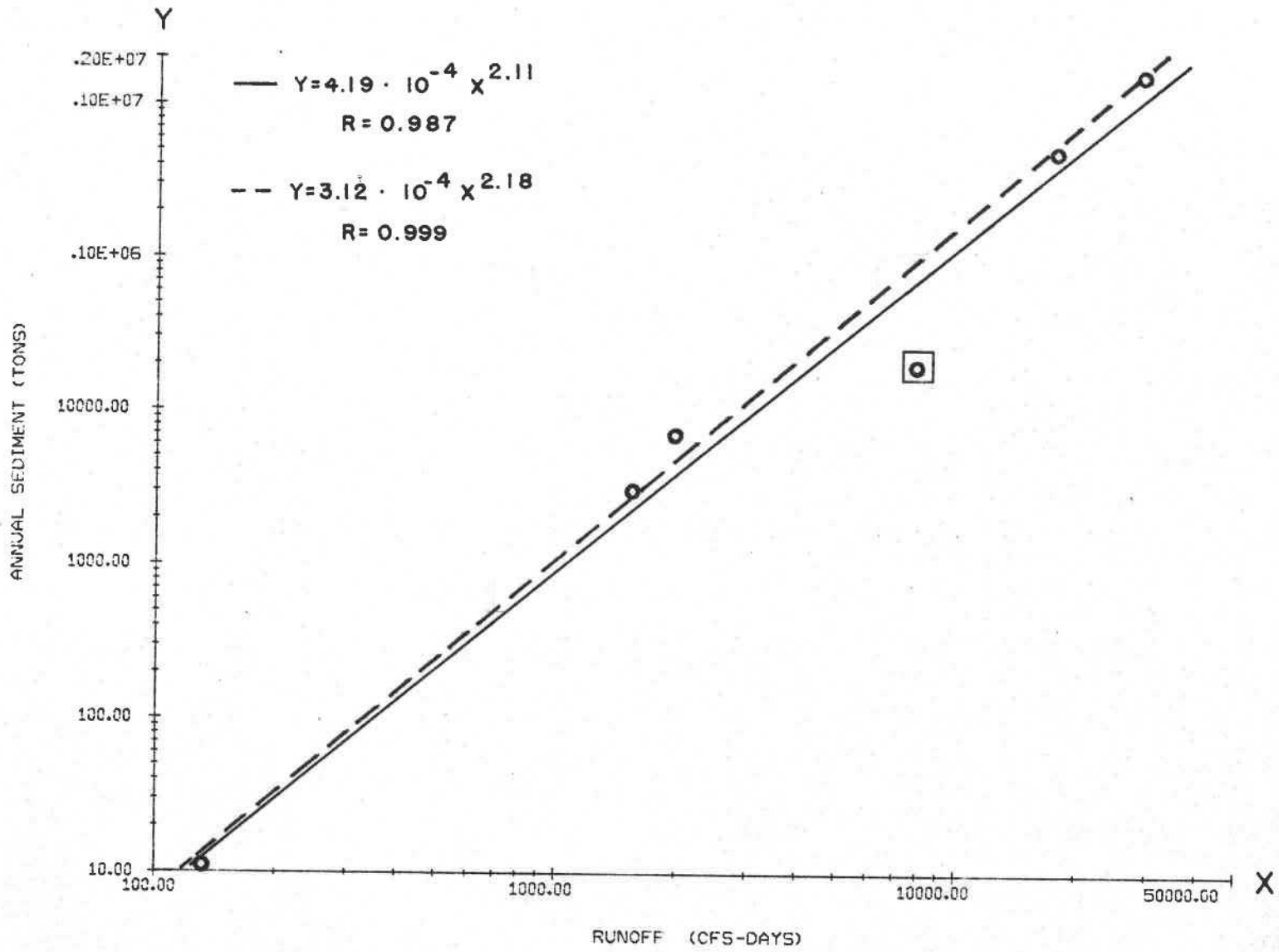
For Arlington, the equation is

$$Y = 4.19 \times 10^{-4} X^{2.11}, \quad r = 0.987 \qquad (4)$$



WILLOW CREEK (HEPPNER)

Figure 9. Relationship Between Annual Suspended Sediment Yield and Annual Runoff at Heppner



WILLOW CREEK (ARLINGTON)

Figure 10. Relationship Between Annual Suspended Sediment Yield and Annual Runoff at Arlington

where, Y = annual sediment yield, tons
X = annual water discharge, cfs-days
r = correlation coefficient.

For sediment studies, these correlation coefficients are quite high. This fact could be attributed to the short length of record that was available for analysis. However, observation of the runoff data for the period of record when sediment measurements were taken indicates that the six years of record for the Arlington station contained the lowest and the second highest annual water yield in the 14-year period of water discharge record that has been published. This relationship between annual runoff and annual sediment yield is believed to be representative of what should be expected from this basin. The same conclusions hold for the Heppner station.

Further study of the annual sediment yield versus runoff for Arlington station indicated that the data point for 1967 (denoted in a square on Figure 9) fell considerably below the regression line. However, statistically it could not be excluded because of the small size of the sample in the regression analysis. The records indicated an unusually large snowmelt from the area above Heppner during the spring of that year. This snowmelt resulted in relatively uniform discharge of water and the resulting sediment in those flows were quite low considering the volume of water discharged. The result of these prolonged moderate flows with relatively low suspended sediment concentrations was high runoff for the year and very low suspended sediment yield as compared to the other years of the record. Since most of the sediment yield for this basin was found to occur from relatively short events related to precipitation, I chose to eliminate the 1967 point and develop a new regression line based upon five years of record. The new regression line yielded a revised equation,

$$Y = 1.12 \times 10^{-4} X^{2.18}, \quad r = 0.999. \qquad (5)$$

where the variables are defined as with Equations 3 and 4.

To compare annual sediment yields for 1964-69 when sediment data was taken with predicted sediment yields from the regression equations for the entire period of record for water discharge (1961-1974) at Arlington and Heppner, Tables 6 and 7 were prepared. For the Heppner station Table 6 indicates that the discharge for the five years 1964 - 1968 when sediment data was collected had an average annual water discharge about 20 percent less than the 14-year average (4998 versus 6360 cfs-days). However, the measured annual sediment yield for the 5-year period was about 10 percent higher than the average predicted by

Table 6. Discharge, Measured Annual Sediment Yield, and Predicted Annual Sediment Yield for Willow Creek Basin at Heppner

Water Year	Discharge (cfs-days)	Annual Sediment Yield (tons) Measured	Predicted[a]
1961	4,604	---	3,353
1962	5,941	---	6,096
1963	9,218	---	17,067
1964	4,003	1,385	2,415
1965	11,950	63,999	31,358
1966	1,970	549	458
1967	6,122	3,566	6,538
1968	944	108	82
1969	8,038	---	12,380
1970	7,215	---	9,609
1971	4,845	---	3,779
1972	9,110	---	16,599
1973	1,511	---	246
1974	13,574	---	42,275
Totals:	89,045	69,607	152,255
Averages:	6,360	13,921	10,875
1964 - 1968			
Totals:	24,989	69,607	40,851
Averages:	4,998	13,921	8,170

[a] By regression equation, Annual Sediment Yield = 8.69×10^{-6} Discharge$^{2.34}$

Table 7. Discharge, Measured Annual Sediment Yield, and Predicted Annual Sediment Yield for Willow Creek Basin at Arlington

Water Year	Discharge (cfs-days)	Annual Sediment Yield (tons) Measured	Predicted[a]
1961	5,296	---	41,727
1962	8,018	---	103,142
1963	19,611	---	726,108
1964	1,988	7,000	4,914
1965	29,089	1,615,882	1,715,130
1966	1,558	3,030	2,890
1967	7,971	19,965	102,163
1968	132	11	13
1969	17,748	503,781	583,997
1970	15,624	---	442,203
1971	4,204	---	25,211
1972	15,054	---	407,759
1973	1,780	---	3,865
1974	34,074	---	2,423,895
Totals:	162,147	2,149,669	6,583,017
Averages:	11,582	358,278	470,216
1964 - 1968			
Totals:	58,486	2,149,669	2,409,107
Averages:	9,748	358,278	401,518

[a] By regression equation, Annual Sediment Yield = 3.12×10^{-4} Discharge$^{2.18}$

Equation 1 for the 14-year period of record (13,921 versus 10,875 tons). Nearly all of this difference could be attributed to 1965 when the measured sediment yield was about double the predicted value. The poor prediction of that year's discharge could either be attributed to an unusually large sediment discharge that was not characteristic of the other years, or to the possibility that the regression line of best fit of sediment yield versus runoff is a curvilinear line with an increasing slope with increasing runoff.

For Arlington, as shown in Table 7, the average annual volume of discharge was about 15 percent less for the 6-year period than the 14-year average (9,748 versus 11,582 cfs-days). Likewise, the average annual sediment yield that was measured was about 25 percent less than the estimated yield for the 14-year average predicted by Equation 5. As stated earlier, Equation 5 is believed to represent the expected sediment discharge from the Arlington station quite well, because it contains a wide range of values within this period of record and fits the data quite well. The fact that the predicted sediment yield compared to the actual sediment yield for the six years of record overestimated sediment yield by only 12 percent further substantiates this fact.

From the sediment yield data from the Heppner station, one concludes that the sediment yield from areas of the basin that are primarily in rangeland and forest in the upper reaches of the watershed is rather low. All but about 6,000 acres of this portion of the basin is in rangeland and forest. The average annual yield for the five years of record at Heppner was only .18 tons per acre. Similar yields are expected in the upper reaches of Rhea Creek and Clark's Canyon where similar land uses are found as shown on Figure 6. Also, little sediment yield would be expected in the lower reaches of the basin where annual precipitation is less than ten inches and the soils are rather coarse in texture. In this lower area, infiltration of precipitation would be expected to be quite rapid and generation of runoff to transport sediment would be very limited. From this information the remaining slightly more than one-half of the middle of the basin would be the most likely source for much of the sediment in the discharge from the basin. This area is characterized by precipitation in the ten to fifteen inches per year range, soils that are primarily silt loams that are relatively highly erodible based upon their composition, considerable areas that are suitable for crop production, and climatic conditions suitable for crop production. The SCS (1974) has identified this area as having average annual soil erosion

by water from cropland in the range from 5 to 20 tons per acre (Figure 5). These values as previously stated have been calculated based upon the Universal Soil Loss Equation (Wischmeier and Smith, 1965). Figure 5 should be used only as an indication of the amount of gross soil erosion by water within the basin on cropland.

Within this middle portion of the basin, it is estimated that about 40 percent of the area is rangeland. Rangeland is on areas where the slopes are too steep for farming, soils are very shallow or stony or that are otherwise unsuitable for tillage and crop production. These rangelands would be expected to have average annual soil erosion by water values that are much less than for cropland. Generally, the estimated annual soil erosion by water from rangeland by the Universal Soil Loss Equation would be about 5 percent of the value for cropland in small grains and fallow. Forestland where some logging activity is practiced is estimated to be about one-tenth as much as for rangeland. Other lands are diverse in use and are estimated to have soil erosion rates less than cropland and greater than rangeland.

Based upon the above information, Table 8 was developed to estimate the percentages of the gross amount of soil erosion occurring on land uses in various parts of the Willow Creek basin. This presentation indicates that 89 percent of the total soil erosion by water is occurring on cropland on the middle portion of the basin. The remaining 11 percent of the erosion is spread over the remaining land uses and areas within the basin. Total erosion on cropland is estimated to be 94 percent of the total. Again, it must be emphasized that these are estimates of the gross amount of erosion occurring on the land and cannot be directly correlated with amounts of sediment that would be delivered to the outlet of the basin. However, unless the stream bed and banks are a major source of sediment for the stream, soil erosion on the land is the only other available source of sediment. Streambank erosion in Willow Creek appears to be small especially below Heppner.

Below a point at about the 10-inch precipitation line, the channel of this stream becomes lined with quite fine materials. This indicates that the flow in the stream may not have sufficient water discharge and velocity to carry out all the suspended sediments introduced upstream. On the other hand, above Heppner the stream bed is eroded down onto stones and cobbles and a small amount of streambank erosion may be occurring. These facts indicate that much sediment is introduced to the stream in the middle portion of the basin outside the stream channel because the stream changes from a streambed eroding condition to a

Table 8. Estimated Percentage of Gross Soil Erosion by Water on Various Parts of the Willow Creek Basin above Arlington

Land Use	Area, acres	C-Factor[a]	Area X C	% of Total
Cropland in middle half of basin	183,000	0.30	54,900	89
Rangeland in middle half of basin	146,000	0.015	2,190	1
Other rangeland	139,000	0.007[b]	973	2
Forestland	46,000	0.002	92	0
Cropland in basin with less than 10 in. of annual precip.	21,000	0.15[b]	3,150	5
Other lands	9,000	0.05	450	1
Total	544,000		61,755	100

[a]Cropping-management factor by Universal Soil Loss Equation (Wischmeier and Smith, 1965)

[b]C-factor reduced in half to compensate for lower precipitation and soils subjected to less erosion in this portion of basin

sediment depositing condition through this area. This characteristic for Willow Creek is different from many Oregon basins where streambank erosion is a major contributor of suspended sediment.

For the area above Heppner, estimates relative percentages of gross annual soil erosion were made, also, and are shown in Table 9. Although less than 10 percent of the area above Heppner is in cropland, two-thirds of the gross soil erosion is estimated to be occurring on this cropland.

Table 9. Estimated Percentage of Gross Soil Erosion by Water on Various Parts of Willow Creek Basin above Heppner

Land Use	Area, acres	C-Factor	Area X C	% of Total
Cropland	6,000	0.3	1,800	67
Rangeland	50,000	0.015	750	28
Forestland	19,000	0.002	38	1
Other	2,000	0.05	100	4
Total	77,000		2,688	100

The amount of suspended sediment in the discharge from each land use cannot be identified. However, since cropland erosion is estimated to be so large compared to other sources, even with quite different ratios of the amount of material eroded to the amount carried out of the basin as suspended sediment, cropland obviously is the source of much of the suspended sediment discharged from the Willow Creek basin.

In this report the sediment delivery ratio is defined as the average amount of suspended sediment that was measured at a sampling station within the basin to the average gross amount of soil that was estimated to have been removed from the land above a sampling station. The sediment delivery ratio for a basin is a rather complex integration of factors including the area, type of sediment sources, size and texture of erodible materials, climate, transport systems, land use, proximity of sediment sources, source size, basin characteristics, and the nature of the depositional areas. There are no generalized sediment delivery ratio relationships that can be applied to every situation. Several studies have shown general trends in

sediment delivery for specific areas and have been summarized by the SCS (1973). Their analysis of data from widely scattered areas of the country showed that sediment delivery ratios vary roughly inversely as the 0.2 power of the drainage area. Using this relationship for the Willow Creek basin at Heppner, the sediment delivery ratio would be .09 and about .04 at Arlington.

For Willow Creek, the comparison between the gross amount of soil eroded in the watershed to that delivered to the sampling stations was estimated as shown in Tables 10 and 11. Here, an estimated average gross annual soil loss for each land use was determined from available information for the basin, summed together, and compared with the measured suspended sediment discharge for the basin.

Table 10. Estimated Gross Annual Soil Erosion by Water on Various Parts of Willow Creek Basin above Arlington

Land Use	Area, acres	Estimated Gross Annual Soil Erosion by Water	
		Ton/Acre	Total, tons
Cropland in middle half of basin	183,000	12.5	2,287,500
Rangland in middle half of basin	146,000	0.4	58,400
Other rangeland	139,000	0.2	27,800
Forestland	46,000	0.1	4,600
Cropland in basin with less than 10 in. precipitation	21,000	6.2	130,200
Other lands	9,000	2.1	18,900
Total	544,000		2,527,400

$$\text{Sediment delivery ratio} = \frac{\text{Measured suspended sediment, tons}}{\text{Gross annual soil erosion, tons}}$$

$$= \frac{358,276}{2,527,400} = 0.14$$

Table 11. Estimated Gross Annual Soil Erosion by Water on Various Parts of Willow Creek Basin above Heppner

Land Use	Area, acres	Estimated Gross Annual Soil Erosion by Water	
		Ton/Acre	Total, tons
Cropland	6,000	10	60,000
Rangeland	50,000	0.5	25,000
Forestland	19,000	0.1	1,900
Other	2,000	3.3	6,600
			91,500

$$\text{Sediment delivery ratio} = \frac{\text{Measured suspended sediment, tons}}{\text{Gross annual soil erosion, tons}}$$

$$= \frac{13,921}{93,500} = 0.15$$

For the basin above Heppner the estimated sediment delivery ratio was 0.15 based upon actual measured values for the period of record and 0.12 for the predicted sediment yield over the 14-year discharge record period. These values are somewhat higher than those estimated by the SCS (1973).

The sediment delivery ratio for the basin at Arlington, however, yields an estimated sediment delivery ratio considerably above that value expected from the SCS information. The ratio was 0.14 based upon measured data and .19 based upon the predicted sediment yield data over the 14-year period of record. The higher than expected sediment delivery ratio is attributed to the nature of the soils within the basin and the relatively steep gradient on the stream channel (0.6 percent). Field observations of the stream channel in the lower reaches of the basin indicate that the channel may be degrading somewhat. Here, bottom and sides of the channel were primarily covered with silts that appeared to be washed in from upstream. This indicated that frequently when there was flow in the channel that it would have its sediment-carrying capacity satisfied with the sediment materials in the channel. This may also account for the complex sediment concentration versus discharge curve relationship at low flows. Easily erodible sediment in the channel would provide a source for suspended sediment under all flow conditions. Since so much sediment is available in the channel, and the sediment source is

nearer the lower end of the basin than would be expected if it were evenly distributed over a basin of this size, I would expect a relatively high sediment delivery ratio as was in fact verified by these calculations.

If the source of sediment from on the cropland were suddenly stopped by some means, the suspended sediment discharge at Arlington might not be reduced very much. If the water discharge from tributaries within was of equal magnitude to current flows and did not have its suspended sediment load satisfied, such discharge would erode the sediment within the channel and carry that sediment as its load. The channel would have to be eroded down by the discharge over an extended period before a new "equilibrium" would be established. Under those conditions the channel itself would become the primary source of suspended sediment in the discharge. Then, under new "equilibrium" the suspended sediment discharge might be significantly less than those currently being experienced.

Nearly all techniques to reduce suspended sediment discharge from within the basin whether it be at the source of generation on the land surface or at some point downstream will also modify the discharge hydrograph from the basin. This modification will result in a reduction in the peak discharge per unit area for the area treated and may or may not affect the total yield of water per unit area. Since sediment concentration is related to discharge to a power, reducing the rate of discharge also affects the sediment carrying capacity of that discharge. Therefore, reduction of sediment movement by methods that also reduce peak discharge would likely have an immediate effect on suspended sediment discharge. Lower discharge rates have lower sediment carrying capacity.

POSSIBILITIES FOR REDUCTION OF SEDIMENT YIELD

The reduction of sediment yield from Willow Creek, if declared necessary, should be done for justifiable reasons. The flow in this stream appears to be is too sporadic to support a sport fish population, so fisheries enhancement by sediment control is not possible. Other water-based recreation also is not very appropriate. Irrigation, which is the primary water use, is generally unaffected by the sediment concentration in the stream. The quantity of flow available is of much more importance than the quality. Reduction of sediment yield would reduce the sedimentation in the John Day pool on the Columbia River. The quantity of sediment from this source decreases that reservoir's capacity by an estimated 200 acre-feet per year. Other benefits within the basin because of less erosion and sedimentation would be a result of less road maintenance for cleaning out drainage ditches, unclogging culverts and bridges, etc. Additional benefits of sediment reduction measures would result of those same measures also reduced flooding and associated damages within the basin. Conservation of the soil resources through less soil erosion is a worthy goal. However, control of soil erosion has not been positively identified as a way to control downstream sediment yield.

No studies have been done in the Northwest to determine the effects of various alternatives to reduce sediment yield from cropland. Also, the results of studies in other parts of the country to determine sediment reduction by changes in land use have not been reported. Therefore, subsequent discussion must be tempered with a realized degree of uncertainty.

One way to approach the effect of various practices is to estimate the hydrologic effects of soil conservation practices. Then, from these changes, it is possible to project the effect those changes would have on resulting sediment yield provided the relationship in Equation 5 still holds. A study of hydrologic effects of soil conservation practices by Sharp, Gibbs, and Owen (1966) for water deficient areas of the Great Plains suggests effects expected on surface runoff as shown in Table 12. These values are, in effect, the percentages of the maximum depleting effect of closed-end level terraces, as compared to straight-row crops, shown by the curve in Figure 10. To determine reduction in surface runoff, consider an area with average annual precipitation of 12 inches and average annual potential evapotranspiration of 30 inches. The farming practice is proposed to be changed from small grain

Table 12. Estimated Relative Effects of Land Use and Treatment Measures in Depleting or Increasing Water Yields by Surface Runoff (Sharp, Gibbs, and Owen, 1966)[a]

Practice	Index to Convert from Base Curve[b]	Effect on Runoff
All level closed-end terraces	1.0	Depleting
Row Crops -- straight-row	0[c]	Base
Row Crops -- contour tillage with or without graded terraces	0.5	Depleting
Row Crops -- level open-end terraced with contour tillage	.7	Depleting
Small Grain -- straight-row	.3	Depleting
Small Grain -- contour tillage with or without graded terraces	.6	Depleting
Small Grain -- level open-end terraces with contour tillage	.7	Depleting
Land Use Conversions: cultivated to noncultivated range, pasture and meadow on deep, permeable soils (good land)	.7	Depleting
Land Use Conversions: cultivated to noncultivated range, pasture, and meadow on shallow, eroded, slowly permeable soils (poor land)	.4	Depleting
Irrigation[d] (as compared to former dry-land farming)	-.4	Increasing

[a] To be used in conjunction with curve in Figure 10.

[b] These are, in effect, percentages of the maximum depleting effect of closed-end level terraces, as compared to straight-row crops, shown by the curve in Figure 10.

[c] This is the base from which effects of all other practices are referenced.

[d] Does not consider the depletion of ground water or stream flow used for irrigation.

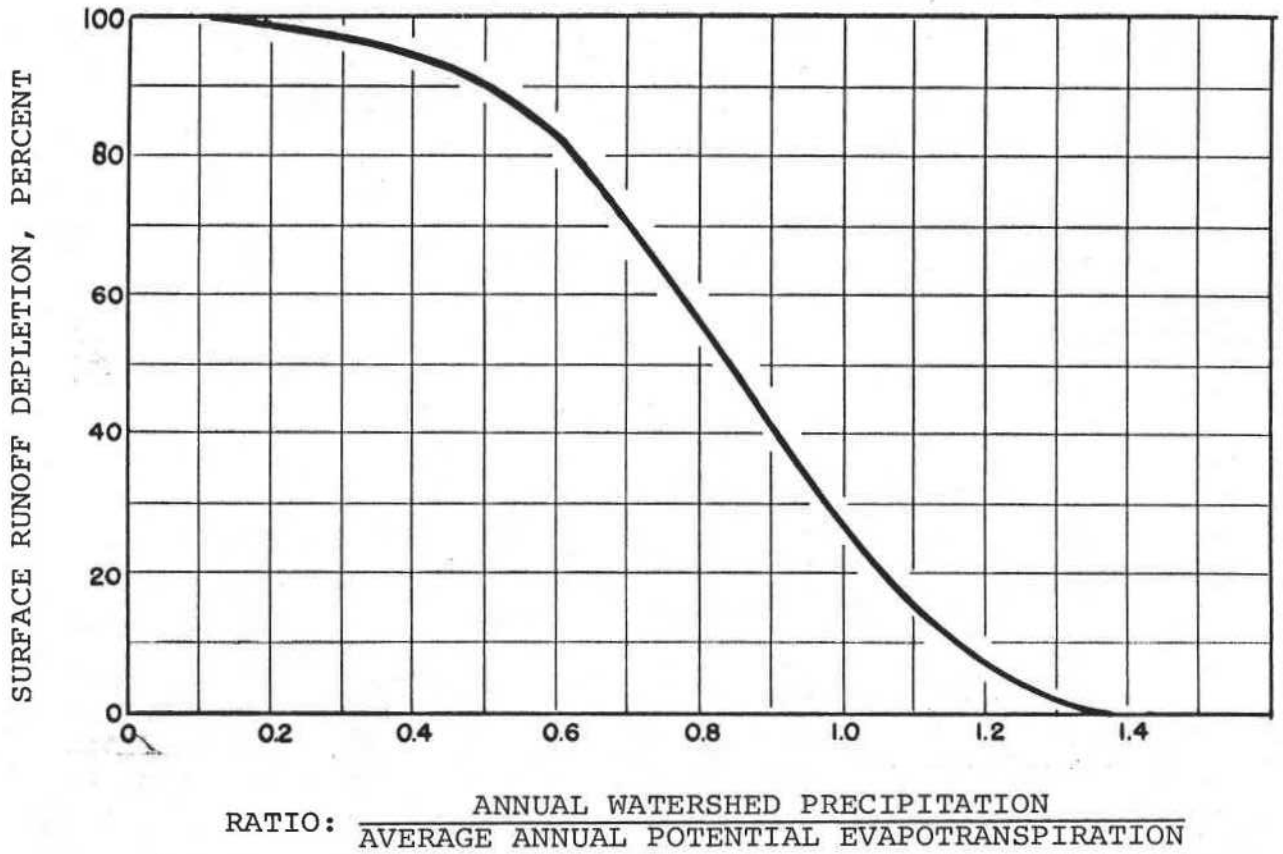


Figure 14. Base curve of surface runoff depletion, row crops in straight-row farming to level closed-end terraces with contour tillage, as related to relative aridity of climate (Sharp, Gibbs, and Owen, 1966).

in straight rows to small grain with level open-end terraces with contour tillage. What would be the expected effect on surface runoff from the treated area? From Figure 10, the depletion value from the base curve for a ratio, 12/30 = 0.4, is 94 percent. The change in the index values from Table 12 is from 0.3 to 0.7 which equals 0.4. Therefore, the reduction in annual surface runoff would be, 94% x (0.4) = 18%, or a 38 percent reduction.

Information presented previously indicates that cropland within the basin appears to be the dominant source of suspended sediment in the discharge from the basin and the one where man has the most influence. Also, since the annual sediment yield is related to the annual discharge to the 2.18 power (Equation 5), any steps or methods that would reduce the annual water yield from the basin would substantially decrease the sediment yield. In fact, if this relationship is true, then a 10 percent reduction in basin discharge might result in a 20 percent decrease in sediment yield from the basin. Since most of the sediment appears to be coming from the cropland, a closer look at ways to control water and accompanying sediment discharges from that source appears justified. Several erosion control techniques for cropland have been identified. Those that are applicable to this basin will be discussed.

Change Land Use: Areas of cropland that are subject to rates of soil erosion above some maximum limit such as the soil loss tolerance might be changed to uses that produce less erosion. The soil loss tolerance is a value based upon the depth of soil to rock or parent material and thickness of topsoil. It is the rate at which soil could be lost and still maintain production provided proper nutrients, etc. were added. Values range from 1 to 5 tons per acre per year. In the case of this basin, land use changes from cropland to range or pasture production of beef or sheep would be considered. This would result in about a twenty-fold reduction in the rate of gross annual soil erosion from lands as changed. An approximately 30 percent reduction in the water yield from these same lands would be anticipated. Although this study implicates all cropland, not all of it has soil losses that are in excess of the tolerance value. Therefore, not all cropland production would be eliminated. However, the relative income difference between the same land in small grain production as compared to range production under current economic conditions favors grain production. Income would be reduced as well as the value of the land where land use changes were necessary. One way to promote such land change would be to have government farm programs that

currently subsidize grain production be changed to consider subsidizing practices that are more environmentally suited to the area. Here, beef or sheep production should be considered for the subsidy on croplands subject to excessive erosion. Not only could the income be maintained but also erosion from the basin might be greatly reduced.

Increase Infiltration Capacity of Cropland: Research in the Great Plains wheat production areas has shown that reduced tillage and greater use of crop residues for surface mulch produce less runoff from cropland. This practice requires limited tillage and/or herbicides to control problem weeds that currently can be controlled only by tillage. Water yield from cropland where such practices would be used might be reduced by about 25 percent over the long term. However, such practices might have little effect on large storm runoff volumes. Erosion on the cropland might be reduced by 50 percent.

Contour Farming: This technique where all tillage and planting is done perpendicular to the land slope has been shown to reduce runoff by as much as 30 percent in the Great Plains wheat production areas as compared to straight-row farming. However, contouring is difficult on land with complex slopes and where large equipment must be used such as is found in Willow Creek. Additionally, contouring would have little effect on runoff from large storms and in years with unusually high precipitation. Some effect on sediment yield would be expected from this practice.

Graded Terraces or Diversion Ditches: These measures reduce in-field soil erosion by reducing field slope length. Little effect on water yield or on the downstream hydrograph from a large basin has been demonstrated from these types of terraces unless farming is on the contour with the terraces. In-field erosion is decreased and sediments in runoff is also decreased because discharge flows off at a lower velocity through the terrace channel. Little effect on basin sediment yield is expected from these types of structures without appropriate changes in farming practices such as contouring.

Level Terraces: Because these types of terraces store the entire runoff volume from the area above them, they effectively remove the treated portions of the watershed from the basin as far as water and sediment yield are concerned except for unusually large storms. Therefore, sediment and water yield from treated areas is reduced by nearly 100 percent. These systems require subsoils that are relatively permeable so that accumulated water can infiltrate into the soil above the terrace ridge before crops are drowned.

Level Terraces with Open Ends: These are similar to level terraces except that the ends remain open so that once enough water is accumulated behind the terrace to cause them to flow, they can be discharged to some outlet point. Reduction in water yield of about 40 percent would be expected from these types of terraces. Sediment runoff is reduced by at least as much as the water runoff because the rate of water flow through the system is quite low.

Terraces with Underground Outlets: These graded terraces are similar to level terraces in that they store and accumulate runoff from the area above them. However, an underground conduit is provided with a surface inlet to drain off the accumulated runoff at a controlled rate. Reduction of water yield of about 20 percent might be expected from these systems due to the infiltration of the accumulated water behind the terraces before it was drained out, losses similar to level terraces would be expected if the terraces were built on the level. The ponding and controlled discharge reduce peak discharge from the area treated by about 95 percent over the same area with no treatment. Sediment discharge from the field in the Midwest is about 10 percent of that from graded terraces. Installation of these systems on a large area could provide flood protection as well as a reduction in sediment discharge.

Sediment Basins or Sediment Traps: These are embankments across a natural depression or gully that if supplied with sufficient water will form a pond. Runoff from the above area of the watershed is trapped in the basin where it is temporarily detained or retained so that much of the suspended sediment and the entering runoff is deposited in the basin. Such structures reduce both water yield and the sediment yield. The amount of reduction is dependent upon the size of the basin in comparison to the amount of runoff actually flowing through the basin. Basins that would contain the once-in-10-year, 24-hour runoff (about 1 inch) would effectively remove the treated portion from the basin except for large storms. These basins would greatly alter the hydrograph from all storms as well as the sediment runoff and water yield.

If a mix of practices were adopted to reduce the soil loss to the soil loss tolerance value, soil erosion from cropland would be reduced by at least two-thirds. A reduction in water yield from the cropland portion of the basin would also be expected. This reduction would be in the range of from 20 to 60 percent. An average value of 35 percent reduction in water yield from cropland will be used for further discussion.

The average annual water yield from cropland in the basin is estimated to be about one-half inch which is about one-third of the total basin yield. Water yield for the basin would be reduced by about 11 percent by conservation measures on cropland that reduce runoff there by 35 percent. According to Equation 5, resultant reduction in sediment yield would be about 22 percent. The sediment delivery ratio would be increased by decreasing gross erosion on cropland. The eroded material that would be discharged from cropland would have a much better chance for transport to the outlet of the basin since the concentration of sediment would be much closer to the concentration that could be transported by the discharge. Local sedimentation would be reduced, but effects at the outlet of the basin would be much less than the effects at the source of erosion. Other sources of sediment, especially that deposited in the channel at the lower end of the basin would become more available if cropland sources were reduced. Much of this stream channel sediment would be removed.

The question remains whether a substantial reduction in the sediment and runoff yield from the cropland portion of the basin would likewise reduce the sediment yield from the basin. Assuming, in fact, that the above practices could reduce the estimated sediment yield at the Arlington station by 22 percent, this reduction must be weighed against the additional costs that would be experienced within the basin. In other words, the benefits of reducing sediment discharged from Willow Creek basin by about 90,000 tons per year must be weighed against an estimated annual cost of between $1.5 and 3.6 million on the cropland in the basin. There would be additional benefits within the basin due to reduced sediment yield within the basin such as less road and bridge maintenance and less flooding. Long-term advantages of protecting the soil resource for future generations appears worthy, but economically it is difficult to justify.

If external financial assistance were available to pay for most of the initial cost of structural measures or to pay for the annual use of herbicides, the cost to the cropland users could be reduced by about one-half of the estimated above annual cost. However, such assistance would only transfer the costs of erosion and sediment control from the land users to other segments of society. The fact remains that unless the damages from the sediment that would be controlled are in fact great enough to justify the cost, control would appear to be an unwise practice.

Adoption of soil conserving practices which also indirectly control sediment yield has been slow in the Willow Creek basin. However, increased awareness of the effects of erosion on the farming enterprise and on the downstream environment appears to be motivating land owners to begin adoption of more conservation practices. Such adoption likely will continue to increase. However, unless more financial assistance is made available, the economic expense of more conservation practices to control soil erosion on cropland is not justified to the farmer. If the general public is concerned enough to place sufficient value on reduction of sediment discharges to the point of financial assistance and regulations to limit sediment losses, only then will practices be adopted. In a basin such as Willow Creek, the limitations of practices that reduce soil erosion to reduce basin sediment yield must be recognized. Just because soil erosion is controlled does not necessarily correlate that sediment yield at the outlet from the basin will be reduced to the same degree.

SUMMARY AND CONCLUSIONS

Since the enactment of Public Law 92-500 and especially Section 208, interest in control of non-point pollution from suspended sediments has been greatly increased. Daily suspended sediment data for a six-year period for the Willow Creek basin in north-central Oregon was available from the U.S. Geological Survey. Within the Willow Creek basin agricultural activities are the primary land uses. Since much of the sediment in streams in agricultural areas is attributed to land disturbing or crop cultivation activities, this basin was studied in detail to determine what information could be derived from the suspended sediment data and other information available for the basin.

All daily discharge, suspended sediment concentration, and sediment yield data available from the U.S. Geological Survey were placed on the computer for further use. Data was summarized by month and by year. Average annual sediment yield at Heppner for the upper one-seventh of the basin was .18 tons per acre. At Arlington, near the lower end of the 850 square mile basin, the annual sediment yield was .66 tons per acre. A logarithmic plot of daily water discharge versus suspended sediment concentration yielded a complex relationship. A least-squares line of best fit using $\log_{10}$ transformation of the variates resulted in correlation coefficients of only about .55 for the two stations. There was considerable scatter in the data from the fitted straight line. Also, below a discharge rate of about 10 cfs the sediment concentration deviated drastically from the straight-line relationship. Regardless of the flow rate below 10 cfs, the suspended sediment concentration remained about 15 ppm at Heppner and 25 ppm at Arlington. No single factor could be identified for this deviation. Flaxman (1972) reported the Walla Walla River near Touchet, Washington also showed a complex relationship between sediment discharge and discharge rate similar to the one found for Willow Creek. This particular relationship may be a phenomenon associated with basins in the Northwest that contain loessial soils or similar precipitation patterns.

Relationships between annual sediment yield and annual water yield within the basin showed a very good linear relationship on a logarithmic plot. Correlation coefficients on the $\log_{10}$ transformed variates were greater than 0.97. Total annual sediment yield for the basin was related to the annual water yield to the 2.18 power. Using this relationship and 14 years of available records for water

discharge, the average annual predicted sediment yield over the 14-year period was calculated. These calculations showed that the average annual measured sediment yield over the six-year period was about 25 percent less than that which would be expected over a longer term of record from the prediction equation.

Investigation of the climatic events which resulted in large sediment discharges indicated that the primary cause was rainfall precipitation. Ninety-seven percent of the total sediment discharged during the six-year period at the lower end of the basin was delivered in only 1 percent of the total time of record and was carried in only 30 percent of the total discharge for the period. The period of record contained a winter rainstorm that would likely be about a once-in-100-year frequency storm. Also, a considerable portion of the middle of the basin received a summer rainfall event that was equal or greater than a once-in-10-year storm. Even though the length of record was only six years, it is believed that the records were rather indicative of conditions that would be expected over a long term within the basin.

Daily suspended sediment and water discharge data available from the U.S. Geological Survey can be useful in analyzing overall sediment yield and sediment yield versus discharge relationships for a particular basin. Coupled with other available information including precipitation, land use, topography, and soil types, these data can be used to make generalizations about erosion and sedimentation relationships within a basin. Such data, however, is not precise enough to allow for complete confidence in determining sources of sediments, effects of changes in land use, etc.

The Universal Soil Loss Equation was used to estimate the percentage of gross annual soil erosion by water on various land uses in the basin. This analysis indicated that over 90 percent of the gross soil erosion was occurring on cropland in the basin. Nearly all of the cropland which represents about 38 percent of the total area is located in the middle half of the basin. Observation of the stream channel through the basin showed that through this middle reach the stream bed composition changed quite drastically from one with primarily stones and cobbles in the bed to one lined with much smaller particles and sediments below the area where most of the cropland lies. Some decrease in the channel slope occurs through this middle reach, however, much of the change must be attributed to increased amounts of sediment introduced to the stream in this middle reach.

Comparing the estimated gross annual soil erosion to the amount of suspended sediment yield measured at the two gaging stations within the basin showed that for the upper

reaches of the basin that the sediment delivery ratio was about 0.14. At the lower end of the basin, however, the sediment delivery ratio increased to about 0.16. Most sediment delivery relationships indicate that for increasing drainage areas that the sediment delivery ratio values decreases. The reason this relationship does not hold for this basin is attributed to the increased levels of soil erosion and sediment delivered to the stream within the middle portion of the basin.

A technique to determine relationships between the hydrologic effect of erosion control practices on cropland developed for the Great Plains is presented. Application of this technique to Willow Creek shows the estimated effect of erosion control practices on water yield from cropland would be a 35 percent reduction in yield. The estimated effect of such practices on total sediment yield at the basin outlet is estimated to be a 22 percent reduction. Sedimentation reduction within the basin should be more substantial since total cropland erosion would be reduced about 75 percent.

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EVALUATION OF SUSPENDED SEDIMENT DISCHARGES FROM THE WILLOW CREEK BASIN

~~PLANT PRODUCTION IN EXPERIMENTAL STREAMS~~

~~A Cooperative Research Project With Weyerhaeuser Company~~

Prepared by

Koelsch

~~David E. Busch, Research Assistant, Botany~~
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in part

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~~September 1976~~

APPENDIX A

Suspended Sediment and Discharge Data for Willow Creek at Heppner and Arlington, Oregon

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 63	10 1	.40	10.00	.01]	11 1	3.90	12.00	.13]	12 1	5.40	6.00	.09
WCHP 63	10 2	.40	10.00	.01]	11 2	3.70	12.00	.12]	12 2	5.00	6.00	.08
WCHP 63	10 3	.50	10.00	.01]	11 3	3.90	12.00	.13]	12 3	5.00	6.00	.08
WCHP 63	10 4	.60	10.00	.02]	11 4	4.10	12.00	.13]	12 4	4.80	6.00	.08
WCHP 63	10 5	.70	10.00	.02]	11 5	4.60	16.13	.20]	12 5	5.40	6.00	.09
WCHP 63	10 6	.90	10.00	.02]	11 6	5.40	20.00	.29]	12 6	6.10	6.00	.10
WCHP 63	10 7	1.00	10.00	.03]	11 7	6.10	22.00	.36]	12 7	5.80	6.00	.09
WCHP 63	10 8	1.30	10.00	.04]	11 8	9.80	170.00	4.49]	12 8	5.60	6.00	.09
WCHP 63	10 9	1.30	10.00	.04]	11 9	12.00	180.00	5.82]	12 9	5.60	6.00	.09
WCHP 63	10 10	1.30	10.00	.04]	11 10	8.80	65.00	1.54]	12 10	5.00	6.00	.08
WCHP 63	10 11	1.40	10.00	.04]	11 11	7.40	15.00	.30]	12 11	4.40	6.00	.07
WCHP 63	10 12	1.50	10.00	.04]	11 12	6.60	11.24	.20]	12 12	4.60	6.00	.07
WCHP 63	10 13	1.50	10.00	.04]	11 13	6.40	13.00	.22]	12 13	5.20	6.00	.08
WCHP 63	10 14	1.00	10.00	.03]	11 14	6.60	16.86	.30]	12 14	5.40	6.00	.09
WCHP 63	10 15	.80	10.00	.02]	11 15	8.60	22.00	.51]	12 15	5.40	6.00	.09
WCHP 63	10 16	.70	10.00	.02]	11 16	7.60	14.64	.30]	12 16	5.60	6.00	.09
WCHP 63	10 17	.80	10.00	.02]	11 17	7.10	10.45	.20]	12 17	5.80	6.00	.09
WCHP 63	10 18	.90	10.00	.02]	11 18	6.40	6.00	.10]	12 18	6.10	6.00	.10
WCHP 63	10 19	.90	10.00	.02]	11 19	6.10	6.00	.10]	12 19	5.80	6.00	.09
WCHP 63	10 20	1.00	10.00	.03]	11 20	6.10	6.00	.10]	12 20	6.60	6.00	.11
WCHP 63	10 21	1.10	10.00	.03]	11 21	5.80	6.00	.09]	12 21	6.60	6.00	.11
WCHP 63	10 22	1.30	10.00	.04]	11 22	5.80	6.00	.09]	12 22	6.40	6.00	.10
WCHP 63	10 23	1.60	10.00	.04]	11 23	5.80	6.00	.09]	12 23	6.40	6.00	.10
WCHP 63	10 24	1.90	10.00	.05]	11 24	6.10	6.00	.10]	12 24	6.40	6.00	.10
WCHP 63	10 25	1.90	10.00	.05]	11 25	6.10	6.00	.10]	12 25	6.40	6.00	.10
WCHP 63	10 26	2.20	10.00	.06]	11 26	6.10	6.00	.10]	12 26	6.40	6.00	.10
WCHP 63	10 27	2.30	10.00	.06]	11 27	5.80	6.00	.09]	12 27	6.60	6.00	.11
WCHP 63	10 28	2.50	10.00	.07]	11 28	5.60	6.00	.09]	12 28	8.30	32.00	.72
WCHP 63	10 29	3.50	14.00	.13]	11 29	5.40	6.00	.09]	12 29	8.80	27.00	.64
WCHP 63	10 30	4.40	14.00	.17]	11 30	5.40	6.00	.09]	12 30	8.60	8.00	.19
WCHP 63	10 31	4.10	9.05	.10]					12 31	8.30	8.00	.18
MONTHLY TOTALS:		45.70	317.05	1.31		189.10	702.33	16.48		187.80	237.00	4.21
AVERAGES:		1.47	10.23	.04		6.30	23.41	.55		6.06	7.65	.14

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 64	1 1	9.60	8.00	.19)	2 1	17.00	230.00	10.54)	3 1	8.30	9.00	.20
WCHP 64	1 2	9.80	8.00	.21)	2 2	15.00	70.00	2.83)	3 2	7.80	9.00	.19
WCHP 64	1 3	8.80	8.00	.19)	2 3	14.00	44.00	1.66)	3 3	7.60	9.00	.18
WCHP 64	1 4	8.60	8.00	.19)	2 4	13.00	44.00	1.54)	3 4	7.60	9.00	.18
WCHP 64	1 5	8.00	8.00	.17)	2 5	12.00	44.00	1.42)	3 5	8.00	9.00	.19
WCHP 64	1 6	8.30	8.00	.18)	2 6	9.80	44.00	1.16)	3 6	7.60	9.00	.18
WCHP 64	1 7	8.00	8.00	.17)	2 7	12.00	44.00	1.42)	3 7	8.00	9.00	.19
WCHP 64	1 8	7.80	8.00	.17)	2 8	11.00	27.00	.80)	3 8	7.60	9.00	.18
WCHP 64	1 9	7.80	8.00	.17)	2 9	11.00	27.00	.80)	3 9	7.60	9.00	.18
WCHP 64	1 10	7.40	8.00	.16)	2 10	11.00	27.00	.80)	3 10	7.40	9.00	.18
WCHP 64	1 11	6.80	8.00	.15)	2 11	10.00	27.00	.73)	3 11	7.10	9.00	.17
WCHP 64	1 12	6.60	8.00	.14)	2 12	8.80	27.00	.64)	3 12	7.10	9.00	.17
WCHP 64	1 13	5.50	8.00	.12)	2 13	11.00	27.00	.80)	3 13	6.80	9.00	.16
WCHP 64	1 14	7.10	8.00	.15)	2 14	9.80	16.00	.42)	3 14	7.40	9.00	.18
WCHP 64	1 15	5.20	8.00	.11)	2 15	9.40	16.00	.41)	3 15	7.10	9.00	.17
WCHP 64	1 16	6.10	12.00	.20)	2 16	9.10	16.00	.39)	3 16	7.60	14.00	.29
WCHP 64	1 17	7.10	12.00	.23)	2 17	8.80	16.00	.38)	3 17	8.30	37.00	.83
WCHP 64	1 18	6.40	12.00	.21)	2 18	8.60	16.00	.37)	3 18	9.80	38.00	1.00
WCHP 64	1 19	6.40	12.00	.21)	2 19	8.30	16.00	.36)	3 19	9.80	22.00	.58
WCHP 64	1 20	7.80	12.00	.25)	2 20	7.10	16.00	.31)	3 20	10.00	22.26	.60
WCHP 64	1 21	7.40	12.00	.24)	2 21	8.30	16.00	.36)	3 21	10.00	23.00	.62
WCHP 64	1 22	6.80	12.00	.22)	2 22	8.00	16.00	.35)	3 22	11.00	29.00	.86
WCHP 64	1 23	6.60	12.00	.21)	2 23	7.60	16.00	.33)	3 23	8.80	19.00	.45
WCHP 64	1 24	7.80	90.00	1.99)	2 24	8.80	16.00	.38)	3 24	11.00	33.00	.98
WCHP 64	1 25	8.80	55.00	1.30)	2 25	7.10	9.00	.17)	3 25	11.00	26.00	.77
WCHP 64	1 26	20.00	380.00	20.49)	2 26	7.60	9.00	.18)	3 26	11.00	23.00	.68
WCHP 64	1 27	23.00	190.00	11.78)	2 27	7.10	9.00	.17)	3 27	12.00	40.00	1.29
WCHP 64	1 28	23.00	128.00	7.94)	2 28	8.30	9.00	.20)	3 28	20.00	340.00	18.33
WCHP 64	1 29	20.00	100.00	5.39)	2 29	8.00	9.00	.19)	3 29	44.00	810.00	96.07
WCHP 64	1 30	19.00	170.00	8.71)					3 30	76.00	1000.00	204.87
WCHP 64	1 31	18.00	170.00	8.25)					3 31	83.00	680.00	152.14
MONTHLY TOTALS:		308.50	1499.00	69.98		287.50	903.00	30.12		456.30	3291.26	483.12
AVERAGES:		9.95	48.35	2.26		9.91	31.14	1.04		14.72	106.17	15.58

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 64	4 1	89.00	640.00	153.55]	5 1	42.00	71.00	8.04]	6 1	17.00	21.00	.96
WCHP 64	4 2	67.00	300.00	54.18]	5 2	39.00	48.00	5.05]	6 2	17.00	21.00	.96
WCHP 64	4 3	49.00	200.00	26.42]	5 3	34.00	43.00	3.94]	6 3	14.00	21.00	.79
WCHP 64	4 4	37.00	140.00	13.96]	5 4	31.00	43.00	3.59]	6 4	13.00	212.00	7.43
WCHP 64	4 5	37.00	80.00	7.98]	5 5	29.00	43.00	3.36]	6 5	15.00	32.00	1.29
WCHP 64	4 6	33.00	84.00	7.47]	5 6	26.00	43.00	3.01]	6 6	18.00	32.00	1.55
WCHP 64	4 7	32.00	76.00	6.56]	5 7	25.00	43.00	2.90]	6 7	17.00	16.00	.73
WCHP 64	4 8	34.00	85.00	7.79]	5 8	24.00	43.00	2.78]	6 8	16.00	16.00	.69
WCHP 64	4 9	39.00	98.00	10.30]	5 9	25.00	43.00	2.90]	6 9	15.00	16.00	.65
WCHP 64	4 10	52.00	200.00	28.04]	5 10	27.00	43.00	3.13]	6 10	13.00	16.00	.56
WCHP 64	4 11	56.00	190.00	28.68]	5 11	31.00	68.00	5.68]	6 11	13.00	16.00	.56
WCHP 64	4 12	50.00	120.00	16.17]	5 12	32.00	100.00	8.63]	6 12	11.00	16.00	.47
WCHP 64	4 13	44.00	73.00	8.66]	5 13	36.00	160.00	15.53]	6 13	9.80	16.00	.42
WCHP 64	4 14	41.00	75.00	8.29]	5 14	34.00	190.00	17.41]	6 14	7.80	16.00	.34
WCHP 64	4 15	45.00	110.00	13.34]	5 15	32.00	98.00	8.45]	6 15	7.80	30.00	.63
WCHP 64	4 16	43.00	100.00	11.59]	5 16	31.00	92.14	7.70]	6 16	11.00	86.00	2.55
WCHP 64	4 17	35.00	51.00	4.81]	5 17	32.00	95.06	8.20]	6 17	13.00	34.00	1.19
WCHP 64	4 18	29.00	51.00	3.99]	5 18	31.00	90.00	7.52]	6 18	22.00	130.00	7.71
WCHP 64	4 19	27.00	51.00	3.71]	5 19	29.00	88.00	6.88]	6 19	20.00	58.00	3.13
WCHP 64	4 20	27.00	51.00	3.71]	5 20	29.00	130.00	10.16]	6 20	18.00	54.00	2.62
WCHP 64	4 21	29.00	51.00	3.99]	5 21	26.00	82.00	5.75]	6 21	17.00	30.00	1.37
WCHP 64	4 22	32.00	51.00	4.40]	5 22	29.00	62.00	4.85]	6 22	14.00	8.00	.30
WCHP 64	4 23	32.00	51.00	4.40]	5 23	29.00	52.00	4.07]	6 23	13.00	8.00	.28
WCHP 64	4 24	29.00	51.00	3.99]	5 24	25.00	43.03	2.90]	6 24	12.00	8.00	.26
WCHP 64	4 25	28.00	51.00	3.85]	5 25	21.00	38.00	2.15]	6 25	11.00	8.00	.24
WCHP 64	4 26	29.00	51.00	3.99]	5 26	18.00	21.00	1.02]	6 26	9.80	8.00	.21
WCHP 64	4 27	31.00	51.00	4.26]	5 27	18.00	21.00	1.02]	6 27	8.80	8.00	.19
WCHP 64	4 28	32.00	51.00	4.40]	5 28	16.00	21.00	.91]	6 28	8.30	8.00	.18
WCHP 64	4 29	38.00	120.00	12.29]	5 29	16.00	21.00	.91]	6 29	7.40	8.00	.16
WCHP 64	4 30	42.00	120.00	13.59]	5 30	17.00	21.00	.96]	6 30	7.40	8.00	.16
WCHP 64					5 31	18.00	21.00	1.02]				
MONTHLY TOTALS:		1188.00	3423.00	478.36		852.00	1977.23	160.41		397.10	961.00	38.60
AVERAGES:		39.60	114.10	15.95		27.48	63.78	5.17		13.24	32.03	1.29

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 64	7 1	7.10	8.00	.15)	8 1	.30	18.00	.01)	9 1	.20	19.00	.01
WCHP 64	7 2	7.40	8.00	.16)	8 2	.30	18.00	.01)	9 2	.30	19.00	.02
WCHP 64	7 3	6.80	8.00	.15)	8 3	.60	18.00	.03)	9 3	.30	19.00	.02
WCHP 64	7 4	5.60	8.00	.12)	8 4	.40	18.00	.02)	9 4	.30	19.00	.02
WCHP 64	7 5	4.40	8.00	.09)	8 5	.40	18.00	.02)	9 5	.20	19.00	.01
WCHP 64	7 6	3.70	8.00	.08)	8 6	.40	18.00	.02)	9 6	.20	19.00	.01
WCHP 64	7 7	3.00	8.00	.06)	8 7	.30	18.00	.01)	9 7	.20	19.00	.01
WCHP 64	7 8	3.00	8.00	.06)	8 8	.30	18.00	.01)	9 8	.20	19.00	.01
WCHP 64	7 9	3.40	8.00	.07)	8 9	.30	18.00	.01)	9 9	.20	19.00	.01
WCHP 64	7 10	3.50	8.00	.08)	8 10	.20	18.00	.01)	9 10	.20	19.00	.01
WCHP 64	7 11	3.00	8.00	.06)	8 11	.20	18.00	.01)	9 11	.30	19.00	.02
WCHP 64	7 12	2.50	8.00	.05)	8 12	.20	18.00	.01)	9 12	.30	19.00	.02
WCHP 64	7 13	5.60	5300.00	80.01)	8 13	.20	18.00	.01)	9 13	.30	19.00	.02
WCHP 64	7 14	3.90	1800.00	18.92)	8 14	.30	18.00	.01)	9 14	.30	19.00	.02
WCHP 64	7 15	2.20	86.00	.51)	8 15	.30	18.00	.01)	9 15	.30	19.00	.02
WCHP 64	7 16	1.60	40.00	.17)	8 16	.30	18.00	.01)	9 16	.30	19.00	.02
WCHP 64	7 17	1.00	30.00	.08)	8 17	.20	18.00	.01)	9 17	.30	19.00	.02
WCHP 64	7 18	.60	18.00	.03)	8 18	.30	18.00	.01)	9 18	.30	19.00	.02
WCHP 64	7 19	.50	18.00	.02)	8 19	.40	18.00	.02)	9 19	.30	19.00	.02
WCHP 64	7 20	.50	18.00	.02)	8 20	.40	18.00	.02)	9 20	.30	19.00	.02
WCHP 64	7 21	.40	18.00	.02)	8 21	.30	18.00	.01)	9 21	.30	19.00	.02
WCHP 64	7 22	.40	18.00	.02)	8 22	.30	18.00	.01)	9 22	.40	19.00	.02
WCHP 64	7 23	.40	18.00	.02)	8 23	.20	18.00	.01)	9 23	.40	19.00	.02
WCHP 64	7 24	.30	18.00	.01)	8 24	.20	18.00	.01)	9 24	.40	19.00	.02
WCHP 64	7 25	.20	18.00	.01)	8 25	.10	18.00	.00)	9 25	.30	19.00	.02
WCHP 64	7 26	.20	18.00	.01)	8 26	.30	18.00	.01)	9 26	.30	19.00	.02
WCHP 64	7 27	.20	18.00	.01)	8 27	.40	18.00	.02)	9 27	.30	19.00	.02
WCHP 64	7 28	.20	18.00	.01)	8 28	.40	18.00	.02)	9 28	.30	19.00	.02
WCHP 64	7 29	.20	18.00	.01)	8 29	.30	18.00	.01)	9 29	.30	19.00	.02
WCHP 64	7 30	.30	18.00	.01)	8 30	.30	18.00	.01)	9 30	.30	19.00	.02
WCHP 64	7 31	.60	18.00	.03)	8 31	.20	18.00	.01)				
MONTHLY TOTALS:		72.70	7604.00	101.09		9.30	558.00	.45)		8.60	570.00	.44
AVERAGES:		2.35	245.29	3.26		.30	18.00	.01)		.29	19.00	.01

WATER YEAR STATISTICS ENDING SEP 64

	SUM	AVERAGE	
DISCHARGE VOLUME:	4002.60	10.94	(CFS)
CONCENTRATION:		60.23	(PPM)
SEDIMENT FLOW	1384.57	3.78	(TONS)

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 64	10 1	.20	18.00	.011	11 1	3.40	15.00	.141	12 1	12.00	140.00	4.53
WCHP 64	10 2	.20	18.00	.011	11 2	3.50	15.00	.141	12 2	11.00	50.00	1.48
WCHP 64	10 3	.20	18.00	.011	11 3	3.50	15.00	.141	12 3	12.00	32.00	1.04
WCHP 64	10 4	.20	18.00	.011	11 4	3.50	15.00	.141	12 4	9.80	24.00	.63
WCHP 64	10 5	.20	18.00	.011	11 5	3.40	15.00	.141	12 5	9.10	20.00	.49
WCHP 64	10 6	.20	18.00	.011	11 6	3.20	15.00	.131	12 6	7.40	14.00	.28
WCHP 64	10 7	.20	18.00	.011	11 7	3.40	15.00	.141	12 7	7.40	14.00	.28
WCHP 64	10 8	.20	18.00	.011	11 8	3.40	15.00	.141	12 8	8.60	14.00	.32
WCHP 64	10 9	.40	18.00	.021	11 9	3.70	15.00	.151	12 9	7.80	14.00	.29
WCHP 64	10 10	.80	18.00	.041	11 10	4.30	15.00	.171	12 10	7.80	14.00	.29
WCHP 64	10 11	.90	18.00	.041	11 11	4.60	15.00	.191	12 11	8.60	14.00	.32
WCHP 64	10 12	.90	18.00	.041	11 12	4.40	15.00	.181	12 12	6.60	14.00	.25
WCHP 64	10 13	.90	18.00	.041	11 13	4.40	15.00	.181	12 13	7.10	14.00	.27
WCHP 64	10 14	.90	18.00	.041	11 14	4.10	15.00	.171	12 14	7.80	21.00	.44
WCHP 64	10 15	.90	18.00	.041	11 15	3.50	15.00	.141	12 15	9.80	42.00	1.11
WCHP 64	10 16	1.10	18.00	.051	11 16	3.40	15.00	.141	12 16	4.00	27.82	.30
WCHP 64	10 17	1.40	18.00	.071	11 17	3.20	15.00	.131	12 17	3.00	24.73	.20
WCHP 64	10 18	1.90	11.00	.061	11 18	3.40	15.00	.141	12 18	4.00	27.82	.30
WCHP 64	10 19	2.00	11.00	.061	11 19	3.50	15.00	.141	12 19	5.00	29.68	.40
WCHP 64	10 20	2.00	11.00	.061	11 20	3.40	15.00	.141	12 20	10.00	37.10	1.00
WCHP 64	10 21	2.00	11.00	.061	11 21	3.50	15.00	.141	12 21	40.00	10400.00	1121.40
WCHP 64	10 22	2.00	11.00	.061	11 22	3.70	15.00	.151	12 22	285.00	25500.00	19590.85
WCHP 64	10 23	1.90	11.00	.061	11 23	4.80	17.00	.221	12 23	288.00	5900.00	4580.50
WCHP 64	10 24	1.90	11.00	.061	11 24	5.40	22.00	.321	12 24	369.00	4600.00	4575.65
WCHP 64	10 25	2.00	11.00	.061	11 25	11.00	140.00	4.151	12 25	280.00	2200.00	1660.54
WCHP 64	10 26	2.30	11.00	.071	11 26	7.80	120.00	2.521	12 26	250.00	1170.00	788.49
WCHP 64	10 27	2.70	14.00	.101	11 27	5.80	52.00	.811	12 27	170.00	807.00	369.82
WCHP 64	10 28	2.80	18.00	.141	11 28	6.60	19.00	.341	12 28	115.00	540.00	167.40
WCHP 64	10 29	3.00	25.00	.201	11 29	6.80	12.00	.221	12 29	85.00	296.00	67.82
WCHP 64	10 30	3.90	50.00	.531	11 30	7.80	22.00	.461	12 30	67.00	200.00	36.12
WCHP 64	10 31	4.10	41.00	.451					12 31	53.00	135.00	19.29
MONTHLY TOTALS:		44.30	553.00	2.43		136.40	734.00	12.30		2160.80	52336.15	32992.12
AVERAGES:		1.43	17.84	.08		4.55	24.47	.41		69.70	1688.26	1064.26

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 65	1 1	54.00	96.00	13.97)	2 1	235.00	1100.00	696.83)	3 1	53.00	39.00	5.57
WCHP 65	1 2	55.00	85.00	12.60)	2 2	164.00	710.00	313.88)	3 2	48.00	45.00	5.82
WCHP 65	1 3	51.00	66.00	9.07)	2 3	139.00	572.00	214.33)	3 3	45.00	42.00	5.09
WCHP 65	1 4	46.00	43.00	5.33)	2 4	116.00	580.00	181.37)	3 4	42.00	42.00	4.76
WCHP 65	1 5	38.00	46.00	4.71)	2 5	98.00	347.00	91.67)	3 5	40.00	44.00	4.74
WCHP 65	1 6	39.00	140.00	14.72)	2 6	81.00	193.00	42.14)	3 6	37.00	29.00	2.89
WCHP 65	1 7	37.00	108.00	10.77)	2 7	64.00	140.00	24.15)	3 7	37.00	29.00	2.89
WCHP 65	1 8	35.00	50.00	4.72)	2 8	63.00	113.00	19.19)	3 8	35.00	29.00	2.74
WCHP 65	1 9	33.00	46.00	4.09)	2 9	58.00	102.00	15.95)	3 9	33.00	29.00	2.58
WCHP 65	1 10	30.00	67.00	5.42)	2 10	54.00	90.00	13.10)	3 10	33.00	29.00	2.58
WCHP 65	1 11	31.00	54.00	4.51)	2 11	47.00	130.00	16.47)	3 11	33.00	29.00	2.58
WCHP 65	1 12	32.00	61.00	5.26)	2 12	54.00	100.00	14.56)	3 12	33.00	29.00	2.58
WCHP 65	1 13	32.00	125.00	10.78)	2 13	55.00	83.00	12.31)	3 13	30.00	29.00	2.35
WCHP 65	1 14	36.00	2400.00	232.91)	2 14	55.00	64.00	9.49)	3 14	29.00	29.00	2.27
WCHP 65	1 15	49.00	380.00	50.19)	2 15	54.00	150.00	21.84)	3 15	27.00	29.00	2.11
WCHP 65	1 16	59.00	184.00	29.26)	2 16	53.00	70.00	10.00)	3 16	27.00	29.00	2.11
WCHP 65	1 17	60.00	128.00	20.70)	2 17	58.00	63.00	9.85)	3 17	25.00	29.00	1.95
WCHP 65	1 18	56.00	102.00	15.40)	2 18	61.00	77.00	12.66)	3 18	14.00	19.00	.72
WCHP 65	1 19	54.00	76.00	11.06)	2 19	64.00	87.00	15.01)	3 19	17.00	19.00	.87
WCHP 65	1 20	52.00	72.00	10.09)	2 20	66.00	98.00	17.44)	3 20	23.00	19.00	1.18
WCHP 65	1 21	57.00	460.00	70.68)	2 21	66.00	77.00	13.70)	3 21	22.00	19.00	1.13
WCHP 65	1 22	55.00	260.00	38.55)	2 22	63.00	62.00	10.53)	3 22	22.00	19.00	1.13
WCHP 65	1 23	87.00	860.00	201.69)	2 23	58.00	58.00	9.07)	3 23	20.00	19.00	1.02
WCHP 65	1 24	99.00	830.00	221.50)	2 24	56.00	50.00	7.55)	3 24	16.00	19.00	.82
WCHP 65	1 25	81.00	235.00	51.31)	2 25	55.00	49.91	7.40)	3 25	17.00	19.00	.87
WCHP 65	1 26	70.00	800.00	150.96)	2 26	53.00	49.00	7.00)	3 26	20.00	19.00	1.02
WCHP 65	1 27	71.00	800.00	153.11)	2 27	59.00	67.00	10.66)	3 27	20.00	19.00	1.02
WCHP 65	1 28	278.00	12000.00	8992.79)	2 28	56.00	45.00	6.79)	3 28	19.00	19.00	.97
WCHP 65	1 29	368.00	3970.00	3938.28)					3 29	19.00	19.00	.97
WCHP 65	1 30	486.00	7700.00	10087.77)					3 30	19.00	19.00	.97
WCHP 65	1 31	353.00	2600.00	2474.10)					3 31	22.00	26.00	1.54
MONTHLY TOTALS:		2884.00	34844.00	26856.34		2105.00	5326.91	1824.92		877.00	833.00	69.86
AVERAGES:		93.03	1124.00	866.33		75.18	190.25	65.18		28.29	26.87	2.25

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 65	4 1	32.00	65.00	5.61)	5 1	67.00	170.00	30.70)	6 1	17.00	40.00	1.83
WCHP 65	4 2	35.00	67.00	6.32)	5 2	61.00	213.00	35.02)	6 2	14.00	37.00	1.40
WCHP 65	4 3	37.00	52.00	5.19)	5 3	64.00	168.00	28.98)	6 3	12.00	31.00	1.00
WCHP 65	4 4	39.00	74.00	7.78)	5 4	60.00	120.00	19.41)	6 4	10.00	23.00	.62
WCHP 65	4 5	40.00	56.00	6.04)	5 5	57.00	85.00	13.06)	6 5	10.00	23.00	.62
WCHP 65	4 6	39.00	48.00	5.05)	5 6	53.00	85.00	12.14)	6 6	9.70	23.00	.60
WCHP 65	4 7	38.00	35.00	3.59)	5 7	51.00	81.00	11.14)	6 7	8.20	23.00	.51
WCHP 65	4 8	38.00	35.00	3.59)	5 8	46.00	70.00	8.68)	6 8	6.10	23.00	.38
WCHP 65	4 9	38.00	35.00	3.59)	5 9	41.00	57.00	6.30)	6 9	6.10	23.00	.38
WCHP 65	4 10	38.00	35.00	3.59)	5 10	37.00	42.00	4.19)	6 10	6.10	23.00	.38
WCHP 65	4 11	36.00	35.00	3.40)	5 11	34.00	42.00	3.85)	6 11	6.70	23.00	.42
WCHP 65	4 12	34.00	35.00	3.21)	5 12	33.00	42.00	3.74)	6 12	7.80	23.00	.48
WCHP 65	4 13	35.00	35.00	3.30)	5 13	32.00	42.00	3.62)	6 13	5.90	23.00	.37
WCHP 65	4 14	39.00	35.00	3.68)	5 14	32.00	42.00	3.62)	6 14	8.60	23.00	.53
WCHP 65	4 15	43.00	95.00	11.01)	5 15	32.00	42.00	3.62)	6 15	12.00	30.00	.97
WCHP 65	4 16	52.00	200.00	28.04)	5 16	32.00	42.00	3.62)	6 16	13.00	53.00	1.86
WCHP 65	4 17	54.00	140.00	20.38)	5 17	32.00	42.00	3.62)	6 17	45.00	930.00	112.81
WCHP 65	4 18	54.00	100.00	14.56)	5 18	28.00	42.00	3.17)	6 18	58.00	390.15	61.00
WCHP 65	4 19	60.00	180.00	29.11)	5 19	28.00	56.97	4.30)	6 19	49.00	125.00	16.51
WCHP 65	4 20	98.00	1300.00	343.43)	5 20	39.00	130.00	13.67)	6 20	41.00	86.00	9.50
WCHP 65	4 21	130.00	1070.00	374.97)	5 21	32.00	59.00	5.09)	6 21	35.00	58.00	5.47
WCHP 65	4 22	119.00	615.00	197.28)	5 22	32.00	43.00	3.71)	6 22	33.00	43.00	3.83
WCHP 65	4 23	99.00	505.00	134.77)	5 23	30.00	37.00	2.99)	6 23	27.00	34.35	2.50
WCHP 65	4 24	87.00	460.00	107.88)	5 24	29.00	37.00	2.89)	6 24	24.00	32.00	2.07
WCHP 65	4 25	81.00	335.00	73.15)	5 25	25.00	37.00	2.49)	6 25	22.00	28.67	1.70
WCHP 65	4 26	78.00	380.00	79.90)	5 26	24.00	37.00	2.39)	6 26	20.00	22.00	1.19
WCHP 65	4 27	80.00	305.00	65.77)	5 27	22.00	37.00	2.19)	6 27	17.00	14.00	.64
WCHP 65	4 28	82.00	292.00	64.55)	5 28	19.00	37.00	1.90)	6 28	15.00	14.00	.57
WCHP 65	4 29	81.00	256.00	55.90)	5 29	22.00	240.00	14.23)	6 29	14.00	14.00	.53
WCHP 65	4 30	75.00	223.00	45.09)	5 30	20.00	87.00	4.69)	6 30	12.00	14.00	.45
WCHP 65					5 31	19.00	63.00	3.23)				
MONTHLY TOTALS:		1791.00	7098.00	1709.69		1133.00	2327.97	262.28		565.20	2249.17	231.12
AVERAGES:		59.70	236.60	56.99		36.55	75.10	8.46		18.84	74.97	7.70

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 65	7 1	11.00	19.00	.56)	8 1	1.10	15.00	.04)	9 1	3.50	11.00	.10
WCHP 65	7 2	9.40	19.00	.48)	8 2	1.30	15.00	.05)	9 2	3.30	11.00	.10
WCHP 65	7 3	8.60	19.00	.44)	8 3	1.10	15.00	.04)	9 3	3.10	11.00	.09
WCHP 65	7 4	8.20	19.00	.42)	8 4	1.00	15.00	.04)	9 4	3.30	11.00	.10
WCHP 65	7 5	6.40	19.00	.33)	8 5	.70	15.00	.03)	9 5	3.70	120.00	1.20
WCHP 65	7 6	5.60	19.00	.29)	8 6	.70	15.00	.03)	9 6	3.70	71.00	.71
WCHP 65	7 7	5.60	19.00	.29)	8 7	.70	15.00	.03)	9 7	3.50	53.00	.50
WCHP 65	7 8	4.20	19.00	.22)	8 8	.60	15.00	.02)	9 8	3.30	83.00	.74
WCHP 65	7 9	3.70	16.00	.16)	8 9	.60	15.00	.02)	9 9	3.10	45.00	.38
WCHP 65	7 10	3.10	16.00	.13)	8 10	.50	15.00	.02)	9 10	3.10	47.87	.40
WCHP 65	7 11	3.10	16.00	.13)	8 11	.60	15.00	.02)	9 11	2.90	60.00	.47
WCHP 65	7 12	3.50	16.00	.15)	8 12	.60	15.00	.02)	9 12	2.90	24.00	.19
WCHP 65	7 13	3.10	16.00	.13)	8 13	.70	15.00	.03)	9 13	2.70	27.48	.20
WCHP 65	7 14	2.50	16.00	.11)	8 14	.60	15.00	.02)	9 14	2.90	30.00	.23
WCHP 65	7 15	2.30	16.00	.10)	8 15	.50	15.00	.02)	9 15	3.30	40.00	.36
WCHP 65	7 16	1.60	16.00	.07)	8 16	.30	15.00	.01)	9 16	8.20	460.00	10.17
WCHP 65	7 17	1.30	16.00	.06)	8 17	.20	15.00	.01)	9 17	5.30	210.00	3.00
WCHP 65	7 18	1.30	16.00	.06)	8 18	.20	15.00	.01)	9 18	4.70	180.00	2.28
WCHP 65	7 19	1.10	16.00	.05)	8 19	.60	15.00	.02)	9 19	4.50	45.00	.58
WCHP 65	7 20	1.10	16.00	.05)	8 20	.90	15.00	.04)	9 20	3.90	52.00	.55
WCHP 65	7 21	1.80	16.00	.08)	8 21	.90	15.00	.04)	9 21	3.70	90.00	.90
WCHP 65	7 22	2.50	16.00	.11)	8 22	1.00	15.00	.04)	9 22	3.50	170.00	1.60
WCHP 65	7 23	1.90	16.00	.08)	8 23	1.30	15.00	.05)	9 23	3.30	150.00	1.33
WCHP 65	7 24	1.80	16.00	.08)	8 24	1.30	15.00	.05)	9 24	3.30	90.00	.71
WCHP 65	7 25	1.50	16.00	.06)	8 25	1.90	15.00	.08)	9 25	3.10	140.00	1.17
WCHP 65	7 26	1.60	16.00	.07)	8 26	2.50	15.00	.10)	9 26	3.10	230.00	1.92
WCHP 65	7 27	2.30	16.00	.10)	8 27	2.50	15.00	.10)	9 27	3.10	50.00	.42
WCHP 65	7 28	2.50	16.00	.11)	8 28	2.90	15.00	.12)	9 28	3.50	45.00	.42
WCHP 65	7 29	2.10	16.00	.09)	8 29	2.70	15.00	.11)	9 29	3.70	63.00	.63
WCHP 65	7 30	1.80	16.00	.08)	8 30	2.70	15.00	.11)	9 30	3.50	30.00	.28
WCHP 65	7 31	1.60	16.00	.07)	8 31	3.10	15.00	.13)				
MONTHLY TOTALS:		108.10	520.00	5.14		36.30	465.00	1.47		108.70	2643.35	31.73
AVERAGES:		3.49	16.77	.17		1.17	15.00	.05		3.62	88.11	1.06

WATER YEAR STATISTICS ENDING SEP 65

	SUM	AVERAGE	
DISCHARGE VOLUME:	11949.80	32.74	(CFS)
CONCENTRATION:		301.18	(PPM)
SEDIMENT FLOW	63999.39	175.34	(TONS)

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 65	10 1	3.40	32.00	.29)	11 1	2.10	10.00	.06)	12 1	4.60	12.00	.15
WCHP 65	10 2	3.00	18.00	.15)	11 2	2.10	10.00	.06)	12 2	4.90	12.00	.16
WCHP 65	10 3	2.60	16.00	.11)	11 3	2.10	10.00	.06)	12 3	4.90	12.00	.16
WCHP 65	10 4	2.60	18.00	.13)	11 4	3.00	10.00	.08)	12 4	4.90	12.00	.16
WCHP 65	10 5	3.20	24.00	.21)	11 5	3.60	10.00	.10)	12 5	4.60	12.00	.15
WCHP 65	10 6	3.40	10.00	.09)	11 6	4.00	10.00	.11)	12 6	4.60	12.00	.15
WCHP 65	10 7	3.20	10.00	.09)	11 7	4.00	19.00	.20)	12 7	4.60	12.00	.15
WCHP 65	10 8	3.20	10.00	.09)	11 8	4.00	34.00	.37)	12 8	5.20	12.00	.17
WCHP 65	10 9	3.20	10.00	.09)	11 9	4.90	26.00	.34)	12 9	5.20	12.00	.17
WCHP 65	10 10	3.20	10.00	.09)	11 10	4.60	20.00	.25)	12 10	5.20	12.00	.17
WCHP 65	10 11	3.20	10.00	.09)	11 11	4.60	13.00	.16)	12 11	4.60	12.00	.15
WCHP 65	10 12	3.40	10.00	.09)	11 12	4.90	263.00	3.47)	12 12	4.90	12.00	.16
WCHP 65	10 13	3.40	10.00	.09)	11 13	5.20	132.00	1.85)	12 13	4.60	12.00	.15
WCHP 65	10 14	3.40	10.00	.09)	11 14	6.00	88.00	1.42)	12 14	4.00	12.00	.13
WCHP 65	10 15	3.60	10.00	.10)	11 15	5.60	61.00	.92)	12 15	3.60	12.00	.12
WCHP 65	10 16	3.20	10.00	.09)	11 16	4.90	61.00	.81)	12 16	3.40	12.00	.11
WCHP 65	10 17	2.80	10.00	.08)	11 17	5.20	82.00	1.15)	12 17	3.00	12.00	.10
WCHP 65	10 18	3.20	10.00	.09)	11 18	6.00	62.00	1.00)	12 18	3.60	12.00	.12
WCHP 65	10 19	3.20	10.00	.09)	11 19	5.60	36.00	.54)	12 19	4.20	12.00	.14
WCHP 65	10 20	3.20	10.00	.09)	11 20	4.60	22.00	.27)	12 20	4.00	12.00	.13
WCHP 65	10 21	3.00	10.00	.08)	11 21	4.60	14.00	.17)	12 21	4.20	12.00	.14
WCHP 65	10 22	3.20	10.00	.09)	11 22	4.20	13.00	.15)	12 22	4.00	12.00	.13
WCHP 65	10 23	3.40	10.00	.09)	11 23	4.60	21.00	.26)	12 23	3.40	12.00	.11
WCHP 65	10 24	3.20	10.00	.09)	11 24	5.60	16.00	.24)	12 24	4.00	12.00	.13
WCHP 65	10 25	3.20	10.00	.09)	11 25	6.30	27.00	.46)	12 25	4.20	12.00	.14
WCHP 65	10 26	3.20	10.00	.09)	11 26	5.60	30.00	.45)	12 26	3.80	12.00	.12
WCHP 65	10 27	3.00	10.00	.08)	11 27	4.90	12.00	.16)	12 27	4.60	12.00	.15
WCHP 65	10 28	3.00	10.00	.08)	11 28	5.20	12.00	.17)	12 28	4.90	12.00	.16
WCHP 65	10 29	2.10	10.00	.06)	11 29	4.60	12.00	.15)	12 29	5.20	12.00	.17
WCHP 65	10 30	2.20	10.00	.06)	11 30	5.00	12.00	.16)	12 30	4.90	12.00	.16
WCHP 65	10 31	2.10	10.00	.06)					12 31	4.60	12.00	.15
MONTHLY TOTALS:		95.20	368.00	3.05		137.60	1148.00	15.59		136.40	372.00	4.41
AVERAGES:		3.07	11.87	.10		4.59	38.27	.52		4.40	12.00	.14

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 66	1 1	3.60	12.00	.12)	2 1	4.60	80.00	.99)	3 1	7.50	12.00	.24
WCHP 66	1 2	5.60	12.00	.18)	2 2	5.20	12.00	.17)	3 2	6.30	12.00	.20
WCHP 66	1 3	6.00	12.00	.19)	2 3	5.60	12.00	.18)	3 3	7.50	12.00	.24
WCHP 66	1 4	6.30	12.00	.20)	2 4	5.00	12.00	.16)	3 4	6.70	12.00	.22
WCHP 66	1 5	6.00	12.00	.19)	2 5	6.30	12.00	.20)	3 5	7.10	12.00	.23
WCHP 66	1 6	11.00	189.00	5.60)	2 6	6.30	12.00	.20)	3 6	7.10	12.00	.23
WCHP 66	1 7	10.00	178.00	4.80)	2 7	6.00	12.00	.19)	3 7	7.50	24.00	.49
WCHP 66	1 8	9.90	66.00	1.76)	2 8	5.60	12.00	.18)	3 8	7.90	43.00	.92
WCHP 66	1 9	8.30	33.00	.74)	2 9	6.00	12.00	.19)	3 9	13.00	1200.00	42.05
WCHP 66	1 10	7.90	22.00	.47)	2 10	4.90	12.00	.16)	3 10	17.00	750.00	34.37
WCHP 66	1 11	7.50	22.00	.44)	2 11	5.60	12.00	.18)	3 11	14.00	120.00	4.53
WCHP 66	1 12	7.10	22.00	.42)	2 12	5.60	12.00	.18)	3 12	14.00	112.00	4.23
WCHP 66	1 13	7.50	22.00	.44)	2 13	4.90	12.00	.16)	3 13	22.00	590.00	34.99
WCHP 66	1 14	7.50	22.00	.44)	2 14	6.30	12.00	.20)	3 14	26.00	710.00	49.76
WCHP 66	1 15	7.50	22.00	.44)	2 15	4.90	12.00	.16)	3 15	22.00	218.00	12.93
WCHP 66	1 16	6.00	18.00	.29)	2 16	6.30	12.00	.20)	3 16	20.00	123.00	6.63
WCHP 66	1 17	5.00	18.00	.24)	2 17	6.30	12.00	.20)	3 17	17.00	79.00	3.62
WCHP 66	1 18	4.60	18.00	.22)	2 18	6.00	12.00	.19)	3 18	16.00	82.00	3.54
WCHP 66	1 19	4.00	18.00	.19)	2 19	6.00	12.00	.19)	3 19	16.00	75.00	3.23
WCHP 66	1 20	3.80	18.00	.18)	2 20	7.50	12.00	.24)	3 20	14.00	56.00	2.11
WCHP 66	1 21	4.00	18.00	.19)	2 21	7.50	12.00	.24)	3 21	14.00	46.00	1.74
WCHP 66	1 22	4.20	18.00	.20)	2 22	7.50	12.00	.24)	3 22	12.00	80.00	2.59
WCHP 66	1 23	4.40	18.00	.21)	2 23	7.10	12.00	.23)	3 23	14.00	66.00	2.49
WCHP 66	1 24	4.60	7.00	.09)	2 24	7.90	12.00	.26)	3 24	13.00	52.00	1.82
WCHP 66	1 25	4.20	7.00	.08)	2 25	8.30	12.00	.27)	3 25	14.00	57.00	2.15
WCHP 66	1 26	4.00	7.00	.08)	2 26	8.30	12.00	.27)	3 26	14.00	81.00	3.06
WCHP 66	1 27	4.80	7.00	.09)	2 27	7.90	12.00	.26)	3 27	18.00	128.00	6.21
WCHP 66	1 28	6.30	7.00	.12)	2 28	7.90	12.00	.26)	3 28	22.00	197.00	11.68
WCHP 66	1 29	6.30	7.00	.12)					3 29	26.00	255.00	17.97
WCHP 66	1 30	6.30	7.00	.12)					3 30	31.00	373.00	31.17
WCHP 66	1 31	6.60	7.00	.11)					3 31	31.00	252.00	21.06
MONTHLY TOTALS:		189.80	858.00	19.00		177.30	404.00	6.58		477.60	5841.00	306.60
AVERAGES:		6.12	27.68	.61		6.33	14.43	.23		15.41	188.42	9.89

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 66	4 1	32.00	240.00	20.70)	5 1	11.00	18.00	.53)	6 1	1.20	9.00	.03
WCHP 66	4 2	34.00	340.00	31.16)	5 2	11.00	19.00	.56)	6 2	1.20	9.00	.03
WCHP 66	4 3	27.00	150.00	10.92)	5 3	11.00	28.00	.83)	6 3	1.20	17.00	.05
WCHP 66	4 4	23.00	112.00	6.94)	5 4	12.00	39.00	1.26)	6 4	1.30	17.00	.06
WCHP 66	4 5	20.00	90.00	4.85)	5 5	14.00	48.00	1.81)	6 5	1.40	17.00	.06
WCHP 66	4 6	17.00	89.00	4.08)	5 6	14.00	56.00	2.11)	6 6	1.40	17.00	.06
WCHP 66	4 7	12.00	84.00	2.72)	5 7	14.00	39.00	1.47)	6 7	1.40	17.00	.06
WCHP 66	4 8	17.00	110.00	5.04)	5 8	14.00	39.00	1.47)	6 8	1.40	17.00	.06
WCHP 66	4 9	17.00	82.00	3.76)	5 9	12.00	33.00	1.07)	6 9	1.90	17.00	.09
WCHP 66	4 10	22.00	116.00	6.88)	5 10	10.00	28.00	.75)	6 10	2.40	17.00	.11
WCHP 66	4 11	25.00	122.00	8.22)	5 11	7.50	13.00	.26)	6 11	2.10	17.00	.10
WCHP 66	4 12	22.00	85.00	5.04)	5 12	4.20	13.00	.15)	6 12	1.80	17.00	.08
WCHP 66	4 13	18.00	59.00	2.86)	5 13	3.60	13.00	.13)	6 13	2.10	17.00	.10
WCHP 66	4 14	12.00	56.00	1.81)	5 14	5.20	13.00	.18)	6 14	1.90	17.00	.09
WCHP 66	4 15	14.00	55.00	2.08)	5 15	4.00	13.00	.14)	6 15	1.70	17.00	.08
WCHP 66	4 16	14.00	55.00	2.08)	5 16	2.60	9.00	.06)	6 16	1.60	12.00	.05
WCHP 66	4 17	12.00	34.00	1.10)	5 17	2.80	9.00	.07)	6 17	1.60	12.00	.05
WCHP 66	4 18	12.00	29.00	.94)	5 18	2.40	9.00	.06)	6 18	1.40	12.00	.05
WCHP 66	4 19	9.10	22.00	.54)	5 19	2.20	9.00	.05)	6 19	1.60	12.00	.05
WCHP 66	4 20	9.50	23.00	.59)	5 20	1.60	9.00	.04)	6 20	1.70	12.00	.05
WCHP 66	4 21	9.90	29.00	.77)	5 21	1.80	9.00	.04)	6 21	1.50	12.00	.05
WCHP 66	4 22	9.50	42.00	1.08)	5 22	1.80	9.00	.04)	6 22	1.50	12.00	.05
WCHP 66	4 23	9.50	22.00	.56)	5 23	2.20	52.00	.31)	6 23	1.60	37.00	.16
WCHP 66	4 24	11.00	37.00	1.10)	5 24	2.10	28.00	.16)	6 24	2.70	32.00	.23
WCHP 66	4 25	12.00	35.00	1.13)	5 25	2.00	11.00	.06)	6 25	2.60	24.00	.17
WCHP 66	4 26	11.00	26.00	.77)	5 26	1.60	9.00	.04)	6 26	1.60	22.00	.09
WCHP 66	4 27	11.00	32.00	.95)	5 27	1.50	9.00	.04)	6 27	1.70	30.00	.14
WCHP 66	4 28	12.00	25.00	.81)	5 28	1.40	9.00	.03)	6 28	1.90	24.00	.12
WCHP 66	4 29	11.00	16.00	.47)	5 29	1.40	9.00	.03)	6 29	1.90	29.00	.15
WCHP 66	4 30	12.00	12.00	.39)	5 30	1.40	9.00	.03)	6 30	1.50	33.00	.13
WCHP 66					5 31	1.40	9.00	.03)				
MONTHLY TOTALS:		477.50	2229.00	130.34		177.70	620.00	13.84		50.80	554.00	2.62
AVERAGES:		15.92	74.30	4.34		5.73	20.00	.45		1.69	18.47	.09

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 66	7 1	2.10	33.00	.19]	8 1	.20	19.00	.01]	9 1	0.00	0.00	0.00
WCHP 66	7 2	3.30	23.00	.20]	8 2	.20	19.00	.01]	9 2	0.00	0.00	0.00
WCHP 66	7 3	4.60	57.00	.71]	8 3	.10	19.00	.01]	9 3	0.00	0.00	0.00
WCHP 66	7 4	4.40	52.00	.62]	8 4	.20	19.00	.01]	9 4	0.00	0.00	0.00
WCHP 66	7 5	3.20	51.00	.44]	8 5	.20	19.00	.01]	9 5	0.00	0.00	0.00
WCHP 66	7 6	3.10	46.00	.38]	8 6	.10	19.00	.01]	9 6	0.00	0.00	0.00
WCHP 66	7 7	3.00	44.00	.36]	8 7	.10	19.00	.01]	9 7	0.00	0.00	0.00
WCHP 66	7 8	2.30	54.00	.33]	8 8	.10	19.00	.01]	9 8	0.00	0.00	0.00
WCHP 66	7 9	1.80	31.00	.15]	8 9	.10	19.00	.01]	9 9	0.00	0.00	0.00
WCHP 66	7 10	2.00	48.00	.26]	8 10	.10	19.00	.01]	9 10	0.00	0.00	0.00
WCHP 66	7 11	1.70	46.00	.21]	8 11	.10	19.00	.01]	9 11	.10	34.00	.01
WCHP 66	7 12	1.60	41.00	.18]	8 12	.10	19.00	.01]	9 12	.10	27.00	.01
WCHP 66	7 13	1.70	30.00	.14]	8 13	.10	19.00	.01]	9 13	.10	20.00	.01
WCHP 66	7 14	1.30	27.00	.09]	8 14	.10	19.00	.01]	9 14	1.90	4600.00	23.56
WCHP 66	7 15	1.20	27.00	.09]	8 15	.10	19.00	.01]	9 15	.10	750.00	.20
WCHP 66	7 16	.80	27.00	.06]	8 16	.10	19.00	.01]	9 16	.10	210.00	.06
WCHP 66	7 17	.80	27.00	.06]	8 17	.10	19.00	.01]	9 17	.10	125.00	.03
WCHP 66	7 18	.80	27.00	.06]	8 18	.10	19.00	.01]	9 18	0.00	0.00	0.00
WCHP 66	7 19	.50	27.00	.04]	8 19	.10	19.00	.01]	9 19	0.00	0.00	0.00
WCHP 66	7 20	.50	27.00	.04]	8 20	0.00	0.00	0.00]	9 20	0.00	0.00	0.00
WCHP 66	7 21	.50	27.00	.04]	8 21	0.00	0.00	0.00]	9 21	0.00	0.00	0.00
WCHP 66	7 22	.30	27.00	.02]	8 22	0.00	0.00	0.00]	9 22	0.00	0.00	0.00
WCHP 66	7 23	.30	27.00	.02]	8 23	.10	21.00	.01]	9 23	0.00	0.00	0.00
WCHP 66	7 24	.20	27.00	.01]	8 24	.10	21.00	.01]	9 24	0.00	0.00	0.00
WCHP 66	7 25	.30	27.00	.02]	8 25	.10	21.00	.01]	9 25	0.00	0.00	0.00
WCHP 66	7 26	.30	27.00	.02]	8 26	.10	21.00	.01]	9 26	0.00	0.00	0.00
WCHP 66	7 27	.20	27.00	.01]	8 27	.80	8200.00	17.68]	9 27	0.00	0.00	0.00
WCHP 66	7 28	.10	27.00	.01]	8 28	.10	2200.00	.59]	9 28	0.00	0.00	0.00
WCHP 66	7 29	.20	56.00	.03]	8 29	.10	250.00	.07]	9 29	0.00	0.00	0.00
WCHP 66	7 30	.20	30.00	.02]	8 30	0.00	0.00	0.00]	9 30	0.00	0.00	0.00
WCHP 66	7 31	.20	16.00	.01]	8 31	0.00	0.00	0.00]				
MONTHLY TOTALS:		43.50	1063.00	4.81		3.70	11095.00	18.48		2.50	5766.00	23.87
AVERAGES:		1.40	34.29	.16		.12	357.90	.60		.08	192.20	.80

WATER YEAR STATISTICS ENDING SEP 66

	SUM	AVERAGE	
DISCHARGE VOLUME:	1969.60	5.40	(CFS)
CONCENTRATION:		83.06	(PPM)
SEDIMENT FLOW	549.21	1.50	(TONS)

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 66	10 1	.04	30.00	.001	11 1	.58	27.00	.041	12 1	17.00	310.00	14.21
WCHP 66	10 2	.07	30.00	.011	11 2	.58	66.00	.101	12 2	24.00	290.00	18.76
WCHP 66	10 3	.04	30.00	.001	11 3	.58	17.00	.031	12 3	23.00	110.00	6.82
WCHP 66	10 4	.04	30.00	.001	11 4	.58	18.00	.031	12 4	20.00	100.00	5.39
WCHP 66	10 5	.04	30.00	.001	11 5	.69	14.00	.031	12 5	20.00	68.00	3.67
WCHP 66	10 6	.04	30.00	.001	11 6	1.20	30.00	.101	12 6	16.00	39.00	1.69
WCHP 66	10 7	.04	30.00	.001	11 7	1.50	44.00	.181	12 7	15.00	41.00	1.66
WCHP 66	10 8	.04	30.00	.001	11 8	1.40	25.00	.091	12 8	13.00	26.00	.91
WCHP 66	10 9	.04	30.00	.001	11 9	1.40	34.00	.131	12 9	11.00	15.00	.44
WCHP 66	10 10	.04	30.00	.001	11 10	1.80	10.00	.051	12 10	17.00	95.00	4.35
WCHP 66	10 11	.04	30.00	.001	11 11	2.00	37.00	.201	12 11	28.00	193.00	14.57
WCHP 66	10 12	.04	30.00	.001	11 12	3.00	40.00	.321	12 12	32.00	214.00	18.46
WCHP 66	10 13	.07	30.00	.011	11 13	3.00	22.00	.181	12 13	45.00	683.00	82.85
WCHP 66	10 14	.04	30.00	.001	11 14	2.80	130.00	.981	12 14	48.00	341.00	44.12
WCHP 66	10 15	.04	30.00	.001	11 15	7.50	680.00	13.751	12 15	40.00	147.00	15.85
WCHP 66	10 16	.02	30.00	.001	11 16	14.00	370.00	13.961	12 16	32.00	116.00	10.01
WCHP 66	10 17	.02	30.00	.001	11 17	11.00	120.00	3.561	12 17	27.00	74.00	5.39
WCHP 66	10 18	.02	30.00	.001	11 18	7.90	40.00	.851	12 18	27.00	64.00	4.66
WCHP 66	10 19	.02	30.00	.001	11 19	9.10	535.00	13.121	12 19	23.00	60.00	3.72
WCHP 66	10 20	.04	30.00	.001	11 20	19.00	2000.00	102.441	12 20	21.00	50.00	2.83
WCHP 66	10 21	.17	35.00	.021	11 21	17.00	228.00	10.451	12 21	19.00	37.00	1.90
WCHP 66	10 22	.48	63.00	.081	11 22	13.00	72.00	2.521	12 22	15.00	36.00	1.46
WCHP 66	10 23	.81	120.90	.261	11 23	11.00	46.00	1.361	12 23	14.00	36.00	1.36
WCHP 66	10 24	.81	140.00	.311	11 24	9.90	33.00	.881	12 24	14.00	36.00	1.36
WCHP 66	10 25	.69	93.00	.181	11 25	9.50	34.00	.871	12 25	12.00	36.00	1.16
WCHP 66	10 26	.48	54.00	.071	11 26	12.00	59.00	1.911	12 26	11.00	36.00	1.07
WCHP 66	10 27	.39	95.12	.101	11 27	10.00	42.00	1.131	12 27	10.00	36.00	.97
WCHP 66	10 28	.39	42.00	.041	11 28	9.90	46.00	1.231	12 28	9.90	36.00	.96
WCHP 66	10 29	.39	36.00	.041	11 29	12.00	54.00	1.751	12 29	12.00	36.00	1.16
WCHP 66	10 30	.39	32.00	.031	11 30	12.00	55.64	1.801	12 30	12.00	36.00	1.16
WCHP 66	10 31	.58	28.00	.041					12 31	12.00	36.00	1.16
MONTHLY TOTALS:		6.36	1340.12	1.23		205.91	4928.64	174.04		639.90	3433.00	274.07
AVERAGES:		.21	43.23	.04		6.86	164.29	5.80		20.64	110.74	8.84

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 67	1 1	11.00	22.00	.65)	2 1	56.00	230.00	34.72)	3 1	14.00	18.00	.68
WCHP 67	1 2	11.00	22.00	.65)	2 2	48.00	152.00	19.67)	3 2	15.00	14.00	.57
WCHP 67	1 3	11.00	22.00	.65)	2 3	42.00	115.00	13.02)	3 3	15.00	14.00	.57
WCHP 67	1 4	12.00	28.00	.91)	2 4	39.00	100.00	10.51)	3 4	12.00	12.00	.39
WCHP 67	1 5	17.00	64.00	2.93)	2 5	36.00	78.00	7.57)	3 5	14.00	12.00	.45
WCHP 67	1 6	17.00	45.00	2.06)	2 6	32.00	64.00	5.52)	3 6	14.00	16.00	.60
WCHP 67	1 7	17.00	34.00	1.56)	2 7	30.00	66.00	5.34)	3 7	14.00	20.00	.75
WCHP 67	1 8	16.00	26.00	1.12)	2 8	28.00	59.00	4.45)	3 8	14.00	10.00	.38
WCHP 67	1 9	14.00	23.00	.87)	2 9	26.00	51.00	3.57)	3 9	13.00	16.00	.56
WCHP 67	1 10	14.00	35.00	1.32)	2 10	24.00	45.00	2.91)	3 10	13.00	12.00	.42
WCHP 67	1 11	22.00	140.00	8.30)	2 11	23.00	44.00	2.73)	3 11	12.00	11.00	.36
WCHP 67	1 12	27.00	164.00	11.94)	2 12	22.00	34.00	2.02)	3 12	11.00	22.00	.65
WCHP 67	1 13	29.00	115.00	8.99)	2 13	21.00	35.00	1.98)	3 13	14.00	29.00	1.09
WCHP 67	1 14	36.00	187.00	18.15)	2 14	19.00	28.00	1.43)	3 14	12.00	17.00	.55
WCHP 67	1 15	38.00	194.00	19.87)	2 15	18.00	30.00	1.46)	3 15	13.00	23.00	.81
WCHP 67	1 16	38.00	140.00	14.34)	2 16	18.00	24.00	1.16)	3 16	14.00	32.00	1.21
WCHP 67	1 17	36.00	87.00	8.44)	2 17	18.00	30.00	1.46)	3 17	22.00	150.00	8.90
WCHP 67	1 18	32.00	69.00	5.95)	2 18	19.00	27.00	1.38)	3 18	24.00	111.00	7.18
WCHP 67	1 19	28.00	66.00	4.98)	2 19	16.00	26.00	1.12)	3 19	25.00	66.00	4.45
WCHP 67	1 20	29.00	172.00	13.45)	2 20	13.00	24.00	.84)	3 20	26.00	73.00	5.12
WCHP 67	1 21	29.00	78.00	6.10)	2 21	16.00	28.00	1.21)	3 21	26.00	63.00	4.42
WCHP 67	1 22	23.00	48.00	2.98)	2 22	16.00	18.00	.78)	3 22	26.00	58.00	4.07
WCHP 67	1 23	20.00	35.00	1.89)	2 23	15.00	20.00	.81)	3 23	27.00	64.00	4.66
WCHP 67	1 24	18.00	32.00	1.55)	2 24	15.00	18.00	.73)	3 24	28.00	67.00	5.06
WCHP 67	1 25	20.00	29.00	1.56)	2 25	15.00	17.00	.69)	3 25	28.00	44.00	3.32
WCHP 67	1 26	19.00	75.00	3.84)	2 26	15.00	14.00	.57)	3 26	26.00	38.00	2.66
WCHP 67	1 27	32.00	511.00	44.08)	2 27	15.00	18.00	.73)	3 27	24.00	30.00	1.94
WCHP 67	1 28	64.00	1340.00	231.18)	2 28	14.00	20.00	.75)	3 28	23.00	44.00	2.73
WCHP 67	1 29	79.00	1150.00	244.90)					3 29	24.00	32.00	2.07
WCHP 67	1 30	78.00	470.00	98.82)					3 30	22.00	26.00	1.54
WCHP 67	1 31	66.00	290.00	51.60)					3 31	22.00	46.00	2.73
MONTHLY TOTALS:		903.00	5713.00	815.64		669.00	1415.00	129.13		587.00	1190.00	70.87
AVERAGES:		29.13	184.29	26.31		23.89	50.54	4.61		18.94	38.39	2.29

STATION ^ YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 67	4 1	23.00	62.00	3.84]	5 1	54.00	470.00	68.42]	6 1	28.00	55.00	4.15
WCHP 67	4 2	23.00	34.00	2.11]	5 2	65.00	380.00	66.58]	6 2	24.00	49.00	3.17
WCHP 67	4 3	24.00	53.00	3.43]	5 3	61.00	230.00	37.82]	6 3	21.00	41.00	2.32
WCHP 67	4 4	23.00	90.00	5.58]	5 4	58.00	156.00	24.39]	6 4	19.00	31.00	1.59
WCHP 67	4 5	32.00	200.00	17.25]	5 5	56.00	140.00	21.13]	6 5	17.00	32.00	1.47
WCHP 67	4 6	41.00	290.00	32.05]	5 6	52.00	124.00	17.38]	6 6	14.00	24.00	.91
WCHP 67	4 7	51.00	350.00	48.12]	5 7	53.00	156.00	22.29]	6 7	13.00	24.00	.84
WCHP 67	4 8	52.00	206.00	28.88]	5 8	58.00	300.00	46.90]	6 8	11.00	26.00	.77
WCHP 67	4 9	48.00	134.00	17.34]	5 9	68.00	420.00	76.99]	6 9	9.80	13.00	.34
WCHP 67	4 10	47.00	111.00	14.06]	5 10	73.00	390.00	76.75]	6 10	8.60	10.00	.23
WCHP 67	4 11	46.00	107.00	13.27]	5 11	64.00	210.00	36.23]	6 11	8.30	12.00	.27
WCHP 67	4 12	43.00	88.00	10.20]	5 12	60.00	170.00	27.50]	6 12	9.80	12.00	.32
WCHP 67	4 13	40.00	88.00	9.49]	5 13	59.00	180.00	28.63]	6 13	12.00	20.00	.65
WCHP 67	4 14	38.00	52.00	5.33]	5 14	58.00	182.00	28.46]	6 14	9.50	15.00	.38
WCHP 67	4 15	35.00	44.00	4.15]	5 15	58.00	150.00	23.45]	6 15	7.70	12.00	.25
WCHP 67	4 16	32.00	32.00	2.76]	5 16	59.00	900.00	143.14]	6 16	7.10	8.00	.15
WCHP 67	4 17	33.00	42.00	3.74]	5 17	72.00	1820.00	353.24]	6 17	4.70	8.00	.10
WCHP 67	4 18	32.00	40.00	3.45]	5 18	84.00	790.00	178.89]	6 18	4.90	13.00	.17
WCHP 67	4 19	30.00	28.00	2.26]	5 19	81.00	570.00	124.46]	6 19	4.40	12.00	.14
WCHP 67	4 20	28.00	25.00	1.89]	5 20	76.00	440.00	90.14]	6 20	4.40	10.00	.12
WCHP 67	4 21	26.00	26.00	1.82]	5 21	73.00	388.00	76.35]	6 21	5.50	12.00	.18
WCHP 67	4 22	24.00	22.00	1.42]	5 22	70.00	391.00	73.78]	6 22	7.10	18.00	.34
WCHP 67	4 23	19.00	33.00	1.69]	5 23	64.00	270.00	46.58]	6 23	6.30	24.00	.41
WCHP 67	4 24	20.00	80.00	4.31]	5 24	51.00	224.00	30.80]	6 24	6.00	14.00	.23
WCHP 67	4 25	26.00	42.00	2.94]	5 25	43.00	190.00	22.02]	6 25	5.20	13.00	.19
WCHP 67	4 26	31.00	120.00	10.03]	5 26	37.00	144.00	14.36]	6 26	4.90	13.00	.17
WCHP 67	4 27	35.00	62.00	5.85]	5 27	32.00	109.00	9.40]	6 27	4.40	13.00	.15
WCHP 67	4 28	38.00	49.79	5.10]	5 28	33.00	114.00	10.14]	6 28	4.00	13.00	.14
WCHP 67	4 29	40.00	60.28	6.50]	5 29	37.00	146.00	14.56]	6 29	3.40	13.00	.12
WCHP 67	4 30	44.00	80.09	9.50]	5 30	32.00	68.00	5.87]	6 30	2.90	13.00	.10
WCHP 67					5 31	31.00	57.00	4.76]				
MONTHLY TOTALS:		1024.00	2651.16	278.36		1772.00	10279.00	1801.42		287.90	573.00	20.37
AVERAGES:		34.13	88.37	9.28		57.16	331.58	58.11		9.60	19.10	.68

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 67	7 1	2.70	13.00	.091	8 1	.13	31.00	.011	9 1	.06	12.00	.00
WCHP 67	7 2	2.30	13.00	.081	8 2	.12	31.00	.011	9 2	.06	12.00	.00
WCHP 67	7 3	2.00	13.00	.071	8 3	.10	31.00	.011	9 3	.07	12.00	.00
WCHP 67	7 4	1.40	13.00	.051	8 4	.09	12.00	.001	9 4	.06	12.00	.00
WCHP 67	7 5	1.40	13.00	.051	8 5	.08	12.00	.001	9 5	.06	12.00	.00
WCHP 67	7 6	1.30	13.00	.051	8 6	.09	12.00	.001	9 6	.06	12.00	.00
WCHP 67	7 7	1.30	13.00	.051	8 7	.08	12.00	.001	9 7	.10	12.00	.00
WCHP 67	7 8	1.40	13.00	.051	8 8	.10	12.00	.001	9 8	.03	12.00	.00
WCHP 67	7 9	.91	13.00	.031	8 9	.08	12.00	.001	9 9	.03	12.00	.00
WCHP 67	7 10	.81	13.00	.031	8 10	.10	12.00	.001	9 10	.03	12.00	.00
WCHP 67	7 11	.76	13.00	.031	8 11	.08	12.00	.001	9 11	.08	12.00	.00
WCHP 67	7 12	.75	13.00	.031	8 12	.08	12.00	.001	9 12	.08	12.00	.00
WCHP 67	7 13	.55	13.00	.021	8 13	.08	12.00	.001	9 13	.13	12.00	.00
WCHP 67	7 14	.44	13.00	.021	8 14	.08	12.00	.001	9 14	.13	12.00	.00
WCHP 67	7 15	.35	13.00	.011	8 15	.08	12.00	.001	9 15	.13	12.00	.00
WCHP 67	7 16	.42	13.00	.011	8 16	.08	12.00	.001	9 16	.08	12.00	.00
WCHP 67	7 17	.19	31.00	.021	8 17	.07	12.00	.001	9 17	.08	12.00	.00
WCHP 67	7 18	.24	31.00	.021	8 18	.06	12.00	.001	9 18	.13	12.00	.00
WCHP 67	7 19	.27	31.00	.021	8 19	.06	12.00	.001	9 19	.08	12.00	.00
WCHP 67	7 20	.29	31.00	.021	8 20	.06	12.00	.001	9 20	.08	12.00	.00
WCHP 67	7 21	.29	31.00	.021	8 21	.05	12.00	.001	9 21	.08	12.00	.00
WCHP 67	7 22	.30	31.00	.031	8 22	.06	12.00	.001	9 22	.08	12.00	.00
WCHP 67	7 23	.24	31.00	.021	8 23	.07	12.00	.001	9 23	.08	12.00	.00
WCHP 67	7 24	.21	31.00	.021	8 24	.06	12.00	.001	9 24	.08	12.00	.00
WCHP 67	7 25	.17	31.00	.011	8 25	.06	12.00	.001	9 25	.08	12.00	.00
WCHP 67	7 26	.17	31.00	.011	8 26	.06	12.00	.001	9 26	.08	12.00	.00
WCHP 67	7 27	.18	31.00	.021	8 27	.07	12.00	.001	9 27	.08	12.00	.00
WCHP 67	7 28	.14	31.00	.011	8 28	.07	12.00	.001	9 28	.08	12.00	.00
WCHP 67	7 29	.13	31.00	.011	8 29	.07	12.00	.001	9 29	.08	12.00	.00
WCHP 67	7 30	.12	31.00	.011	8 30	.07	12.00	.001	9 30	.08	12.00	.00
WCHP 67	7 31	.12	31.00	.011	8 31	.07	12.00	.001				
MONTHLY TOTALS:		21.85	673.00	.91		2.41	429.00	.10		2.36	360.00	.08
AVERAGES:		.70	21.71	.03		.08	13.84	.00		.08	12.00	.00

WATER YEAR STATISTICS ENDING SEP 67

	SUM	AVERAGE	
DISCHARGE VOLUME:	6121.69	16.77	(CFS)
CONCENTRATION:		90.37	(PPM)
SEDIMENT FLOW	3566.22	9.77	(TONS)

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 67	10 1	.08	4.00	.001	11 1	1.30	9.00	.031	12 1	2.00	59.35	.32
WCHP 67	10 2	.09	4.00	.001	11 2	1.30	9.00	.031	12 2	1.80	78.00	.38
WCHP 67	10 3	.10	4.00	.001	11 3	1.40	9.00	.031	12 3	2.10	52.00	.29
WCHP 67	10 4	.10	4.00	.001	11 4	1.40	9.00	.031	12 4	2.10	58.00	.33
WCHP 67	10 5	.10	4.00	.001	11 5	1.50	9.00	.041	12 5	2.70	63.00	.46
WCHP 67	10 6	.10	4.00	.001	11 6	1.50	9.00	.041	12 6	2.70	27.00	.20
WCHP 67	10 7	.10	4.00	.001	11 7	1.50	9.00	.041	12 7	2.10	66.00	.37
WCHP 67	10 8	.10	4.00	.001	11 8	1.70	9.00	.041	12 8	2.30	77.00	.48
WCHP 67	10 9	.10	4.00	.001	11 9	1.70	9.00	.041	12 9	2.70	65.00	.47
WCHP 67	10 10	.10	4.00	.001	11 10	2.10	9.00	.051	12 10	2.90	73.00	.57
WCHP 67	10 11	.10	4.00	.001	11 11	2.30	9.00	.061	12 11	2.70	70.00	.51
WCHP 67	10 12	.15	4.00	.001	11 12	2.30	9.00	.061	12 12	2.50	68.00	.46
WCHP 67	10 13	.25	4.00	.001	11 13	2.30	9.00	.061	12 13	2.20	17.00	.10
WCHP 67	10 14	.10	4.00	.001	11 14	2.10	9.00	.051	12 14	1.80	17.00	.08
WCHP 67	10 15	.08	4.00	.001	11 15	2.10	9.00	.051	12 15	1.80	17.00	.08
WCHP 67	10 16	.08	4.00	.001	11 16	2.30	9.00	.061	12 16	1.90	17.00	.09
WCHP 67	10 17	.08	4.00	.001	11 17	2.10	9.00	.051	12 17	2.30	17.00	.11
WCHP 67	10 18	.08	4.00	.001	11 18	2.10	9.00	.051	12 18	2.40	17.00	.11
WCHP 67	10 19	.10	4.00	.001	11 19	2.10	9.00	.051	12 19	2.10	17.00	.10
WCHP 67	10 20	.13	4.00	.001	11 20	2.10	9.00	.051	12 20	1.90	17.00	.09
WCHP 67	10 21	.13	4.00	.001	11 21	2.10	9.00	.051	12 21	1.80	17.00	.08
WCHP 67	10 22	.19	4.00	.001	11 22	2.00	9.00	.051	12 22	2.20	17.00	.10
WCHP 67	10 23	.32	4.00	.001	11 23	2.00	9.00	.051	12 23	2.50	17.00	.11
WCHP 67	10 24	.50	15.00	.021	11 24	2.00	9.00	.051	12 24	3.00	17.00	.14
WCHP 67	10 25	.64	25.00	.041	11 25	2.00	9.00	.051	12 25	4.70	22.00	.28
WCHP 67	10 26	.72	27.00	.051	11 26	2.00	9.00	.051	12 26	9.30	99.00	2.48
WCHP 67	10 27	.72	23.00	.041	11 27	1.80	9.00	.041	12 27	7.40	51.00	1.02
WCHP 67	10 28	1.80	9.00	.041	11 28	1.80	9.00	.041	12 28	6.40	36.00	.62
WCHP 67	10 29	2.70	9.00	.071	11 29	2.30	9.00	.061	12 29	4.70	18.00	.23
WCHP 67	10 30	1.80	9.00	.041	11 30	2.30	9.00	.061	12 30	3.70	10.00	.10
WCHP 67	10 31	1.50	9.00	.041					12 31	3.20	10.00	.09
MONTHLY TOTALS:		13.14	218.00	.38		57.50	270.00	1.40		93.90	1206.35	10.84
AVERAGES:		.42	7.03	.01		1.92	9.00	.05		3.03	38.91	.35

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 68	1 1	4.10	10.00	.11)	2 1	4.20	11.00	.12)	3 1	13.00	31.39	1.10
WCHP 68	1 2	3.20	12.00	.10)	2 2	4.20	11.00	.12)	3 2	13.00	28.00	.98
WCHP 68	1 3	2.80	12.00	.09)	2 3	4.00	11.00	.12)	3 3	12.00	30.00	.97
WCHP 68	1 4	2.80	12.00	.09)	2 4	4.20	11.00	.12)	3 4	10.00	33.00	.89
WCHP 68	1 5	3.00	12.00	.10)	2 5	4.90	11.00	.15)	3 5	10.00	26.00	.70
WCHP 68	1 6	2.80	12.00	.09)	2 6	3.60	11.00	.11)	3 6	11.00	18.00	.53
WCHP 68	1 7	2.70	12.00	.09)	2 7	3.80	11.00	.11)	3 7	10.00	17.00	.46
WCHP 68	1 8	3.40	12.00	.11)	2 8	2.90	11.00	.09)	3 8	10.00	26.00	.70
WCHP 68	1 9	4.10	12.00	.13)	2 9	4.00	11.00	.12)	3 9	9.80	14.00	.37
WCHP 68	1 10	5.00	12.00	.16)	2 10	4.00	11.00	.12)	3 10	9.50	10.00	.26
WCHP 68	1 11	3.70	12.00	.12)	2 11	3.60	11.00	.11)	3 11	9.20	9.00	.22
WCHP 68	1 12	3.30	20.00	.18)	2 12	3.80	11.00	.11)	3 12	8.30	15.00	.34
WCHP 68	1 13	4.30	18.00	.21)	2 13	2.50	11.00	.07)	3 13	8.00	13.00	.28
WCHP 68	1 14	6.50	29.00	.51)	2 14	2.00	11.00	.06)	3 14	7.70	25.00	.52
WCHP 68	1 15	10.00	96.00	2.59)	2 15	2.70	11.00	.08)	3 15	6.60	25.00	.44
WCHP 68	1 16	10.00	58.00	1.56)	2 16	2.70	11.00	.08)	3 16	6.00	30.00	.49
WCHP 68	1 17	7.40	28.00	.56)	2 17	3.60	11.00	.11)	3 17	7.40	9.00	.18
WCHP 68	1 18	6.30	25.00	.42)	2 18	3.60	11.00	.11)	3 18	6.80	16.00	.29
WCHP 68	1 19	5.20	14.00	.20)	2 19	4.70	37.00	.47)	3 19	5.80	10.00	.16
WCHP 68	1 20	4.90	15.00	.20)	2 20	10.00	110.00	2.97)	3 20	6.00	10.00	.16
WCHP 68	1 21	7.10	42.00	.80)	2 21	16.00	265.00	11.43)	3 21	6.00	10.00	.16
WCHP 68	1 22	8.30	43.00	.96)	2 22	18.00	180.00	8.73)	3 22	4.90	11.00	.15
WCHP 68	1 23	7.00	15.00	.28)	2 23	19.00	187.00	9.58)	3 23	2.00	6.00	.03
WCHP 68	1 24	6.60	16.00	.28)	2 24	22.00	210.00	12.45)	3 24	2.30	4.00	.02
WCHP 68	1 25	5.80	13.00	.20)	2 25	20.00	121.00	6.52)	3 25	3.40	18.00	.16
WCHP 68	1 26	4.40	11.00	.13)	2 26	18.00	75.00	3.64)	3 26	3.10	13.00	.11
WCHP 68	1 27	3.80	11.00	.11)	2 27	17.00	80.00	3.67)	3 27	1.40	7.00	.03
WCHP 68	1 28	3.80	11.00	.11)	2 28	15.00	69.00	2.79)	3 28	1.70	8.00	.04
WCHP 68	1 29	4.90	11.00	.15)	2 29	13.00	37.00	1.30)	3 29	2.50	23.00	.16
WCHP 68	1 30	6.60	11.00	.20)					3 30	4.00	36.00	.39
WCHP 68	1 31	4.70	11.00	.14)					3 31	5.20	30.00	.42
MONTHLY TOTALS:		158.50	628.00	10.99		237.00	1569.00	65.45		216.60	561.39	11.70
AVERAGES:		5.11	20.26	.35		8.17	54.10	2.26		6.99	18.11	.38

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 68	4 1	2.90	16.00	.13)	5 1	1.80	16.00	.08)	6 1	1.70	19.00	.09
WCHP 68	4 2	2.50	7.00	.05)	5 2	.64	19.00	.03)	6 2	1.70	19.00	.09
WCHP 68	4 3	2.70	9.00	.07)	5 3	.72	19.00	.04)	6 3	2.50	19.00	.13
WCHP 68	4 4	2.00	4.00	.02)	5 4	1.00	19.00	.05)	6 4	1.50	19.00	.08
WCHP 68	4 5	1.80	9.00	.04)	5 5	.81	19.00	.04)	6 5	1.40	19.00	.07
WCHP 68	4 6	6.00	18.00	.29)	5 6	.91	19.00	.05)	6 6	1.30	19.00	.07
WCHP 68	4 7	5.50	31.00	.46)	5 7	1.00	19.00	.05)	6 7	1.30	19.00	.07
WCHP 68	4 8	4.20	22.00	.25)	5 8	1.30	19.00	.07)	6 8	1.30	19.00	.07
WCHP 68	4 9	5.20	12.00	.17)	5 9	1.40	19.00	.07)	6 9	1.30	19.00	.07
WCHP 68	4 10	4.70	9.00	.11)	5 10	1.80	19.00	.09)	6 10	1.00	19.00	.05
WCHP 68	4 11	5.80	12.00	.19)	5 11	.91	19.00	.05)	6 11	1.00	19.00	.05
WCHP 68	4 12	5.50	12.00	.18)	5 12	.72	19.00	.04)	6 12	1.00	19.00	.05
WCHP 68	4 13	2.00	7.00	.04)	5 13	.72	19.00	.04)	6 13	1.00	19.00	.05
WCHP 68	4 14	1.50	7.00	.03)	5 14	.81	19.00	.04)	6 14	1.00	19.00	.05
WCHP 68	4 15	1.50	7.00	.03)	5 15	.72	19.00	.04)	6 15	1.60	19.00	.09
WCHP 68	4 16	1.80	7.00	.03)	5 16	.57	19.00	.03)	6 16	.81	19.00	.04
WCHP 68	4 17	1.50	7.00	.03)	5 17	.50	19.00	.03)	6 17	.72	19.00	.04
WCHP 68	4 18	3.60	19.00	.18)	5 18	.44	19.00	.02)	6 18	.64	19.00	.03
WCHP 68	4 19	7.70	18.00	.37)	5 19	.44	19.00	.02)	6 19	.64	19.00	.03
WCHP 68	4 20	6.90	19.00	.35)	5 20	.57	19.00	.03)	6 20	.57	19.00	.03
WCHP 68	4 21	6.60	12.00	.21)	5 21	.72	19.00	.04)	6 21	.50	19.00	.03
WCHP 68	4 22	5.50	10.00	.15)	5 22	.72	19.00	.04)	6 22	.50	19.00	.03
WCHP 68	4 23	5.80	10.00	.16)	5 23	.72	19.00	.04)	6 23	.57	19.00	.03
WCHP 68	4 24	2.10	4.00	.02)	5 24	.72	19.00	.04)	6 24	.50	19.00	.03
WCHP 68	4 25	1.80	4.00	.02)	5 25	1.10	19.00	.06)	6 25	.50	19.00	.03
WCHP 68	4 26	2.30	16.00	.10)	5 26	1.10	19.00	.06)	6 26	.44	19.00	.02
WCHP 68	4 27	2.50	18.00	.12)	5 27	2.10	19.00	.11)	6 27	.44	19.00	.02
WCHP 68	4 28	2.70	12.00	.09)	5 28	1.50	19.00	.08)	6 28	.44	19.00	.02
WCHP 68	4 29	2.10	13.00	.07)	5 29	1.30	19.00	.07)	6 29	.44	19.00	.02
WCHP 68	4 30	1.40	8.00	.03)	5 30	1.50	19.00	.08)	6 30	.29	19.00	.01
WCHP 68					5 31	1.70	19.00	.09)				
MONTHLY TOTALS:		108.10	359.00	3.99		30.96	586.00	1.57		28.80	570.00	1.48
AVERAGES:		3.60	11.97	.13		1.00	18.90	.05		.96	19.00	.05

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCHP 68	7 1	0.00	0.00	0.001	8 1	0.00	0.00	0.001	9 1	0.00	0.00	0.00
WCHP 68	7 2	0.00	0.00	0.001	8 2	0.00	0.00	0.001	9 2	0.00	0.00	0.00
WCHP 68	7 3	0.00	0.00	0.001	8 3	0.00	0.00	0.001	9 3	0.00	0.00	0.00
WCHP 68	7 4	0.00	0.00	0.001	8 4	0.00	0.00	0.001	9 4	0.00	0.00	0.00
WCHP 68	7 5	0.00	0.00	0.001	8 5	0.00	0.00	0.001	9 5	0.00	0.00	0.00
WCHP 68	7 6	0.00	0.00	0.001	8 6	0.00	0.00	0.001	9 6	0.00	0.00	0.00
WCHP 68	7 7	0.00	0.00	0.001	8 7	0.00	0.00	0.001	9 7	0.00	0.00	0.00
WCHP 68	7 8	0.00	0.00	0.001	8 8	0.00	0.00	0.001	9 8	0.00	0.00	0.00
WCHP 68	7 9	0.00	0.00	0.001	8 9	0.00	0.00	0.001	9 9	0.00	0.00	0.00
WCHP 68	7 10	0.00	0.00	0.001	8 10	0.00	0.00	0.001	9 10	0.00	0.00	0.00
WCHP 68	7 11	0.00	0.00	0.001	8 11	0.00	0.00	0.001	9 11	0.00	0.00	0.00
WCHP 68	7 12	0.00	0.00	0.001	8 12	0.00	0.00	0.001	9 12	0.00	0.00	0.00
WCHP 68	7 13	0.00	0.00	0.001	8 13	0.00	0.00	0.001	9 13	0.00	0.00	0.00
WCHP 68	7 14	0.00	0.00	0.001	8 14	0.00	0.00	0.001	9 14	0.00	0.00	0.00
WCHP 68	7 15	0.00	0.00	0.001	8 15	0.00	0.00	0.001	9 15	0.00	0.00	0.00
WCHP 68	7 16	0.00	0.00	0.001	8 16	0.00	0.00	0.001	9 16	0.00	0.00	0.00
WCHP 68	7 17	0.00	0.00	0.001	8 17	0.00	0.00	0.001	9 17	0.00	0.00	0.00
WCHP 68	7 18	0.00	0.00	0.001	8 18	0.00	0.00	0.001	9 18	0.00	0.00	0.00
WCHP 68	7 19	0.00	0.00	0.001	8 19	0.00	0.00	0.001	9 19	0.00	0.00	0.00
WCHP 68	7 20	0.00	0.00	0.001	8 20	0.00	0.00	0.001	9 20	0.00	0.00	0.00
WCHP 68	7 21	0.00	0.00	0.001	8 21	0.00	0.00	0.001	9 21	0.00	0.00	0.00
WCHP 68	7 22	0.00	0.00	0.001	8 22	0.00	0.00	0.001	9 22	0.00	0.00	0.00
WCHP 68	7 23	0.00	0.00	0.001	8 23	0.00	0.00	0.001	9 23	0.00	0.00	0.00
WCHP 68	7 24	0.00	0.00	0.001	8 24	0.00	0.00	0.001	9 24	0.00	0.00	0.00
WCHP 68	7 25	0.00	0.00	0.001	8 25	0.00	0.00	0.001	9 25	0.00	0.00	0.00
WCHP 68	7 26	0.00	0.00	0.001	8 26	0.00	0.00	0.001	9 26	0.00	0.00	0.00
WCHP 68	7 27	0.00	0.00	0.001	8 27	0.00	0.00	0.001	9 27	0.00	0.00	0.00
WCHP 68	7 28	0.00	0.00	0.001	8 28	0.00	0.00	0.001	9 28	0.00	0.00	0.00
WCHP 68	7 29	0.00	0.00	0.001	8 29	0.00	0.00	0.001	9 29	0.00	0.00	0.00
WCHP 68	7 30	0.00	0.00	0.001	8 30	0.00	0.00	0.001	9 30	0.00	0.00	0.00
WCHP 68	7 31	0.00	0.00	0.001	8 31	0.00	0.00	0.001				
MONTHLY TOTALS:		0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00
		0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00

WATER YEAR STATISTICS ENDING SEP 68

	SUM	AVERAGE	
DISCHARGE VOLUME:	944.50	2.58	(CFS)
CONCENTRATION:		16.31	(PPM)
SEDIMENT FLOW	107.80	.29	(TONS)

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 63	10 1	0.00	0.00	0.001	11 1	0.00	0.00	0.001	12 1	1.70	21.00	.10
WCAR 63	10 2	0.00	0.00	0.001	11 2	0.00	0.00	0.001	12 2	1.70	21.00	.10
WCAR 63	10 3	0.00	0.00	0.001	11 3	0.00	0.00	0.001	12 3	1.70	21.00	.10
WCAR 63	10 4	0.00	0.00	0.001	11 4	0.00	0.00	0.001	12 4	.80	21.00	.05
WCAR 63	10 5	0.00	0.00	0.001	11 5	0.00	0.00	0.001	12 5	2.20	21.00	.12
WCAR 63	10 6	0.00	0.00	0.001	11 6	0.00	0.00	0.001	12 6	4.40	21.00	.25
WCAR 63	10 7	0.00	0.00	0.001	11 7	0.00	0.00	0.001	12 7	4.00	21.00	.23
WCAR 63	10 8	0.00	0.00	0.001	11 8	0.00	0.00	0.001	12 8	5.20	21.00	.29
WCAR 63	10 9	0.00	0.00	0.001	11 9	0.00	0.00	0.001	12 9	5.60	21.00	.32
WCAR 63	10 10	0.00	0.00	0.001	11 10	0.00	0.00	0.001	12 10	3.20	21.00	.18
WCAR 63	10 11	0.00	0.00	0.001	11 11	0.00	0.00	0.001	12 11	1.00	21.00	.06
WCAR 63	10 12	0.00	0.00	0.001	11 12	0.00	0.00	0.001	12 12	.60	21.00	.03
WCAR 63	10 13	0.00	0.00	0.001	11 13	0.00	0.00	0.001	12 13	3.20	21.00	.18
WCAR 63	10 14	0.00	0.00	0.001	11 14	0.00	0.00	0.001	12 14	4.40	21.00	.25
WCAR 63	10 15	0.00	0.00	0.001	11 15	0.00	0.00	0.001	12 15	5.20	21.00	.29
WCAR 63	10 16	0.00	0.00	0.001	11 16	0.00	0.00	0.001	12 16	5.60	21.00	.32
WCAR 63	10 17	0.00	0.00	0.001	11 17	0.00	0.00	0.001	12 17	6.00	21.00	.34
WCAR 63	10 18	0.00	0.00	0.001	11 18	0.00	0.00	0.001	12 18	6.50	21.00	.37
WCAR 63	10 19	0.00	0.00	0.001	11 19	0.00	0.00	0.001	12 19	8.00	17.00	.37
WCAR 63	10 20	0.00	0.00	0.001	11 20	0.00	0.00	0.001	12 20	8.60	17.00	.39
WCAR 63	10 21	0.00	0.00	0.001	11 21	0.00	0.00	0.001	12 21	9.20	17.00	.42
WCAR 63	10 22	0.00	0.00	0.001	11 22	0.00	0.00	0.001	12 22	9.20	17.00	.42
WCAR 63	10 23	0.00	0.00	0.001	11 23	.70	80.00	.151	12 23	9.20	17.00	.42
WCAR 63	10 24	0.00	0.00	0.001	11 24	.20	80.00	.041	12 24	9.20	17.00	.42
WCAR 63	10 25	0.00	0.00	0.001	11 25	.30	80.00	.061	12 25	9.80	17.00	.45
WCAR 63	10 26	0.00	0.00	0.001	11 26	.30	80.00	.061	12 26	10.00	17.00	.46
WCAR 63	10 27	0.00	0.00	0.001	11 27	.70	21.00	.041	12 27	10.00	17.00	.46
WCAR 63	10 28	0.00	0.00	0.001	11 28	.70	21.00	.041	12 28	11.00	17.00	.50
WCAR 63	10 29	0.00	0.00	0.001	11 29	1.20	21.00	.071	12 29	12.00	17.00	.55
WCAR 63	10 30	0.00	0.00	0.001	11 30	1.70	21.00	.101	12 30	15.00	17.00	.69
WCAR 63	10 31	0.00	0.00	0.001					12 31	16.00	17.00	.73
MONTHLY TOTALS:		0.00	0.00	0.00		5.80	404.00	.57		200.20	599.00	9.85
AVERAGES:		0.00	0.00	0.00		.19	13.47	.02		6.46	19.32	.32

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 64	1 1	16.00	17.00	.731	2 1	43.00	83.00	9.621	3 1	.60	14.00	.02
WCAR 64	1 2	16.00	17.00	.731	2 2	39.00	45.00	4.731	3 2	.70	14.00	.03
WCAR 64	1 3	17.00	17.00	.781	2 3	34.00	40.37	3.701	3 3	.80	14.00	.03
WCAR 64	1 4	12.00	17.00	.551	2 4	9.20	28.23	.701	3 4	1.70	14.00	.06
WCAR 64	1 5	13.00	17.00	.601	2 5	6.00	24.00	.391	3 5	1.50	14.00	.06
WCAR 64	1 6	15.00	17.00	.691	2 6	4.80	24.00	.311	3 6	.80	14.00	.03
WCAR 64	1 7	15.00	17.00	.691	2 7	4.80	24.00	.311	3 7	1.70	14.00	.06
WCAR 64	1 8	15.00	17.00	.691	2 8	5.20	24.00	.341	3 8	.80	14.00	.03
WCAR 64	1 9	16.00	17.00	.731	2 9	5.20	24.00	.341	3 9	1.50	14.00	.06
WCAR 64	1 10	16.00	17.00	.731	2 10	5.60	24.00	.361	3 10	2.00	14.00	.08
WCAR 64	1 11	16.00	17.00	.731	2 11	8.00	24.00	.521	3 11	1.50	14.00	.06
WCAR 64	1 12	16.00	17.00	.731	2 12	7.00	24.00	.451	3 12	1.70	14.00	.06
WCAR 64	1 13	12.00	17.00	.551	2 13	10.00	24.00	.651	3 13	1.50	14.00	.06
WCAR 64	1 14	14.00	17.00	.641	2 14	5.20	24.00	.341	3 14	2.80	14.00	.11
WCAR 64	1 15	15.00	17.00	.691	2 15	6.50	24.00	.421	3 15	2.80	14.00	.11
WCAR 64	1 16	17.00	17.00	.781	2 16	8.00	24.00	.521	3 16	2.00	14.00	.08
WCAR 64	1 17	16.00	17.00	.731	2 17	5.20	24.00	.341	3 17	1.00	14.00	.04
WCAR 64	1 18	17.00	17.00	.781	2 18	2.50	20.00	.131	3 18	1.30	14.00	.05
WCAR 64	1 19	19.00	17.00	.871	2 19	1.70	20.00	.091	3 19	1.70	14.00	.06
WCAR 64	1 20	18.00	17.00	.821	2 20	1.00	20.00	.051	3 20	1.70	14.00	.06
WCAR 64	1 21	16.00	17.00	.731	2 21	.50	20.00	.031	3 21	2.20	14.00	.08
WCAR 64	1 22	17.00	17.00	.781	2 22	0.00	0.00	0.001	3 22	2.50	14.00	.09
WCAR 64	1 23	18.00	17.00	.821	2 23	.50	14.00	.021	3 23	1.20	11.00	.04
WCAR 64	1 24	18.00	17.00	.821	2 24	.80	14.00	.031	3 24	0.00	0.00	0.00
WCAR 64	1 25	19.00	17.00	.871	2 25	.30	14.00	.011	3 25	0.00	0.00	0.00
WCAR 64	1 26	21.00	17.00	.961	2 26	2.20	14.00	.081	3 26	0.00	0.00	0.00
WCAR 64	1 27	32.00	65.00	5.611	2 27	3.20	14.00	.121	3 27	0.00	0.00	0.00
WCAR 64	1 28	43.00	220.00	25.501	2 28	2.20	14.00	.081	3 28	0.00	0.00	0.00
WCAR 64	1 29	43.00	280.00	32.461	2 29	.60	14.00	.021	3 29	.20	10.00	.01
WCAR 64	1 30	42.00	160.00	18.111	2 30	0.00	0.00	0.001	3 30	0.00	0.00	0.00
WCAR 64	1 31	40.00	77.00	8.301					3 31	42.00	251.00	28.42
MONTHLY TOTALS:		620.00	1244.00	109.23		222.20	686.60	24.70		78.20	580.00	29.77
AVERAGES:		20.00	40.13	3.52		7.41	22.89	.82		2.52	18.71	.96

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 64	4 1	43.00	336.00	38.95)	5 1	0.00	0.00	0.00)	6 1	5.20	14.27	.20
WCAR 64	4 2	52.00	360.00	50.46)	5 2	0.00	0.00	0.00)	6 2	5.60	87.00	1.31
WCAR 64	4 3	44.00	150.00	17.79)	5 3	3.60	12.00	.12)	6 3	5.20	37.00	.52
WCAR 64	4 4	33.00	30.00	2.67)	5 4	5.60	12.00	.18)	6 4	4.00	22.00	.24
WCAR 64	4 5	23.00	25.00	1.55)	5 5	6.00	12.00	.19)	6 5	66.00	14000.00	2490.31
WCAR 64	4 6	16.00	34.00	1.47)	5 6	5.60	12.00	.18)	6 6	68.00	16000.00	2932.90
WCAR 64	4 7	15.00	23.00	.93)	5 7	8.60	12.00	.28)	6 7	37.00	10000.00	997.40
WCAR 64	4 8	10.00	23.00	.62)	5 8	7.50	12.00	.24)	6 8	35.00	1600.00	150.96
WCAR 64	4 9	7.00	23.00	.43)	5 9	8.00	12.00	.26)	6 9	30.00	820.00	66.31
WCAR 64	4 10	6.00	23.00	.37)	5 10	7.50	12.00	.24)	6 10	24.00	400.00	25.88
WCAR 64	4 11	5.20	23.00	.32)	5 11	7.00	12.00	.23)	6 11	21.00	242.00	13.70
WCAR 64	4 12	8.00	23.00	.50)	5 12	7.50	12.00	.24)	6 12	18.00	220.00	10.67
WCAR 64	4 13	9.20	23.00	.57)	5 13	7.50	12.00	.24)	6 13	12.00	148.00	4.79
WCAR 64	4 14	12.00	23.00	.74)	5 14	8.00	12.00	.26)	6 14	9.80	98.00	2.59
WCAR 64	4 15	11.00	23.00	.68)	5 15	8.60	12.00	.28)	6 15	4.40	60.00	.71
WCAR 64	4 16	7.50	23.00	.47)	5 16	6.50	12.00	.21)	6 16	3.60	41.00	.40
WCAR 64	4 17	7.50	23.00	.47)	5 17	5.60	12.00	.18)	6 17	3.20	27.00	.23
WCAR 64	4 18	6.00	23.00	.37)	5 18	5.20	12.00	.17)	6 18	2.00	19.00	.10
WCAR 64	4 19	5.60	23.00	.35)	5 19	3.20	12.00	.10)	6 19	2.80	26.50	.20
WCAR 64	4 20	4.40	23.00	.27)	5 20	4.40	12.00	.14)	6 20	.80	92.74	.20
WCAR 64	4 21	2.50	61.00	.41)	5 21	3.60	12.00	.12)	6 21	.90	19.00	.05
WCAR 64	4 22	1.70	61.00	.28)	5 22	2.50	12.00	.08)	6 22	.20	0.00	0.00
WCAR 64	4 23	.80	61.00	.13)	5 23	2.50	12.00	.08)	6 23	0.00	0.00	0.00
WCAR 64	4 24	.30	61.00	.05)	5 24	3.20	12.00	.10)	6 24	0.00	0.00	0.00
WCAR 64	4 25	.30	61.00	.05)	5 25	5.20	12.00	.17)	6 25	0.00	0.00	0.00
WCAR 64	4 26	0.00	0.00	0.00)	5 26	4.40	12.00	.14)	6 26	0.00	0.00	0.00
WCAR 64	4 27	0.00	0.00	0.00)	5 27	4.80	12.00	.16)	6 27	0.00	0.00	0.00
WCAR 64	4 28	.30	26.00	.02)	5 28	4.40	12.00	.14)	6 28	0.00	0.00	0.00
WCAR 64	4 29	.30	20.00	.02)	5 29	5.20	12.00	.17)	6 29	0.00	0.00	0.00
WCAR 64	4 30	0.00	0.00	0.00)	5 30	5.20	12.00	.17)	6 30	0.00	0.00	0.00
WCAR 64					5 31	4.80	12.00	.16)				
MONTHLY TOTALS:		331.60	1608.00	120.94		161.70	348.00	5.23		358.70	43973.51	6700.17
AVERAGES:		11.05	53.60	4.03		5.22	11.23	.17		11.96	1465.78	223.34

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 64	7 1	0.00	0.00	0.001	8 1	0.00	0.00	0.001	9 1	0.00	0.00	0.00
WCAR 64	7 2	0.00	0.00	0.001	8 2	0.00	0.00	0.001	9 2	0.00	0.00	0.00
WCAR 64	7 3	0.00	0.00	0.001	8 3	0.00	0.00	0.001	9 3	0.00	0.00	0.00
WCAR 64	7 4	0.00	0.00	0.001	8 4	0.00	0.00	0.001	9 4	0.00	0.00	0.00
WCAR 64	7 5	0.00	0.00	0.001	8 5	0.00	0.00	0.001	9 5	0.00	0.00	0.00
WCAR 64	7 6	0.00	0.00	0.001	8 6	0.00	0.00	0.001	9 6	0.00	0.00	0.00
WCAR 64	7 7	0.00	0.00	0.001	8 7	0.00	0.00	0.001	9 7	0.00	0.00	0.00
WCAR 64	7 8	0.00	0.00	0.001	8 8	0.00	0.00	0.001	9 8	0.00	0.00	0.00
WCAR 64	7 9	0.00	0.00	0.001	8 9	0.00	0.00	0.001	9 9	0.00	0.00	0.00
WCAR 64	7 10	0.00	0.00	0.001	8 10	0.00	0.00	0.001	9 10	0.00	0.00	0.00
WCAR 64	7 11	0.00	0.00	0.001	8 11	0.00	0.00	0.001	9 11	0.00	0.00	0.00
WCAR 64	7 12	0.00	0.00	0.001	8 12	0.00	0.00	0.001	9 12	0.00	0.00	0.00
WCAR 64	7 13	0.00	0.00	0.001	8 13	0.00	0.00	0.001	9 13	0.00	0.00	0.00
WCAR 64	7 14	0.00	0.00	0.001	8 14	0.00	0.00	0.001	9 14	0.00	0.00	0.00
WCAR 64	7 15	0.00	0.00	0.001	8 15	0.00	0.00	0.001	9 15	0.00	0.00	0.00
WCAR 64	7 16	0.00	0.00	0.001	8 16	0.00	0.00	0.001	9 16	0.00	0.00	0.00
WCAR 64	7 17	0.00	0.00	0.001	8 17	0.00	0.00	0.001	9 17	.10	0.00	0.00
WCAR 64	7 18	0.00	0.00	0.001	8 18	0.00	0.00	0.001	9 18	.60	0.00	0.00
WCAR 64	7 19	0.00	0.00	0.001	8 19	0.00	0.00	0.001	9 19	.60	0.00	0.00
WCAR 64	7 20	0.00	0.00	0.001	8 20	0.00	0.00	0.001	9 20	.60	0.00	0.00
WCAR 64	7 21	0.00	0.00	0.001	8 21	0.00	0.00	0.001	9 21	.90	0.00	0.00
WCAR 64	7 22	0.00	0.00	0.001	8 22	0.00	0.00	0.001	9 22	.90	0.00	0.00
WCAR 64	7 23	0.00	0.00	0.001	8 23	0.00	0.00	0.001	9 23	.80	0.00	0.00
WCAR 64	7 24	0.00	0.00	0.001	8 24	0.00	0.00	0.001	9 24	.90	0.00	0.00
WCAR 64	7 25	0.00	0.00	0.001	8 25	0.00	0.00	0.001	9 25	.90	0.00	0.00
WCAR 64	7 26	0.00	0.00	0.001	8 26	0.00	0.00	0.001	9 26	1.00	0.00	0.00
WCAR 64	7 27	0.00	0.00	0.001	8 27	0.00	0.00	0.001	9 27	.80	0.00	0.00
WCAR 64	7 28	0.00	0.00	0.001	8 28	0.00	0.00	0.001	9 28	.60	6.00	.01
WCAR 64	7 29	0.00	0.00	0.001	8 29	0.00	0.00	0.001	9 29	.60	0.00	0.00
WCAR 64	7 30	0.00	0.00	0.001	8 30	0.00	0.00	0.001	9 30	.60	0.00	0.00
WCAR 64	7 31	0.00	0.00	0.001	8 31	0.00	0.00	0.001				
MONTHLY TOTALS:		0.00	0.00	0.00		0.00	0.00	0.00		9.90	6.00	.01
AVERAGES:		0.00	0.00	0.00		0.00	0.00	0.00		.33	.20	.00

WATER YEAR STATISTICS ENDING SEP 64

	SUM	AVERAGE	
DISCHARGE VOLUME:	1986.30	5.43	(CFS)
CONCENTRATION:		135.11	(PPM)
SEDIMENT FLOW	7000.47	19.13	(TONS)

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 64	10 1	.50	0.00	0.001	11 1	.10	69.00	.021	12 1	1.50	29.00	.12
WCAR 64	10 2	.30	0.00	0.001	11 2	.10	69.00	.021	12 2	1.20	29.00	.09
WCAR 64	10 3	0.00	0.00	0.001	11 3	.20	69.00	.041	12 3	1.00	29.00	.09
WCAR 64	10 4	0.00	0.00	0.001	11 4	.10	69.00	.021	12 4	.40	29.00	.03
WCAR 64	10 5	.10	0.00	0.001	11 5	.10	69.00	.021	12 5	.10	29.00	.01
WCAR 64	10 6	.10	0.00	0.001	11 6	.10	69.00	.021	12 6	.30	29.00	.02
WCAR 64	10 7	.10	0.00	0.001	11 7	0.00	0.00	0.001	12 7	.30	29.00	.02
WCAR 64	10 8	.20	29.00	.021	11 8	0.00	0.00	0.001	12 8	.10	29.00	.01
WCAR 64	10 9	.30	0.00	0.001	11 9	0.00	0.00	0.001	12 9	0.00	0.00	0.00
WCAR 64	10 10	.20	0.00	0.001	11 10	.10	30.00	.011	12 10	.40	37.00	.04
WCAR 64	10 11	.20	0.00	0.001	11 11	.20	30.00	.021	12 11	.30	37.00	.03
WCAR 64	10 12	.10	0.00	0.001	11 12	.20	30.00	.021	12 12	1.00	37.00	.10
WCAR 64	10 13	.10	0.00	0.001	11 13	.10	30.00	.011	12 13	1.40	37.00	.14
WCAR 64	10 14	0.00	0.00	0.001	11 14	0.00	0.00	0.001	12 14	1.90	37.00	.19
WCAR 64	10 15	0.00	0.00	0.001	11 15	.10	18.00	.001	12 15	3.00	37.00	.30
WCAR 64	10 16	0.00	0.00	0.001	11 16	.10	18.00	.001	12 16	1.00	37.00	.10
WCAR 64	10 17	.20	0.00	0.001	11 17	.10	18.00	.001	12 17	0.00	0.00	0.00
WCAR 64	10 18	.20	0.00	0.001	11 18	.20	18.00	.011	12 18	0.00	0.00	0.00
WCAR 64	10 19	0.00	0.00	0.001	11 19	.30	18.00	.011	12 19	0.00	0.00	0.00
WCAR 64	10 20	0.00	0.00	0.001	11 20	.30	18.00	.011	12 20	0.00	0.00	0.00
WCAR 64	10 21	0.00	0.00	0.001	11 21	.30	18.00	.011	12 21	700.00	40.28	76.00
WCAR 64	10 22	.10	48.00	.011	11 22	.50	18.00	.021	12 22	3240.00	.112E+6	.980E+6
WCAR 64	10 23	.20	48.00	.031	11 23	.50	18.00	.021	12 23	1040.00	23000.00	64430.67
WCAR 64	10 24	.10	48.00	.011	11 24	.50	18.00	.021	12 24	1080.00	24000.00	69972.03
WCAR 64	10 25	.20	48.00	.031	11 25	.40	18.00	.021	12 25	973.00	14000.00	36720.55
WCAR 64	10 26	.20	48.00	.031	11 26	.30	18.00	.011	12 26	750.00	6400.00	12939.26
WCAR 64	10 27	.20	48.00	.031	11 27	.30	18.00	.011	12 27	610.00	4900.00	8057.39
WCAR 64	10 28	.10	48.00	.011	11 28	.50	18.00	.021	12 28	418.00	3600.00	4056.46
WCAR 64	10 29	.10	48.00	.011	11 29	.70	18.00	.031	12 29	252.00	1990.00	1351.33
WCAR 64	10 30	.20	48.00	.031	11 30	1.20	18.00	.061	12 30	280.00	1324.87	1000.00
WCAR 64	10 31	.10	48.00	.011					12 31	280.00	794.92	600.00
MONTHLY TOTALS:		4.10	509.00	.21		7.60	822.00	.48		9636.90	192746.20	1179155.47
AVERAGES:		.13	16.42	.01		.25	27.40	.02		310.87	6217.62	38037.27

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 65	1 1	350.00	411.00	332.38)	2 1	720.00	6050.00	11742.38)	3 1	106.00	332.00	94.87
WCAR 65	1 2	340.00	494.62	400.00)	2 2	500.00	3500.00	4717.44)	3 2	96.00	207.00	53.57
WCAR 65	1 3	290.00	797.57	430.00)	2 3	380.00	2200.00	2253.59)	3 3	86.00	150.00	34.77
WCAR 65	1 4	170.00	1003.78	460.00)	2 4	300.00	1500.00	1213.06)	3 4	70.00	213.00	40.19
WCAR 65	1 5	140.00	1245.38	470.00)	2 5	254.00	1150.00	787.41)	3 5	70.00	237.00	44.72
WCAR 65	1 6	120.00	1520.00	491.69)	2 6	230.00	725.80	450.00)	3 6	61.00	69.00	11.35
WCAR 65	1 7	130.00	2100.00	735.92)	2 7	212.00	440.00	251.45)	3 7	68.00	69.00	12.65
WCAR 65	1 8	100.00	3300.00	889.57)	2 8	172.00	423.00	196.13)	3 8	45.00	69.00	8.37
WCAR 65	1 9	90.00	400.00	97.04)	2 9	147.00	303.00	120.07)	3 9	44.00	69.00	8.18
WCAR 65	1 10	80.00	330.00	71.17)	2 10	134.00	182.00	65.74)	3 10	36.00	69.00	6.70
WCAR 65	1 11	85.00	610.00	139.77)	2 11	125.00	172.00	57.96)	3 11	34.00	69.00	6.32
WCAR 65	1 12	85.00	450.00	103.11)	2 12	125.00	170.00	57.28)	3 12	30.00	69.00	5.58
WCAR 65	1 13	85.00	370.00	84.78)	2 13	125.00	162.00	54.59)	3 13	31.00	69.00	5.77
WCAR 65	1 14	87.00	4700.00	1102.26)	2 14	129.00	180.00	62.59)	3 14	30.00	69.00	5.58
WCAR 65	1 15	162.00	2700.00	1179.09)	2 15	129.00	260.00	90.41)	3 15	30.00	69.00	5.58
WCAR 65	1 16	147.00	2450.00	970.85)	2 16	127.00	211.00	72.24)	3 16	21.00	12.00	.68
WCAR 65	1 17	121.00	905.00	295.19)	2 17	125.00	300.00	101.09)	3 17	16.00	12.00	.52
WCAR 65	1 18	114.00	804.00	247.08)	2 18	147.00	320.00	126.80)	3 18	18.00	12.00	.58
WCAR 65	1 19	112.00	600.00	181.15)	2 19	147.00	299.00	118.48)	3 19	19.00	12.00	.61
WCAR 65	1 20	104.00	500.00	140.18)	2 20	147.00	173.00	68.55)	3 20	25.00	13.35	.90
WCAR 65	1 21	230.00	21000.00	13020.13)	2 21	147.00	146.00	57.85)	3 21	26.00	14.27	1.00
WCAR 65	1 22	200.00	22000.00	11860.99)	2 22	147.00	129.00	51.12)	3 22	26.00	14.27	1.00
WCAR 65	1 23	160.00	5050.00	2178.11)	2 23	134.00	178.00	64.30)	3 23	26.00	14.27	1.00
WCAR 65	1 24	592.00	25000.00	39396.06)	2 24	129.00	186.00	64.68)	3 24	24.00	13.91	.90
WCAR 65	1 25	360.00	5650.00	5483.01)	2 25	110.00	180.00	53.37)	3 25	22.00	13.49	.80
WCAR 65	1 26	300.00	3900.00	3153.95)	2 26	92.00	304.00	75.39)	3 26	24.00	13.91	.90
WCAR 65	1 27	570.00	30000.00	46096.13)	2 27	92.00	318.00	78.86)	3 27	30.00	16.08	1.30
WCAR 65	1 28	564.00	18700.00	28632.43)	2 28	106.00	248.00	70.86)	3 28	30.00	16.08	1.30
WCAR 65	1 29	992.00	13800.00	36902.78)					3 29	29.00	16.00	1.25
WCAR 65	1 30	1650.00	24000.00	106749.93)					3 30	34.00	12.00	1.10
WCAR 65	1 31	1100.00	15000.00	44478.72)					3 31	40.00	8.00	.86
MONTHLY TOTALS:		9454.00	209791.35	347272.48		5332.00	20409.80	23123.71		1247.00	2042.62	358.91
AVERAGES:		304.97	6767.46	11202.34		190.43	728.92	825.85		40.23	65.89	11.58

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 65	4 1	46.00	32.00	3.97)	5 1	75.00	84.00	16.98)	6 1	13.00	47.00	1.65
WCAR 65	4 2	55.00	39.00	5.78)	5 2	76.00	69.00	14.14)	6 2	11.00	47.00	1.39
WCAR 65	4 3	55.00	30.00	4.45)	5 3	72.00	53.00	10.29)	6 3	7.80	47.00	.99
WCAR 65	4 4	55.00	35.00	5.19)	5 4	54.00	45.00	6.55)	6 4	6.10	47.00	.77
WCAR 65	4 5	55.00	30.00	4.45)	5 5	50.00	25.00	3.37)	6 5	5.60	47.00	.71
WCAR 65	4 6	52.00	32.00	4.49)	5 6	49.00	20.00	2.64)	6 6	5.60	47.00	.71
WCAR 65	4 7	45.00	19.00	2.30)	5 7	43.00	17.00	1.97)	6 7	6.10	47.00	.77
WCAR 65	4 8	34.00	8.00	.73)	5 8	30.00	16.00	1.29)	6 8	4.60	47.00	.59
WCAR 65	4 9	29.00	13.00	1.02)	5 9	25.00	15.00	1.01)	6 9	4.20	47.00	.53
WCAR 65	4 10	32.00	22.00	1.90)	5 10	21.00	57.00	3.23)	6 10	3.70	47.00	.47
WCAR 65	4 11	35.00	14.00	1.32)	5 11	14.00	28.00	1.06)	6 11	3.70	47.00	.47
WCAR 65	4 12	33.00	12.00	1.07)	5 12	10.00	16.00	.43)	6 12	3.70	47.00	.47
WCAR 65	4 13	28.00	8.00	.60)	5 13	9.50	16.00	.41)	6 13	3.70	47.00	.47
WCAR 65	4 14	24.00	4.00	.26)	5 14	9.00	16.00	.39)	6 14	5.10	47.00	.65
WCAR 65	4 15	23.00	11.00	.68)	5 15	9.50	16.00	.41)	6 15	3.70	47.00	.47
WCAR 65	4 16	29.00	12.00	.94)	5 16	10.00	16.00	.43)	6 16	3.30	47.00	.42
WCAR 65	4 17	41.00	33.00	3.65)	5 17	11.00	16.00	.47)	6 17	4.20	47.00	.53
WCAR 65	4 18	50.00	23.00	3.10)	5 18	8.30	16.00	.36)	6 18	9.00	152.51	3.70
WCAR 65	4 19	54.00	38.00	5.53)	5 19	7.80	48.00	1.01)	6 19	32.00	80.00	6.90
WCAR 65	4 20	57.00	40.00	6.15)	5 20	10.00	38.00	1.02)	6 20	29.00	62.00	4.85
WCAR 65	4 21	121.00	1400.00	456.65)	5 21	13.00	36.00	1.26)	6 21	24.00	34.00	2.20
WCAR 65	4 22	140.00	1280.00	483.07)	5 22	17.00	35.00	1.60)	6 22	21.00	26.00	1.47
WCAR 65	4 23	129.00	690.00	239.94)	5 23	18.00	35.00	1.70)	6 23	14.00	43.00	1.62
WCAR 65	4 24	112.00	386.00	116.54)	5 24	21.00	35.00	1.98)	6 24	9.00	45.34	1.10
WCAR 65	4 25	104.00	287.00	80.46)	5 25	20.00	35.00	1.89)	6 25	5.60	46.00	.69
WCAR 65	4 26	96.00	235.00	60.81)	5 26	19.00	35.00	1.79)	6 26	4.20	26.50	.30
WCAR 65	4 27	84.00	174.00	39.40)	5 27	17.00	35.00	1.60)	6 27	3.70	16.00	.16
WCAR 65	4 28	78.00	129.00	26.91)	5 28	20.00	35.00	1.89)	6 28	3.30	22.48	.20
WCAR 65	4 29	76.00	135.00	27.66)	5 29	16.00	35.00	1.51)	6 29	1.10	22.00	.07
WCAR 65	4 30	76.00	190.00	38.93)	5 30	15.00	35.00	1.42)	6 30	.80	46.37	.10
WCAR 65					5 31	16.00	35.00	1.51)				
MONTHLY TOTALS:		1848.00	5360.00	1627.94		786.10	1013.00	85.61		251.80	1421.20	35.41
AVERAGES:		61.60	178.67	54.26		25.36	32.68	2.76		8.39	47.37	1.18

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 65	7 1	.40	33.00	.04]	8 1	0.00	0.00	0.00]	9 1	4.20	677.00	7.66
WCAR 65	7 2	.30	33.00	.03]	8 2	0.00	0.00	0.00]	9 2	4.20	570.00	6.45
WCAR 65	7 3	2.00	33.00	.18]	8 3	0.00	0.00	0.00]	9 3	4.20	378.00	4.28
WCAR 65	7 4	3.70	33.00	.33]	8 4	0.00	0.00	0.00]	9 4	3.70	224.00	2.23
WCAR 65	7 5	3.30	33.00	.29]	8 5	0.00	0.00	0.00]	9 5	3.70	186.00	1.86
WCAR 65	7 6	1.10	33.00	.10]	8 6	0.00	0.00	0.00]	9 6	3.70	153.00	1.53
WCAR 65	7 7	3.30	33.00	.29]	8 7	0.00	0.00	0.00]	9 7	2.90	136.00	1.06
WCAR 65	7 8	2.90	33.00	.26]	8 8	0.00	0.00	0.00]	9 8	2.90	88.00	.69
WCAR 65	7 9	3.30	33.00	.29]	8 9	0.00	0.00	0.00]	9 9	2.50	73.00	.49
WCAR 65	7 10	2.10	33.00	.19]	8 10	0.00	0.00	0.00]	9 10	2.50	59.35	.40
WCAR 65	7 11	1.00	33.00	.09]	8 11	0.00	0.00	0.00]	9 11	2.50	35.00	.24
WCAR 65	7 12	1.00	33.00	.09]	8 12	0.00	0.00	0.00]	9 12	2.50	35.00	.24
WCAR 65	7 13	1.80	33.00	.16]	8 13	0.00	0.00	0.00]	9 13	2.50	35.00	.24
WCAR 65	7 14	0.00	0.00	0.00]	8 14	0.00	0.00	0.00]	9 14	2.50	35.00	.24
WCAR 65	7 15	0.00	0.00	0.00]	8 15	0.00	0.00	0.00]	9 15	2.90	35.00	.27
WCAR 65	7 16	0.00	0.00	0.00]	8 16	0.00	0.00	0.00]	9 16	3.30	65.00	.58
WCAR 65	7 17	0.00	0.00	0.00]	8 17	0.00	0.00	0.00]	9 17	3.30	65.00	.58
WCAR 65	7 18	0.00	0.00	0.00]	8 18	0.00	0.00	0.00]	9 18	3.30	65.00	.58
WCAR 65	7 19	0.00	0.00	0.00]	8 19	0.00	0.00	0.00]	9 19	3.30	65.00	.58
WCAR 65	7 20	0.00	0.00	0.00]	8 20	0.00	0.00	0.00]	9 20	3.30	65.00	.58
WCAR 65	7 21	0.00	0.00	0.00]	8 21	0.00	0.00	0.00]	9 21	3.30	65.00	.58
WCAR 65	7 22	0.00	0.00	0.00]	8 22	14.00	.257E+6	.970E+4]	9 22	3.30	65.00	.58
WCAR 65	7 23	0.00	0.00	0.00]	8 23	269.00	67000.00	48584.24]	9 23	3.30	65.00	.58
WCAR 65	7 24	0.00	0.00	0.00]	8 24	19.00	15500.00	793.88]	9 24	2.90	65.00	.51
WCAR 65	7 25	0.00	0.00	0.00]	8 25	10.00	6350.00	171.18]	9 25	2.90	65.00	.51
WCAR 65	7 26	0.00	0.00	0.00]	8 26	14.00	2600.00	98.12]	9 26	2.90	65.00	.51
WCAR 65	7 27	26.00	65600.00	4597.75]	8 27	11.00	3440.00	102.00]	9 27	2.90	65.00	.51
WCAR 65	7 28	4.60	2670.00	33.11]	8 28	9.50	2150.00	55.06]	9 28	2.90	65.00	.51
WCAR 65	7 29	.50	562.00	.76]	8 29	7.80	1200.00	25.23]	9 29	4.60	65.00	.81
WCAR 65	7 30	.10	168.00	.05]	8 30	6.60	703.00	12.51]	9 30	5.10	65.00	.89
WCAR 65	7 31	0.00	0.00	0.00]	8 31	5.10	611.00	8.40]				
MONTHLY TOTALS:		57.40	69429.00	4633.99		366.00	356579.00	59550.62		98.00	3694.35	36.74
AVERAGES:		1.85	2239.65	149.48		11.81	11502.55	1920.99		3.27	123.15	1.22

WATER YEAR STATISTICS ENDING SEP 65

	SUM	AVERAGE	
DISCHARGE VOLUME:	29088.90	79.70	(CFS)
CONCENTRATION:		2366.62	(PPM)
SEDIMENT FLOW	1615881.57	4427.07	(TONS)

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 65	10 1	5.10	37.00	.51)	11 1	2.30	37.00	.23)	12 1	10.00	38.00	1.02
WCAR 65	10 2	5.10	37.00	.51)	11 2	2.30	37.00	.23)	12 2	12.00	230.00	7.44
WCAR 65	10 3	5.10	37.00	.51)	11 3	.70	37.00	.07)	12 3	13.00	180.00	6.31
WCAR 65	10 4	5.10	37.00	.51)	11 4	1.20	37.00	.12)	12 4	13.00	154.00	5.40
WCAR 65	10 5	5.10	37.00	.51)	11 5	.80	37.00	.08)	12 5	14.00	48.00	1.81
WCAR 65	10 6	5.10	37.00	.51)	11 6	1.00	37.00	.10)	12 6	14.00	46.00	1.74
WCAR 65	10 7	5.10	37.00	.51)	11 7	1.40	37.00	.14)	12 7	14.00	35.00	1.32
WCAR 65	10 8	5.10	37.00	.51)	11 8	1.40	37.00	.14)	12 8	15.00	35.00	1.42
WCAR 65	10 9	4.60	37.00	.46)	11 9	2.10	37.00	.21)	12 9	14.00	35.00	1.32
WCAR 65	10 10	4.60	37.00	.46)	11 10	2.10	37.00	.21)	12 10	13.00	35.00	1.23
WCAR 65	10 11	3.70	37.00	.37)	11 11	1.80	37.00	.18)	12 11	13.00	35.00	1.23
WCAR 65	10 12	1.80	37.00	.18)	11 12	2.10	37.00	.21)	12 12	13.00	35.00	1.23
WCAR 65	10 13	2.20	37.00	.22)	11 13	2.30	37.00	.23)	12 13	13.00	35.00	1.23
WCAR 65	10 14	1.80	37.00	.18)	11 14	8.50	92.00	2.11)	12 14	10.00	35.00	.94
WCAR 65	10 15	1.60	37.00	.16)	11 15	5.40	63.00	.92)	12 15	8.00	35.00	.75
WCAR 65	10 16	1.50	37.00	.15)	11 16	3.70	73.00	.73)	12 16	9.00	35.00	.85
WCAR 65	10 17	1.50	37.00	.15)	11 17	3.70	174.00	1.74)	12 17	9.70	35.00	.92
WCAR 65	10 18	1.50	37.00	.15)	11 18	4.50	140.00	1.70)	12 18	10.00	35.00	.94
WCAR 65	10 19	1.40	37.00	.14)	11 19	5.40	86.00	1.25)	12 19	7.90	35.00	.75
WCAR 65	10 20	1.50	37.00	.15)	11 20	5.40	77.00	1.12)	12 20	9.70	35.00	.92
WCAR 65	10 21	1.40	37.00	.14)	11 21	6.20	88.00	1.47)	12 21	13.00	35.00	1.23
WCAR 65	10 22	1.50	37.00	.15)	11 22	6.20	33.00	.55)	12 22	12.00	35.00	1.13
WCAR 65	10 23	1.20	37.00	.12)	11 23	7.30	33.00	.65)	12 23	7.30	35.00	.69
WCAR 65	10 24	1.20	37.00	.12)	11 24	7.90	37.00	.79)	12 24	9.50	35.00	.90
WCAR 65	10 25	1.20	37.00	.12)	11 25	9.10	35.00	.86)	12 25	9.00	35.00	.85
WCAR 65	10 26	1.60	37.00	.16)	11 26	8.50	64.00	1.47)	12 26	10.00	35.00	.94
WCAR 65	10 27	1.70	37.00	.17)	11 27	9.70	97.00	2.54)	12 27	11.00	35.00	1.04
WCAR 65	10 28	1.50	37.00	.15)	11 28	9.10	73.00	1.79)	12 28	12.00	35.00	1.13
WCAR 65	10 29	1.50	37.00	.15)	11 29	9.10	37.00	.91)	12 29	12.00	35.00	1.13
WCAR 65	10 30	2.40	37.00	.24)	11 30	9.70	36.00	.94)	12 30	11.00	35.00	1.04
WCAR 65	10 31	2.10	37.00	.21)					12 31	10.00	35.00	.94
MONTHLY TOTALS:		85.80	1147.00	8.56		140.90	1719.00	23.66		352.10	1571.00	49.77
AVERAGES:		2.77	37.00	.28		4.70	57.30	.79		11.36	50.68	1.61

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 66	1 1	11.00	35.00	1.04)	2 1	11.00	40.00	1.19)	3 1	2.60	25.00	.18
WCAR 66	1 2	8.50	35.00	.80)	2 2	9.10	39.00	.96)	3 2	3.40	31.00	.28
WCAR 66	1 3	11.00	55.00	1.63)	2 3	8.50	31.00	.71)	3 3	2.30	33.00	.20
WCAR 66	1 4	16.00	102.00	4.40)	2 4	8.50	36.00	.82)	3 4	.90	31.00	.08
WCAR 66	1 5	15.00	116.00	4.69)	2 5	3.10	33.00	.28)	3 5	0.00	0.00	0.00
WCAR 66	1 6	17.00	103.00	4.72)	2 6	3.40	33.00	.30)	3 6	.10	4.00	.00
WCAR 66	1 7	21.00	121.00	6.85)	2 7	4.10	33.00	.36)	3 7	.70	24.00	.05
WCAR 66	1 8	24.00	160.00	10.35)	2 8	4.10	33.00	.36)	3 8	1.40	25.00	.09
WCAR 66	1 9	23.00	206.00	12.77)	2 9	3.70	33.00	.33)	3 9	1.40	26.00	.10
WCAR 66	1 10	23.00	240.00	14.88)	2 10	3.40	33.00	.30)	3 10	6.70	92.00	1.66
WCAR 66	1 11	21.00	216.00	12.23)	2 11	3.70	33.00	.33)	3 11	7.90	229.00	4.88
WCAR 66	1 12	20.00	218.00	11.75)	2 12	2.30	19.00	.12)	3 12	5.80	184.00	2.88
WCAR 66	1 13	20.00	238.00	12.83)	2 13	0.00	0.00	0.00)	3 13	2.60	97.00	.69
WCAR 66	1 14	19.00	113.00	5.79)	2 14	0.00	0.00	0.00)	3 14	14.00	200.00	7.55
WCAR 66	1 15	18.00	128.00	6.21)	2 15	0.00	0.00	0.00)	3 15	24.00	324.00	20.96
WCAR 66	1 16	17.00	120.00	5.50)	2 16	0.00	0.00	0.00)	3 16	20.00	208.00	11.21
WCAR 66	1 17	16.00	97.00	4.18)	2 17	0.00	0.00	0.00)	3 17	17.00	115.00	5.27
WCAR 66	1 18	18.00	97.00	4.71)	2 18	0.00	0.00	0.00)	3 18	12.00	68.00	2.20
WCAR 66	1 19	18.00	132.00	6.40)	2 19	.10	12.00	.00)	3 19	12.00	47.00	1.52
WCAR 66	1 20	17.00	109.00	5.00)	2 20	.10	1.90	.00)	3 20	13.00	45.00	1.58
WCAR 66	1 21	16.00	164.00	7.07)	2 21	.60	28.00	.05)	3 21	10.00	46.00	1.24
WCAR 66	1 22	17.00	320.00	14.66)	2 22	.50	38.00	.05)	3 22	6.20	33.00	.55
WCAR 66	1 23	18.00	132.00	6.40)	2 23	.90	35.00	.08)	3 23	5.80	31.00	.48
WCAR 66	1 24	19.00	65.00	3.33)	2 24	.50	16.00	.02)	3 24	6.70	49.00	.88
WCAR 66	1 25	17.00	108.00	4.95)	2 25	.20	9.00	.00)	3 25	7.30	43.00	.85
WCAR 66	1 26	19.00	68.00	3.48)	2 26	.50	25.00	.03)	3 26	6.20	34.00	.57
WCAR 66	1 27	19.00	50.00	2.56)	2 27	.30	31.00	.03)	3 27	3.10	27.00	.23
WCAR 66	1 28	19.00	62.00	3.18)	2 28	.10	26.00	.01)	3 28	2.80	27.00	.20
WCAR 66	1 29	19.00	64.00	3.28)					3 29	2.80	27.00	.20
WCAR 66	1 30	18.00	47.00	2.28)					3 30	5.80	27.00	.42
WCAR 66	1 31	15.00	42.00	1.70)					3 31	3.10	27.00	.23
MONTHLY TOTALS:		549.50	3763.00	189.63		68.70	617.90	6.34		207.60	2179.00	67.22
AVERAGES:		17.73	121.39	6.12		2.45	22.07	.23		6.70	70.29	2.17

STATION ^ YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 66	4 1	3.40	27.00	.25)	5 1	.90	42.00	.10)	6 1	.40	39.00	.04
WCAR 66	4 2	5.80	27.00	.42)	5 2	.40	28.00	.03)	6 2	1.20	36.00	.12
WCAR 66	4 3	4.10	27.00	.30)	5 3	.60	39.00	.06)	6 3	.40	18.00	.02
WCAR 66	4 4	3.40	27.00	.25)	5 4	1.00	27.00	.07)	6 4	0.00	0.00	0.00
WCAR 66	4 5	2.80	27.00	.20)	5 5	2.30	25.00	.16)	6 5	0.00	0.00	0.00
WCAR 66	4 6	3.40	27.00	.25)	5 6	1.80	18.00	.09)	6 6	.70	30.00	.06
WCAR 66	4 7	2.80	27.00	.20)	5 7	.90	18.00	.04)	6 7	.60	40.00	.06
WCAR 66	4 8	1.20	27.00	.09)	5 8	.70	19.00	.04)	6 8	.20	17.00	.01
WCAR 66	4 9	3.40	27.00	.25)	5 9	1.20	12.00	.04)	6 9	0.00	0.00	0.00
WCAR 66	4 10	4.50	27.00	.33)	5 10	.40	24.00	.03)	6 10	0.00	0.00	0.00
WCAR 66	4 11	2.60	27.00	.19)	5 11	0.00	0.00	0.00)	6 11	0.00	0.00	0.00
WCAR 66	4 12	1.40	60.00	.23)	5 12	0.00	0.00	0.00)	6 12	.10	18.00	.00
WCAR 66	4 13	1.20	69.00	.22)	5 13	0.00	0.00	0.00)	6 13	0.00	0.00	0.00
WCAR 66	4 14	1.20	29.00	.09)	5 14	0.00	0.00	0.00)	6 14	0.00	0.00	0.00
WCAR 66	4 15	1.40	18.00	.07)	5 15	0.00	0.00	0.00)	6 15	0.00	0.00	0.00
WCAR 66	4 16	3.40	21.00	.19)	5 16	0.00	0.00	0.00)	6 16	0.00	0.00	0.00
WCAR 66	4 17	3.70	22.00	.22)	5 17	.20	7.00	.00)	6 17	0.00	0.00	0.00
WCAR 66	4 18	2.10	19.00	.11)	5 18	.50	22.00	.03)	6 18	0.00	0.00	0.00
WCAR 66	4 19	1.60	28.00	.12)	5 19	.60	20.00	.03)	6 19	0.00	0.00	0.00
WCAR 66	4 20	1.20	32.00	.10)	5 20	.50	50.00	.07)	6 20	0.00	0.00	0.00
WCAR 66	4 21	2.10	30.00	.17)	5 21	.10	25.00	.01)	6 21	0.00	0.00	0.00
WCAR 66	4 22	1.60	45.00	.19)	5 22	0.00	0.00	0.00)	6 22	0.00	0.00	0.00
WCAR 66	4 23	.10	21.00	.01)	5 23	0.00	0.00	0.00)	6 23	0.00	0.00	0.00
WCAR 66	4 24	.10	36.00	.01)	5 24	0.00	0.00	0.00)	6 24	0.00	0.00	0.00
WCAR 66	4 25	1.40	59.00	.22)	5 25	0.00	0.00	0.00)	6 25	0.00	0.00	0.00
WCAR 66	4 26	0.00	0.00	0.00)	5 26	0.00	0.00	0.00)	6 26	0.00	0.00	0.00
WCAR 66	4 27	0.00	0.00	0.00)	5 27	0.00	0.00	0.00)	6 27	0.00	0.00	0.00
WCAR 66	4 28	0.00	0.00	0.00)	5 28	0.00	0.00	0.00)	6 28	0.00	0.00	0.00
WCAR 66	4 29	0.00	0.00	0.00)	5 29	0.00	0.00	0.00)	6 29	0.00	0.00	0.00
WCAR 66	4 30	.60	49.00	.08)	5 30	0.00	0.00	0.00)	6 30	0.00	0.00	0.00
WCAR 66					5 31	.20	15.00	.01)				
MONTHLY TOTALS:		60.50	935.00	4.76		12.30	391.00	.80		3.60	198.00	.31
AVERAGES:		2.02	27.83	.16		.40	12.61	.03		.12	6.60	.01

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 66	7 1	0.00	0.00	0.00]	8 1	.30	59.00	.05]	9 1	0.00	0.00	0.00
WCAR 66	7 2	.40	12.00	.01]	8 2	.20	55.00	.03]	9 2	0.00	0.00	0.00
WCAR 66	7 3	.20	12.00	.01]	8 3	.10	60.00	.02]	9 3	0.00	0.00	0.00
WCAR 66	7 4	0.00	0.00	0.00]	8 4	0.00	0.00	0.00]	9 4	0.00	0.00	0.00
WCAR 66	7 5	.90	81.00	.20]	8 5	0.00	0.00	0.00]	9 5	0.00	0.00	0.00
WCAR 66	7 6	1.60	54.00	.23]	8 6	0.00	0.00	0.00]	9 6	0.00	0.00	0.00
WCAR 66	7 7	2.80	32.00	.24]	8 7	0.00	0.00	0.00]	9 7	0.00	0.00	0.00
WCAR 66	7 8	2.10	18.00	.10]	8 8	0.00	0.00	0.00]	9 8	0.00	0.00	0.00
WCAR 66	7 9	1.60	30.00	.13]	8 9	0.00	0.00	0.00]	9 9	0.00	0.00	0.00
WCAR 66	7 10	1.20	20.00	.06]	8 10	0.00	0.00	0.00]	9 10	0.00	0.00	0.00
WCAR 66	7 11	1.80	10.00	.05]	8 11	0.00	0.00	0.00]	9 11	0.00	0.00	0.00
WCAR 66	7 12	2.10	12.00	.07]	8 12	0.00	0.00	0.00]	9 12	0.00	0.00	0.00
WCAR 66	7 13	1.60	20.00	.09]	8 13	0.00	0.00	0.00]	9 13	0.00	0.00	0.00
WCAR 66	7 14	16.00	4600.00	198.40]	8 14	0.00	0.00	0.00]	9 14	0.00	0.00	0.00
WCAR 66	7 15	30.00	30000.00	2426.11]	8 15	0.00	0.00	0.00]	9 15	0.00	0.00	0.00
WCAR 66	7 16	2.80	4500.00	33.97]	8 16	0.00	0.00	0.00]	9 16	0.00	0.00	0.00
WCAR 66	7 17	1.80	1850.00	8.98]	8 17	0.00	0.00	0.00]	9 17	0.00	0.00	0.00
WCAR 66	7 18	1.00	1300.00	3.50]	8 18	0.00	0.00	0.00]	9 18	0.00	0.00	0.00
WCAR 66	7 19	.90	900.00	2.18]	8 19	0.00	0.00	0.00]	9 19	0.00	0.00	0.00
WCAR 66	7 20	.70	580.00	1.09]	8 20	0.00	0.00	0.00]	9 20	0.00	0.00	0.00
WCAR 66	7 21	.70	470.00	.89]	8 21	0.00	0.00	0.00]	9 21	0.00	0.00	0.00
WCAR 66	7 22	.70	396.00	.75]	8 22	0.00	0.00	0.00]	9 22	0.00	0.00	0.00
WCAR 66	7 23	.60	336.00	.54]	8 23	0.00	0.00	0.00]	9 23	0.00	0.00	0.00
WCAR 66	7 24	.60	320.00	.52]	8 24	0.00	0.00	0.00]	9 24	0.00	0.00	0.00
WCAR 66	7 25	.50	227.00	.31]	8 25	0.00	0.00	0.00]	9 25	0.00	0.00	0.00
WCAR 66	7 26	.60	150.00	.24]	8 26	0.00	0.00	0.00]	9 26	0.00	0.00	0.00
WCAR 66	7 27	.90	81.00	.20]	8 27	0.00	0.00	0.00]	9 27	0.00	0.00	0.00
WCAR 66	7 28	.70	63.00	.12]	8 28	0.00	0.00	0.00]	9 28	0.00	0.00	0.00
WCAR 66	7 29	.60	74.00	.12]	8 29	0.00	0.00	0.00]	9 29	0.00	0.00	0.00
WCAR 66	7 30	.50	92.00	.12]	8 30	0.00	0.00	0.00]	9 30	0.00	0.00	0.00
WCAR 66	7 31	.40	83.00	.09]	8 31	0.00	0.00	0.00]				
MONTHLY TOTALS:		75.30	46323.00	2679.32		.60	174.00	.09		0.00	0.00	0.00
AVERAGES:		2.46	1494.29	86.43		.02	5.61	.00		0.00	0.00	0.00

WATER YEAR STATISTICS ENDING SEP 66

	SUM	AVERAGE	
DISCHARGE VOLUME:	1557.90	4.27	(CFS)
CONCENTRATION:		161.42	(PPM)
SEDIMENT FLOW	3030.47	8.30	(TONS)

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 66	10 1	0.00	0.00	0.00]	11 1	0.00	0.00	0.00]	12 1	3.40	40.00	.37
WCAR 66	10 2	0.00	0.00	0.00]	11 2	.13	11.00	.00]	12 2	2.30	34.00	.21
WCAR 66	10 3	0.00	0.00	0.00]	11 3	.05	26.00	.00]	12 3	4.50	34.00	.41
WCAR 66	10 4	0.00	0.00	0.00]	11 4	0.00	0.00	0.00]	12 4	11.00	93.00	2.76
WCAR 66	10 5	0.00	0.00	0.00]	11 5	.03	42.00	.00]	12 5	24.00	1260.00	81.32
WCAR 66	10 6	0.00	0.00	0.00]	11 6	.47	41.00	.05]	12 6	22.00	288.00	17.08
WCAR 66	10 7	0.00	0.00	0.00]	11 7	.31	41.00	.03]	12 7	23.00	430.00	26.66
WCAR 66	10 8	0.00	0.00	0.00]	11 8	.47	41.00	.05]	12 8	23.00	138.00	8.56
WCAR 66	10 9	0.00	0.00	0.00]	11 9	.86	41.00	.10]	12 9	19.00	90.00	4.61
WCAR 66	10 10	0.00	0.00	0.00]	11 10	.31	41.00	.03]	12 10	21.00	77.00	4.36
WCAR 66	10 11	0.00	0.00	0.00]	11 11	.47	41.00	.05]	12 11	21.00	77.00	4.36
WCAR 66	10 12	0.00	0.00	0.00]	11 12	.74	41.00	.08]	12 12	67.00	616.00	111.25
WCAR 66	10 13	0.00	0.00	0.00]	11 13	.86	41.00	.10]	12 13	85.00	810.00	185.60
WCAR 66	10 14	0.00	0.00	0.00]	11 14	2.10	28.00	.16]	12 14	122.00	1550.00	509.75
WCAR 66	10 15	0.00	0.00	0.00]	11 15	2.80	28.00	.21]	12 15	98.00	810.00	213.98
WCAR 66	10 16	0.00	0.00	0.00]	11 16	2.80	28.00	.21]	12 16	75.00	360.80	72.95
WCAR 66	10 17	0.00	0.00	0.00]	11 17	1.80	28.00	.14]	12 17	56.00	248.00	37.44
WCAR 66	10 18	0.00	0.00	0.00]	11 18	1.40	28.00	.11]	12 18	45.00	187.00	22.68
WCAR 66	10 19	0.00	0.00	0.00]	11 19	1.80	28.00	.14]	12 19	41.00	123.00	13.59
WCAR 66	10 20	0.00	0.00	0.00]	11 20	4.10	409.00	4.52]	12 20	34.00	92.00	8.43
WCAR 66	10 21	0.00	0.00	0.00]	11 21	48.00	3200.00	414.06]	12 21	36.00	84.00	8.15
WCAR 66	10 22	0.00	0.00	0.00]	11 22	39.00	1550.00	162.95]	12 22	36.00	74.00	7.18
WCAR 66	10 23	0.00	0.00	0.00]	11 23	22.00	240.00	14.23]	12 23	33.00	54.00	4.80
WCAR 66	10 24	0.00	0.00	0.00]	11 24	14.00	205.00	7.74]	12 24	32.00	55.00	4.74
WCAR 66	10 25	0.00	0.00	0.00]	11 25	11.00	97.00	2.88]	12 25	29.00	43.49	3.40
WCAR 66	10 26	0.00	0.00	0.00]	11 26	8.50	70.00	1.60]	12 26	29.00	38.00	2.97
WCAR 66	10 27	0.00	0.00	0.00]	11 27	11.00	62.00	1.84]	12 27	28.00	36.00	2.72
WCAR 66	10 28	0.00	0.00	0.00]	11 28	9.10	42.00	1.03]	12 28	26.00	34.00	2.38
WCAR 66	10 29	0.00	0.00	0.00]	11 29	7.30	44.00	.87]	12 29	27.00	41.00	2.98
WCAR 66	10 30	0.00	0.00	0.00]	11 30	3.10	35.00	.29]	12 30	28.00	45.00	3.40
WCAR 66	10 31	0.00	0.00	0.00]					12 31	27.00	52.00	3.78
MONTHLY TOTALS:		0.00	0.00	0.00		194.50	6529.00	613.47		1128.20	7914.29	1373.09
AVERAGES:		0.00	0.00	0.00		6.48	217.63	20.45		36.39	255.30	44.29

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 67	1 1	23.00	145.00	9.99)	2 1	93.00	690.00	172.98)	3 1	3.70	22.00	.22
WCAR 67	1 2	22.00	75.88	4.50)	2 2	78.00	580.00	121.95)	3 2	4.50	22.00	.27
WCAR 67	1 3	21.00	40.00	2.26)	2 3	56.00	350.00	52.84)	3 3	4.50	22.00	.27
WCAR 67	1 4	23.00	67.00	4.15)	2 4	42.00	252.00	28.53)	3 4	3.40	22.00	.20
WCAR 67	1 5	29.00	110.00	8.60)	2 5	46.00	152.00	18.85)	3 5	3.40	22.00	.20
WCAR 67	1 6	46.00	251.00	31.12)	2 6	38.00	100.00	10.24)	3 6	4.10	22.00	.24
WCAR 67	1 7	42.00	236.00	26.72)	2 7	28.00	75.00	5.66)	3 7	3.40	22.00	.20
WCAR 67	1 8	39.00	94.00	9.88)	2 8	30.00	90.00	7.28)	3 8	3.10	22.00	.18
WCAR 67	1 9	36.00	70.00	6.79)	2 9	19.00	103.00	5.28)	3 9	.86	29.00	.07
WCAR 67	1 10	29.00	55.00	4.30)	2 10	16.00	62.00	2.67)	3 10	1.60	29.00	.13
WCAR 67	1 11	28.00	60.00	4.53)	2 11	6.70	45.00	.81)	3 11	1.60	29.00	.13
WCAR 67	1 12	28.00	58.00	4.38)	2 12	6.20	45.00	.75)	3 12	1.80	29.00	.14
WCAR 67	1 13	30.00	130.00	10.51)	2 13	6.20	45.00	.75)	3 13	2.80	29.00	.22
WCAR 67	1 14	7.90	93.00	1.98)	2 14	7.30	45.00	.89)	3 14	2.10	29.00	.16
WCAR 67	1 15	24.00	130.00	8.41)	2 15	6.20	45.00	.75)	3 15	2.10	29.00	.16
WCAR 67	1 16	66.00	296.00	52.66)	2 16	6.70	45.00	.81)	3 16	1.80	29.00	.14
WCAR 67	1 17	45.00	240.00	29.11)	2 17	6.20	45.00	.75)	3 17	2.80	29.00	.22
WCAR 67	1 18	17.00	140.00	6.42)	2 18	7.30	45.00	.89)	3 18	2.60	29.00	.20
WCAR 67	1 19	4.90	105.00	1.39)	2 19	8.50	45.00	1.03)	3 19	7.30	57.00	1.12
WCAR 67	1 20	6.70	83.00	1.50)	2 20	7.30	45.00	.89)	3 20	12.00	34.00	1.10
WCAR 67	1 21	9.40	50.00	1.27)	2 21	6.20	45.00	.75)	3 21	5.80	24.00	.38
WCAR 67	1 22	6.70	48.00	.87)	2 22	6.20	45.00	.75)	3 22	9.10	42.00	1.03
WCAR 67	1 23	2.80	37.00	.28)	2 23	6.20	45.00	.75)	3 23	17.00	65.00	2.98
WCAR 67	1 24	3.70	40.00	.40)	2 24	6.70	45.00	.81)	3 24	18.00	42.00	2.04
WCAR 67	1 25	2.30	62.00	.38)	2 25	7.30	45.00	.89)	3 25	15.00	44.00	1.78
WCAR 67	1 26	2.60	46.00	.32)	2 26	4.90	22.00	.29)	3 26	14.00	34.00	1.28
WCAR 67	1 27	4.90	31.00	.41)	2 27	5.40	22.00	.32)	3 27	16.00	47.00	2.03
WCAR 67	1 28	28.00	234.00	17.66)	2 28	4.50	22.00	.27)	3 28	15.00	29.00	1.17
WCAR 67	1 29	129.00	3530.00	1227.53)					3 29	12.00	42.00	1.36
WCAR 67	1 30	166.00	3510.00	1570.66)					3 30	13.00	54.00	1.89
WCAR 67	1 31	124.00	1250.00	417.83)					3 31	16.00	41.00	1.77
MONTHLY TOTALS:		1046.90	11316.38	3465.43		562.00	3195.00	439.44		220.36	1021.00	23.28
AVERAGES:		33.77	365.06	111.80		20.07	114.11	15.69		7.11	32.94	.75

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 67	4 1	19.00	50.00	2.56)	5 1	122.00	1110.00	365.05)	6 1	43.00	3400.00	394.11
WCAR 67	4 2	27.00	50.00	3.64)	5 2	180.00	2650.00	1285.84)	6 2	99.00	18900.00	5043.89
WCAR 67	4 3	28.00	25.00	1.89)	5 3	195.00	2550.00	1340.43)	6 3	30.00	11400.00	921.92
WCAR 67	4 4	35.00	58.00	5.47)	5 4	167.00	1460.00	657.26)	6 4	19.00	1120.00	57.36
WCAR 67	4 5	41.00	73.00	8.07)	5 5	144.00	1140.00	442.52)	6 5	9.60	269.00	6.96
WCAR 67	4 6	54.00	183.00	26.64)	5 6	126.00	830.00	281.91)	6 6	6.80	200.00	3.67
WCAR 67	4 7	68.00	252.00	46.19)	5 7	114.00	610.00	187.46)	6 7	5.80	154.00	2.41
WCAR 67	4 8	79.00	421.00	89.66)	5 8	105.00	480.00	135.86)	6 8	6.80	103.00	1.89
WCAR 67	4 9	67.00	466.00	109.29)	5 9	99.00	475.00	126.76)	6 9	7.40	89.00	1.78
WCAR 67	4 10	79.00	285.00	60.69)	5 10	107.00	560.00	161.53)	6 10	5.80	80.00	1.25
WCAR 67	4 11	79.00	263.00	56.01)	5 11	116.00	680.00	212.64)	6 11	4.40	56.00	.66
WCAR 67	4 12	74.00	240.00	47.88)	5 12	103.00	520.00	144.38)	6 12	2.60	47.00	.33
WCAR 67	4 13	63.00	154.00	26.15)	5 13	103.00	495.00	137.44)	6 13	2.60	36.00	.25
WCAR 67	4 14	57.00	131.00	20.13)	5 14	108.00	525.00	152.85)	6 14	3.20	45.00	.39
WCAR 67	4 15	53.00	98.00	14.00)	5 15	90.00	410.00	99.47)	6 15	2.60	36.00	.25
WCAR 67	4 16	56.00	121.00	18.27)	5 16	84.00	446.00	100.99)	6 16	.51	42.00	.06
WCAR 67	4 17	56.00	91.00	13.74)	5 17	82.00	437.00	96.60)	6 17	0.00	0.00	0.00
WCAR 67	4 18	54.00	84.00	12.23)	5 18	85.00	576.00	131.98)	6 18	0.00	0.00	0.00
WCAR 67	4 19	54.00	68.00	9.90)	5 19	75.00	686.00	138.69)	6 19	.41	49.00	.05
WCAR 67	4 20	48.00	67.00	8.67)	5 20	80.00	679.00	146.43)	6 20	.41	40.00	.04
WCAR 67	4 21	45.00	40.00	4.85)	5 21	75.00	597.00	120.70)	6 21	.27	40.00	.03
WCAR 67	4 22	45.00	50.00	6.07)	5 22	70.00	544.00	102.65)	6 22	.46	40.00	.05
WCAR 67	4 23	48.00	48.00	6.21)	5 23	62.00	398.00	66.52)	6 23	.63	40.00	.07
WCAR 67	4 24	46.00	43.00	5.33)	5 24	49.00	256.00	33.81)	6 24	.39	40.00	.04
WCAR 67	4 25	49.00	58.00	7.66)	5 25	42.00	160.00	18.11)	6 25	.45	40.00	.05
WCAR 67	4 26	57.00	62.00	9.53)	5 26	42.00	152.00	17.21)	6 26	.50	40.00	.05
WCAR 67	4 27	73.00	128.00	25.19)	5 27	42.00	130.00	14.72)	6 27	.38	40.00	.04
WCAR 67	4 28	85.00	214.00	49.03)	5 28	38.00	126.00	12.91)	6 28	.33	40.00	.04
WCAR 67	4 29	89.00	340.00	81.57)	5 29	38.00	103.00	10.55)	6 29	.75	40.00	.08
WCAR 67	4 30	92.00	290.00	71.92)	5 30	40.00	119.00	12.83)	6 30	.68	40.00	.07
WCAR 67					5 31	30.00	76.00	6.15)				
MONTHLY TOTALS:		1740.00	4453.00	848.42		2813.00	19980.00	6762.25		254.77	36466.00	6437.80
AVERAGES:		58.00	148.43	28.28		90.74	644.52	218.14		8.49	1215.53	214.59

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 67	7 1	.33	40.00	.031	8 1	0.00	0.00	0.001	9 1	0.00	0.00	0.00
WCAR 67	7 2	.46	40.00	.051	8 2	0.00	0.00	0.001	9 2	0.00	0.00	0.00
WCAR 67	7 3	.88	40.00	.091	8 3	.01	6.00	.001	9 3	0.00	0.00	0.00
WCAR 67	7 4	1.00	40.00	.111	8 4	.04	17.00	.001	9 4	0.00	0.00	0.00
WCAR 67	7 5	1.80	40.00	.191	8 5	0.00	0.00	0.001	9 5	0.00	0.00	0.00
WCAR 67	7 6	.63	40.00	.071	8 6	0.00	0.00	0.001	9 6	0.00	0.00	0.00
WCAR 67	7 7	.56	40.00	.061	8 7	0.00	0.00	0.001	9 7	0.00	0.00	0.00
WCAR 67	7 8	.61	40.00	.071	8 8	0.00	0.00	0.001	9 8	0.00	0.00	0.00
WCAR 67	7 9	.56	40.00	.061	8 9	0.00	0.00	0.001	9 9	0.00	0.00	0.00
WCAR 67	7 10	.56	40.00	.061	8 10	0.00	0.00	0.001	9 10	0.00	0.00	0.00
WCAR 67	7 11	.44	40.00	.051	8 11	0.00	0.00	0.001	9 11	0.00	0.00	0.00
WCAR 67	7 12	.25	40.00	.031	8 12	.63	17.00	.031	9 12	0.00	0.00	0.00
WCAR 67	7 13	.16	40.00	.021	8 13	.19	26.00	.011	9 13	0.00	0.00	0.00
WCAR 67	7 14	.06	40.00	.011	8 14	0.00	0.00	0.001	9 14	0.00	0.00	0.00
WCAR 67	7 15	.20	40.00	.021	8 15	0.00	0.00	0.001	9 15	0.00	0.00	0.00
WCAR 67	7 16	.53	40.00	.061	8 16	0.00	0.00	0.001	9 16	0.00	0.00	0.00
WCAR 67	7 17	.29	40.00	.031	8 17	0.00	0.00	0.001	9 17	0.00	0.00	0.00
WCAR 67	7 18	.11	40.00	.011	8 18	0.00	0.00	0.001	9 18	0.00	0.00	0.00
WCAR 67	7 19	.32	40.00	.031	8 19	0.00	0.00	0.001	9 19	0.00	0.00	0.00
WCAR 67	7 20	.31	40.00	.031	8 20	0.00	0.00	0.001	9 20	0.00	0.00	0.00
WCAR 67	7 21	.15	40.00	.021	8 21	0.00	0.00	0.001	9 21	0.00	0.00	0.00
WCAR 67	7 22	.08	40.00	.011	8 22	0.00	0.00	0.001	9 22	0.00	0.00	0.00
WCAR 67	7 23	.17	40.00	.021	8 23	0.00	0.00	0.001	9 23	0.00	0.00	0.00
WCAR 67	7 24	.11	40.00	.011	8 24	0.00	0.00	0.001	9 24	0.00	0.00	0.00
WCAR 67	7 25	.01	10.00	.001	8 25	0.00	0.00	0.001	9 25	0.00	0.00	0.00
WCAR 67	7 26	0.00	0.00	0.001	8 26	0.00	0.00	0.001	9 26	0.00	0.00	0.00
WCAR 67	7 27	.08	10.00	.001	8 27	0.00	0.00	0.001	9 27	0.00	0.00	0.00
WCAR 67	7 28	.09	24.00	.011	8 28	0.00	0.00	0.001	9 28	0.00	0.00	0.00
WCAR 67	7 29	0.00	0.00	0.001	8 29	0.00	0.00	0.001	9 29	0.00	0.00	0.00
WCAR 67	7 30	0.00	0.00	0.001	8 30	0.00	0.00	0.001	9 30	0.00	0.00	0.00
WCAR 67	7 31	0.00	0.00	0.001	8 31	0.00	0.00	0.001				
MONTHLY TOTALS:		10.72	1004.00	1.14		.87	66.00	.04		0.00	0.00	0.00
AVERAGES:		.35	32.39	.04		.03	2.13	.00		0.00	0.00	0.00

WATER YEAR STATISTICS ENDING SEP 67

	SUM	AVERAGE	
DISCHARGE VOLUME:	7971.32	21.84	(CFS)
CONCENTRATION:		251.90	(PPM)
SEDIMENT FLOW	19964.76	54.70	(TONS)

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 67	10 1	0.00	0.00	0.00)	11 1	1.00	18.00	.05)	12 1	.88	18.00	.04
WCAR 67	10 2	0.00	0.00	0.00)	11 2	.88	18.00	.04)	12 2	.74	18.00	.04
WCAR 67	10 3	0.00	0.00	0.00)	11 3	.88	18.00	.04)	12 3	.88	18.00	.04
WCAR 67	10 4	.22	13.00	.01)	11 4	1.00	18.00	.05)	12 4	.88	18.00	.04
WCAR 67	10 5	1.50	33.00	.13)	11 5	1.00	18.00	.05)	12 5	.88	18.00	.04
WCAR 67	10 6	1.40	14.00	.05)	11 6	.62	18.00	.03)	12 6	.88	18.00	.04
WCAR 67	10 7	.50	23.00	.03)	11 7	.74	18.00	.04)	12 7	.88	18.00	.04
WCAR 67	10 8	.21	23.00	.01)	11 8	1.00	18.00	.05)	12 8	.88	18.00	.04
WCAR 67	10 9	.21	23.00	.01)	11 9	1.20	18.00	.06)	12 9	.88	18.00	.04
WCAR 67	10 10	.23	23.00	.01)	11 10	1.20	18.00	.06)	12 10	1.00	18.00	.05
WCAR 67	10 11	2.20	23.00	.14)	11 11	1.00	18.00	.05)	12 11	.88	18.00	.04
WCAR 67	10 12	2.90	23.00	.18)	11 12	1.20	18.00	.06)	12 12	.74	18.00	.04
WCAR 67	10 13	2.50	23.00	.16)	11 13	1.00	18.00	.05)	12 13	.45	26.00	.03
WCAR 67	10 14	2.20	23.00	.14)	11 14	1.00	18.00	.05)	12 14	.41	26.00	.03
WCAR 67	10 15	2.00	23.00	.12)	11 15	1.00	18.00	.05)	12 15	.06	26.00	.00
WCAR 67	10 16	2.20	23.00	.14)	11 16	1.00	18.00	.05)	12 16	.15	26.00	.01
WCAR 67	10 17	2.20	23.00	.14)	11 17	1.00	18.00	.05)	12 17	.20	26.00	.01
WCAR 67	10 18	.83	19.00	.04)	11 18	1.00	18.00	.05)	12 18	.22	26.00	.02
WCAR 67	10 19	.74	19.00	.04)	11 19	1.00	18.00	.05)	12 19	.22	26.00	.02
WCAR 67	10 20	1.40	19.00	.07)	11 20	1.00	18.00	.05)	12 20	.18	26.00	.01
WCAR 67	10 21	.62	19.00	.03)	11 21	1.00	18.00	.05)	12 21	.15	26.00	.01
WCAR 67	10 22	1.70	45.00	.21)	11 22	.88	18.00	.04)	12 22	.20	26.00	.01
WCAR 67	10 23	2.20	42.15	.25)	11 23	.88	18.00	.04)	12 23	.40	26.00	.03
WCAR 67	10 24	1.20	18.00	.06)	11 24	.88	18.00	.04)	12 24	1.00	30.00	.08
WCAR 67	10 25	1.00	18.00	.05)	11 25	.74	18.00	.04)	12 25	1.00	30.00	.08
WCAR 67	10 26	.83	18.00	.04)	11 26	.74	18.00	.04)	12 26	.74	30.00	.06
WCAR 67	10 27	1.00	18.00	.05)	11 27	.74	18.00	.04)	12 27	.62	30.00	.05
WCAR 67	10 28	1.70	18.00	.08)	11 28	1.20	18.00	.06)	12 28	.51	30.00	.04
WCAR 67	10 29	1.20	18.00	.06)	11 29	1.00	18.00	.05)	12 29	.51	30.00	.04
WCAR 67	10 30	1.00	18.00	.05)	11 30	1.00	18.00	.05)	12 30	.51	30.00	.04
WCAR 67	10 31	.62	18.00	.03)					12 31	.51	30.00	.04
MONTHLY TOTALS:		36.51	620.15	2.32		28.78	540.00	1.40		18.44	742.00	1.13
AVERAGES:		1.18	20.00	.07		.96	18.00	.05		.59	23.94	.04

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 68	1 1	.62	30.00	.05)	2 1	2.20	58.00	.34)	3 1	.49	67.00	.19
WCAR 68	1 2	.59	30.00	.05)	2 2	1.00	33.00	.09)	3 2	.31	67.00	.06
WCAR 68	1 3	.54	30.00	.04)	2 3	1.00	33.00	.09)	3 3	.27	67.00	.05
WCAR 68	1 4	.54	30.00	.04)	2 4	1.00	33.00	.09)	3 4	.24	67.00	.04
WCAR 68	1 5	.54	30.00	.04)	2 5	1.00	33.00	.09)	3 5	.26	67.00	.05
WCAR 68	1 6	.54	30.00	.04)	2 6	.88	33.00	.08)	3 6	.26	67.00	.05
WCAR 68	1 7	.54	30.00	.04)	2 7	.88	33.00	.08)	3 7	.25	67.00	.05
WCAR 68	1 8	.62	30.00	.05)	2 8	.41	33.00	.04)	3 8	.24	67.00	.04
WCAR 68	1 9	.62	30.00	.05)	2 9	.33	33.00	.03)	3 9	.28	67.00	.05
WCAR 68	1 10	.62	30.00	.05)	2 10	.27	33.00	.02)	3 10	.40	43.00	.05
WCAR 68	1 11	.62	30.00	.05)	2 11	.26	33.00	.02)	3 11	.59	52.00	.08
WCAR 68	1 12	.62	30.00	.05)	2 12	.25	33.00	.02)	3 12	.56	54.00	.08
WCAR 68	1 13	.62	30.00	.05)	2 13	.24	33.00	.02)	3 13	.02	48.00	.00
WCAR 68	1 14	.83	30.00	.07)	2 14	.23	33.00	.02)	3 14	.18	60.00	.03
WCAR 68	1 15	.83	30.00	.07)	2 15	.23	33.00	.02)	3 15	.20	62.00	.03
WCAR 68	1 16	.83	30.00	.07)	2 16	.24	33.00	.02)	3 16	.63	66.00	.11
WCAR 68	1 17	1.20	32.00	.10)	2 17	.25	33.00	.02)	3 17	.26	55.00	.04
WCAR 68	1 18	2.00	34.00	.18)	2 18	.27	33.00	.02)	3 18	.70	60.00	.11
WCAR 68	1 19	2.00	57.00	.31)	2 19	.33	67.00	.06)	3 19	.51	60.00	.09
WCAR 68	1 20	2.00	47.00	.25)	2 20	.25	67.00	.05)	3 20	.75	85.00	.17
WCAR 68	1 21	.62	58.00	.10)	2 21	.23	67.00	.04)	3 21	.28	29.00	.02
WCAR 68	1 22	.41	58.00	.06)	2 22	.21	67.00	.04)	3 22	0.00	0.00	0.00
WCAR 68	1 23	.33	58.00	.05)	2 23	.40	67.00	.07)	3 23	.18	70.00	.03
WCAR 68	1 24	.33	58.00	.05)	2 24	.54	67.00	.10)	3 24	.31	68.00	.06
WCAR 68	1 25	.33	58.00	.05)	2 25	.22	67.00	.04)	3 25	.35	74.00	.07
WCAR 68	1 26	.33	58.00	.05)	2 26	.21	67.00	.04)	3 26	.25	43.00	.03
WCAR 68	1 27	.33	58.00	.05)	2 27	.58	67.00	.10)	3 27	.03	41.00	.00
WCAR 68	1 28	.33	58.00	.05)	2 28	.71	67.00	.13)	3 28	.52	76.00	.11
WCAR 68	1 29	.33	58.00	.05)	2 29	.47	67.00	.08)	3 29	.80	45.00	.10
WCAR 68	1 30	.41	58.00	.06)					3 30	0.00	0.00	0.00
WCAR 68	1 31	.88	51.00	.12)					3 31	.50	76.00	.10
MONTHLY TOTALS:		21.95	1281.00	2.37		15.09	1356.00	1.87		10.62	1770.00	1.78
AVERAGES:		.71	41.32	.08		.52	46.76	.06		.34	57.10	.06

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 68	4 1	.47	70.00	.091	5 1	0.00	0.00	0.001	6 1	0.00	0.00	0.00
WCAR 68	4 2	0.00	0.00	0.001	5 2	0.00	0.00	0.001	6 2	0.00	0.00	0.00
WCAR 68	4 3	0.00	0.00	0.001	5 3	0.00	0.00	0.001	6 3	0.00	0.00	0.00
WCAR 68	4 4	.02	65.00	.001	5 4	0.00	0.00	0.001	6 4	0.00	0.00	0.00
WCAR 68	4 5	.08	59.00	.011	5 5	0.00	0.00	0.001	6 5	0.00	0.00	0.00
WCAR 68	4 6	.15	32.00	.011	5 6	0.00	0.00	0.001	6 6	0.00	0.00	0.00
WCAR 68	4 7	.13	45.00	.021	5 7	0.00	0.00	0.001	6 7	0.00	0.00	0.00
WCAR 68	4 8	.18	33.00	.021	5 8	0.00	0.00	0.001	6 8	0.00	0.00	0.00
WCAR 68	4 9	0.00	0.00	0.001	5 9	0.00	0.00	0.001	6 9	0.00	0.00	0.00
WCAR 68	4 10	0.00	0.00	0.001	5 10	0.00	0.00	0.001	6 10	0.00	0.00	0.00
WCAR 68	4 11	0.00	0.00	0.001	5 11	0.00	0.00	0.001	6 11	0.00	0.00	0.00
WCAR 68	4 12	0.00	0.00	0.001	5 12	0.00	0.00	0.001	6 12	0.00	0.00	0.00
WCAR 68	4 13	0.00	0.00	0.001	5 13	0.00	0.00	0.001	6 13	0.00	0.00	0.00
WCAR 68	4 14	0.00	0.00	0.001	5 14	0.00	0.00	0.001	6 14	0.00	0.00	0.00
WCAR 68	4 15	0.00	0.00	0.001	5 15	0.00	0.00	0.001	6 15	0.00	0.00	0.00
WCAR 68	4 16	0.00	0.00	0.001	5 16	0.00	0.00	0.001	6 16	0.00	0.00	0.00
WCAR 68	4 17	0.00	0.00	0.001	5 17	0.00	0.00	0.001	6 17	0.00	0.00	0.00
WCAR 68	4 18	0.00	0.00	0.001	5 18	0.00	0.00	0.001	6 18	0.00	0.00	0.00
WCAR 68	4 19	0.00	0.00	0.001	5 19	0.00	0.00	0.001	6 19	0.00	0.00	0.00
WCAR 68	4 20	0.00	0.00	0.001	5 20	0.00	0.00	0.001	6 20	0.00	0.00	0.00
WCAR 68	4 21	0.00	0.00	0.001	5 21	0.00	0.00	0.001	6 21	0.00	0.00	0.00
WCAR 68	4 22	0.00	0.00	0.001	5 22	0.00	0.00	0.001	6 22	0.00	0.00	0.00
WCAR 68	4 23	0.00	0.00	0.001	5 23	0.00	0.00	0.001	6 23	0.00	0.00	0.00
WCAR 68	4 24	0.00	0.00	0.001	5 24	0.00	0.00	0.001	6 24	0.00	0.00	0.00
WCAR 68	4 25	0.00	0.00	0.001	5 25	0.00	0.00	0.001	6 25	0.00	0.00	0.00
WCAR 68	4 26	0.00	0.00	0.001	5 26	0.00	0.00	0.001	6 26	0.00	0.00	0.00
WCAR 68	4 27	0.00	0.00	0.001	5 27	0.00	0.00	0.001	6 27	0.00	0.00	0.00
WCAR 68	4 28	0.00	0.00	0.001	5 28	0.00	0.00	0.001	6 28	0.00	0.00	0.00
WCAR 68	4 29	0.00	0.00	0.001	5 29	0.00	0.00	0.001	6 29	0.00	0.00	0.00
WCAR 68	4 30	0.00	0.00	0.001	5 30	0.00	0.00	0.001	6 30	0.00	0.00	0.00
WCAR 68					5 31	0.00	0.00	0.001				
MONTHLY TOTALS:		1.03	304.00	.15		0.00	0.00	0.00		0.00	0.00	0.00
AVERAGES:		.03	10.13	.00		0.00	0.00	0.00		0.00	0.00	0.00

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 68	7 1	0.00	0.00	0.001	8 1	0.00	0.00	0.001	9 1	0.00	0.00	0.00
WCAR 68	7 2	0.00	0.00	0.001	8 2	0.00	0.00	0.001	9 2	0.00	0.00	0.00
WCAR 68	7 3	0.00	0.00	0.001	8 3	0.00	0.00	0.001	9 3	0.00	0.00	0.00
WCAR 68	7 4	0.00	0.00	0.001	8 4	0.00	0.00	0.001	9 4	0.00	0.00	0.00
WCAR 68	7 5	0.00	0.00	0.001	8 5	0.00	0.00	0.001	9 5	0.00	0.00	0.00
WCAR 68	7 6	0.00	0.00	0.001	8 6	0.00	0.00	0.001	9 6	0.00	0.00	0.00
WCAR 68	7 7	0.00	0.00	0.001	8 7	0.00	0.00	0.001	9 7	0.00	0.00	0.00
WCAR 68	7 8	0.00	0.00	0.001	8 8	0.00	0.00	0.001	9 8	0.00	0.00	0.00
WCAR 68	7 9	0.00	0.00	0.001	8 9	0.00	0.00	0.001	9 9	0.00	0.00	0.00
WCAR 68	7 10	0.00	0.00	0.001	8 10	0.00	0.00	0.001	9 10	0.00	0.00	0.00
WCAR 68	7 11	0.00	0.00	0.001	8 11	0.00	0.00	0.001	9 11	0.00	0.00	0.00
WCAR 68	7 12	0.00	0.00	0.001	8 12	0.00	0.00	0.001	9 12	0.00	0.00	0.00
WCAR 68	7 13	0.00	0.00	0.001	8 13	0.00	0.00	0.001	9 13	0.00	0.00	0.00
WCAR 68	7 14	0.00	0.00	0.001	8 14	0.00	0.00	0.001	9 14	0.00	0.00	0.00
WCAR 68	7 15	0.00	0.00	0.001	8 15	0.00	0.00	0.001	9 15	0.00	0.00	0.00
WCAR 68	7 16	0.00	0.00	0.001	8 16	0.00	0.00	0.001	9 16	0.00	0.00	0.00
WCAR 68	7 17	0.00	0.00	0.001	8 17	0.00	0.00	0.001	9 17	0.00	0.00	0.00
WCAR 68	7 18	0.00	0.00	0.001	8 18	0.00	0.00	0.001	9 18	0.00	0.00	0.00
WCAR 68	7 19	0.00	0.00	0.001	8 19	0.00	0.00	0.001	9 19	0.00	0.00	0.00
WCAR 68	7 20	0.00	0.00	0.001	8 20	0.00	0.00	0.001	9 20	0.00	0.00	0.00
WCAR 68	7 21	0.00	0.00	0.001	8 21	0.00	0.00	0.001	9 21	0.00	0.00	0.00
WCAR 68	7 22	0.00	0.00	0.001	8 22	0.00	0.00	0.001	9 22	0.00	0.00	0.00
WCAR 68	7 23	0.00	0.00	0.001	8 23	0.00	0.00	0.001	9 23	0.00	0.00	0.00
WCAR 68	7 24	0.00	0.00	0.001	8 24	0.00	0.00	0.001	9 24	0.00	0.00	0.00
WCAR 68	7 25	0.00	0.00	0.001	8 25	0.00	0.00	0.001	9 25	0.00	0.00	0.00
WCAR 68	7 26	0.00	0.00	0.001	8 26	0.00	0.00	0.001	9 26	0.00	0.00	0.00
WCAR 68	7 27	0.00	0.00	0.001	8 27	0.00	0.00	0.001	9 27	0.00	0.00	0.00
WCAR 68	7 28	0.00	0.00	0.001	8 28	0.00	0.00	0.001	9 28	0.00	0.00	0.00
WCAR 68	7 29	0.00	0.00	0.001	8 29	0.00	0.00	0.001	9 29	0.00	0.00	0.00
WCAR 68	7 30	0.00	0.00	0.001	8 30	0.00	0.00	0.001	9 30	0.00	0.00	0.00
WCAR 68	7 31	0.00	0.00	0.001	8 31	0.00	0.00	0.001				
MONTHLY TOTALS:		0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00
AVERAGES:		0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00

WATER YEAR STATISTICS ENDING SEP 68

	SUM	AVERAGE	
DISCHARGE VOLUME:	132.42	.36	(CFS)
CONCENTRATION:		10.07	(PPM)
SEDIMENT FLOW	11.03	.03	(TONS)

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 68	10 1	0.00	0.00	0.001	11 1	0.00	0.00	0.001	12 1	0.00	0.00	0.00
WCAR 68	10 2	0.00	0.00	0.001	11 2	0.00	0.00	0.001	12 2	0.00	0.00	0.00
WCAR 68	10 3	0.00	0.00	0.001	11 3	0.00	0.00	0.001	12 3	0.00	0.00	0.00
WCAR 68	10 4	0.00	0.00	0.001	11 4	0.00	0.00	0.001	12 4	0.00	0.00	0.00
WCAR 68	10 5	0.00	0.00	0.001	11 5	0.00	0.00	0.001	12 5	0.00	0.00	0.00
WCAR 68	10 6	0.00	0.00	0.001	11 6	0.00	0.00	0.001	12 6	0.00	0.00	0.00
WCAR 68	10 7	0.00	0.00	0.001	11 7	0.00	0.00	0.001	12 7	0.00	0.00	0.00
WCAR 68	10 8	0.00	0.00	0.001	11 8	0.00	0.00	0.001	12 8	0.00	0.00	0.00
WCAR 68	10 9	0.00	0.00	0.001	11 9	0.00	0.00	0.001	12 9	0.00	0.00	0.00
WCAR 68	10 10	0.00	0.00	0.001	11 10	0.00	0.00	0.001	12 10	0.00	0.00	0.00
WCAR 68	10 11	0.00	0.00	0.001	11 11	0.00	0.00	0.001	12 11	0.00	0.00	0.00
WCAR 68	10 12	0.00	0.00	0.001	11 12	0.00	0.00	0.001	12 12	15.00	520.00	21.03
WCAR 68	10 13	0.00	0.00	0.001	11 13	0.00	0.00	0.001	12 13	5.90	263.00	4.18
WCAR 68	10 14	0.00	0.00	0.001	11 14	0.00	0.00	0.001	12 14	.45	130.00	.16
WCAR 68	10 15	0.00	0.00	0.001	11 15	0.00	0.00	0.001	12 15	0.00	0.00	0.00
WCAR 68	10 16	0.00	0.00	0.001	11 16	0.00	0.00	0.001	12 16	0.00	0.00	0.00
WCAR 68	10 17	0.00	0.00	0.001	11 17	0.00	0.00	0.001	12 17	0.00	0.00	0.00
WCAR 68	10 18	0.00	0.00	0.001	11 18	0.00	0.00	0.001	12 18	0.00	0.00	0.00
WCAR 68	10 19	0.00	0.00	0.001	11 19	0.00	0.00	0.001	12 19	0.00	0.00	0.00
WCAR 68	10 20	0.00	0.00	0.001	11 20	3.20	599.00	5.171	12 20	0.00	0.00	0.00
WCAR 68	10 21	0.00	0.00	0.001	11 21	.87	461.00	1.081	12 21	0.00	0.00	0.00
WCAR 68	10 22	0.00	0.00	0.001	11 22	0.00	0.00	0.001	12 22	0.00	0.00	0.00
WCAR 68	10 23	0.00	0.00	0.001	11 23	0.00	0.00	0.001	12 23	0.00	0.00	0.00
WCAR 68	10 24	0.00	0.00	0.001	11 24	0.00	0.00	0.001	12 24	0.00	0.00	0.00
WCAR 68	10 25	0.00	0.00	0.001	11 25	0.00	0.00	0.001	12 25	0.00	0.00	0.00
WCAR 68	10 26	0.00	0.00	0.001	11 26	0.00	0.00	0.001	12 26	0.00	0.00	0.00
WCAR 68	10 27	0.00	0.00	0.001	11 27	0.00	0.00	0.001	12 27	0.00	0.00	0.00
WCAR 68	10 28	0.00	0.00	0.001	11 28	0.00	0.00	0.001	12 28	0.00	0.00	0.00
WCAR 68	10 29	0.00	0.00	0.001	11 29	0.00	0.00	0.001	12 29	0.00	0.00	0.00
WCAR 68	10 30	0.00	0.00	0.001	11 30	0.00	0.00	0.001	12 30	0.00	0.00	0.00
WCAR 68	10 31	0.00	0.00	0.001					12 31	0.00	0.00	0.00
MONTHLY TOTALS:		0.00	0.00	0.00		4.07	1060.00	6.25		21.35	913.00	25.37
AVERAGES:		0.00	0.00	0.00		.14	35.33	.21		.69	29.45	.82

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 69	1 1	0.00	0.00	0.00]	2 1	39.00	50.41	5.30]	3 1	22.00	83.00	4.92
WCAR 69	1 2	0.00	0.00	0.00]	2 2	40.00	50.08	5.40]	3 2	23.00	74.00	4.59
WCAR 69	1 3	0.00	0.00	0.00]	2 3	40.00	50.08	5.40]	3 3	22.00	35.00	2.08
WCAR 69	1 4	0.00	0.00	0.00]	2 4	40.00	50.08	5.40]	3 4	21.00	34.00	1.92
WCAR 69	1 5	550.00	10900.00	16160.60]	2 5	39.00	50.41	5.30]	3 5	22.00	130.00	7.71
WCAR 69	1 6	300.00	10600.00	8572.26]	2 6	38.00	49.79	5.10]	3 6	27.00	90.00	6.55
WCAR 69	1 7	220.00	3490.00	2069.74]	2 7	37.00	50.13	5.00]	3 7	38.00	865.00	88.61
WCAR 69	1 8	184.00	1800.00	892.81]	2 8	37.00	90.00	8.98]	3 8	42.00	580.00	65.67
WCAR 69	1 9	145.00	920.00	359.60]	2 9	80.00	1700.00	366.61]	3 9	40.00	460.00	49.60
WCAR 69	1 10	108.00	640.00	186.33]	2 10	61.00	1390.00	228.57]	3 10	41.00	165.00	18.24
WCAR 69	1 11	81.00	473.00	103.28]	2 11	82.00	1660.00	366.94]	3 11	36.00	79.00	7.67
WCAR 69	1 12	63.00	205.00	34.81]	2 12	404.00	16900.00	18405.02]	3 12	23.00	33.00	2.05
WCAR 69	1 13	72.00	230.00	44.64]	2 13	316.00	5990.00	5102.49]	3 13	18.00	26.00	1.26
WCAR 69	1 14	194.00	2640.00	1380.62]	2 14	180.00	2400.00	1164.53]	3 14	22.00	21.00	1.25
WCAR 69	1 15	147.00	985.00	390.32]	2 15	117.00	945.00	298.05]	3 15	32.00	47.00	4.05
WCAR 69	1 16	102.00	460.00	126.48]	2 16	105.00	652.00	184.55]	3 16	59.00	824.00	131.05
WCAR 69	1 17	91.00	320.00	78.50]	2 17	104.00	586.00	164.29]	3 17	125.00	3980.00	1341.10
WCAR 69	1 18	87.00	212.00	49.72]	2 18	83.00	455.00	101.80]	3 18	309.00	11400.00	9495.80
WCAR 69	1 19	81.00	224.00	48.91]	2 19	60.00	285.00	46.10]	3 19	278.00	4100.00	3072.54
WCAR 69	1 20	75.00	190.00	38.41]	2 20	60.00	197.00	31.86]	3 20	232.00	2100.00	1313.34
WCAR 69	1 21	68.00	128.00	23.46]	2 21	56.00	142.00	21.44]	3 21	231.00	1900.00	1183.13
WCAR 69	1 22	58.00	112.00	17.51]	2 22	53.00	129.00	18.43]	3 22	248.00	1800.00	1203.35
WCAR 69	1 23	31.00	50.26	4.20]	2 23	50.00	104.00	14.02]	3 23	298.00	2950.00	2369.77
WCAR 69	1 24	30.00	49.46	4.00]	2 24	51.00	142.00	19.52]	3 24	263.00	1570.00	1113.07
WCAR 69	1 25	35.00	49.82	4.70]	2 25	40.00	140.00	15.10]	3 25	216.00	994.00	578.77
WCAR 69	1 26	34.00	50.19	4.60]	2 26	35.00	106.00	10.00]	3 26	187.00	888.00	447.63
WCAR 69	1 27	32.00	49.85	4.30]	2 27	28.00	74.00	5.59]	3 27	194.00	1220.00	638.01
WCAR 69	1 28	35.00	49.82	4.70]	2 28	22.00	36.00	2.13]	3 28	213.00	1090.00	625.86
WCAR 69	1 29	33.00	50.59	4.50]					3 29	205.00	920.00	508.41
WCAR 69	1 30	35.00	49.82	4.70]					3 30	208.00	977.00	547.91
WCAR 69	1 31	38.00	49.79	5.10]					3 31	261.00	1610.00	1132.75
MONTHLY TOTALS:		2929.00	34978.58	30618.82		2297.00	34473.98	26612.91		3956.00	41045.00	25968.55
AVERAGES:		94.48	1128.34	987.70		82.04	1231.21	950.46		127.61	1324.03	837.70

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 69	4 1	286.00	1920.00	1480.25)	5 1	105.00	165.00	46.70)	6 1	23.00	14.00	.87
WCAR 69	4 2	265.00	1570.00	1121.54)	5 2	94.00	102.00	25.85)	6 2	18.00	17.00	.82
WCAR 69	4 3	246.00	1410.00	935.02)	5 3	82.00	58.00	12.82)	6 3	12.00	14.00	.45
WCAR 69	4 4	221.00	940.00	560.00)	5 4	76.00	43.00	8.81)	6 4	9.40	12.00	.30
WCAR 69	4 5	218.00	865.00	508.32)	5 5	68.00	22.00	4.03)	6 5	9.50	8.00	.20
WCAR 69	4 6	245.00	1040.00	686.86)	5 6	45.00	10.00	1.21)	6 6	7.60	8.00	.16
WCAR 69	4 7	242.00	990.00	645.83)	5 7	35.00	15.00	1.42)	6 7	5.80	5.00	.09
WCAR 69	4 8	224.00	760.00	459.91)	5 8	27.00	17.00	1.24)	6 8	29.00	12300.00	961.55
WCAR 69	4 9	201.00	652.00	353.27)	5 9	21.00	14.00	.79)	6 9	27.00	1130.00	82.25
WCAR 69	4 10	195.00	569.00	299.10)	5 10	13.00	14.00	.49)	6 10	1510.00	97600.00	397278.54
WCAR 69	4 11	190.00	490.00	250.97)	5 11	14.00	9.00	.34)	6 11	136.00	29000.00	10631.76
WCAR 69	4 12	184.00	505.00	250.48)	5 12	12.00	12.00	.39)	6 12	77.00	3300.00	684.97
WCAR 69	4 13	190.00	527.00	269.92)	5 13	16.00	9.00	.39)	6 13	59.00	870.00	138.37
WCAR 69	4 14	167.00	396.00	178.27)	5 14	21.00	17.00	.96)	6 14	42.00	434.00	49.59
WCAR 69	4 15	144.00	422.00	163.81)	5 15	40.00	17.00	1.83)	6 15	33.00	185.00	16.46
WCAR 69	4 16	118.00	346.00	110.06)	5 16	35.00	36.00	3.40)	6 16	22.00	175.00	10.38
WCAR 69	4 17	112.00	300.00	90.57)	5 17	30.00	67.00	5.42)	6 17	25.00	107.00	7.21
WCAR 69	4 18	135.00	395.00	143.75)	5 18	29.00	19.00	1.49)	6 18	19.00	220.00	11.27
WCAR 69	4 19	131.00	580.00	204.82)	5 19	30.00	14.00	1.13)	6 19	8.20	265.00	5.86
WCAR 69	4 20	133.00	372.00	133.37)	5 20	28.00	13.00	.98)	6 20	5.90	190.00	3.02
WCAR 69	4 21	116.00	301.00	94.12)	5 21	39.00	13.00	1.37)	6 21	4.50	98.00	1.19
WCAR 69	4 22	85.00	168.00	38.49)	5 22	37.00	12.00	1.20)	6 22	4.10	70.00	.77
WCAR 69	4 23	80.00	182.00	39.25)	5 23	36.00	8.00	.78)	6 23	4.40	66.00	.78
WCAR 69	4 24	101.00	270.00	73.51)	5 24	36.00	8.00	.78)	6 24	12.00	200.94	6.50
WCAR 69	4 25	101.00	253.00	68.88)	5 25	29.00	5.00	.39)	6 25	33.00	210.00	18.69
WCAR 69	4 26	108.00	204.00	59.39)	5 26	29.00	10.00	.78)	6 26	30.00	715.00	57.82
WCAR 69	4 27	108.00	202.00	58.81)	5 27	33.00	7.00	.62)	6 27	27.00	112.00	8.15
WCAR 69	4 28	94.00	101.00	25.59)	5 28	40.00	15.00	1.62)	6 28	25.00	120.00	8.09
WCAR 69	4 29	116.00	470.00	146.97)	5 29	38.00	14.00	1.43)	6 29	27.00	79.00	5.75
WCAR 69	4 30	126.00	905.00	307.39)	5 30	24.00	18.00	1.16)	6 30	24.00	56.00	3.62
WCAR 69					5 31	21.00	14.00	.79)				
MONTHLY TOTALS:		4882.00	18105.00	9757.54		1183.00	797.00	130.61		2269.40	147584.94	409995.47
AVERAGES:		162.73	603.50	325.25		38.16	25.71	4.21		75.65	4919.50	13666.52

STATION & YEAR	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)	MONTH /DAY	DIS-CHARGE IN CFS	CONCEN-TRATION IN PPM (CHECK)	SEDIMENT IN TONS (CHECK)
WCAR 69	7 1	13.00	34.00	1.19)	8 1	.64	37.00	.06)	9 1	0.00	0.00	0.00
WCAR 69	7 2	8.90	34.00	.82)	8 2	.67	37.00	.07)	9 2	0.00	0.00	0.00
WCAR 69	7 3	6.70	42.00	.76)	8 3	.54	37.00	.05)	9 3	0.00	0.00	0.00
WCAR 69	7 4	6.70	43.19	.78)	8 4	1.20	37.00	.12)	9 4	0.00	0.00	0.00
WCAR 69	7 5	14.00	44.00	1.66)	8 5	1.80	37.00	.18)	9 5	0.00	0.00	0.00
WCAR 69	7 6	11.00	50.00	1.48)	8 6	1.90	37.00	.19)	9 6	0.00	0.00	0.00
WCAR 69	7 7	9.70	59.00	1.54)	8 7	1.90	37.00	.19)	9 7	0.00	0.00	0.00
WCAR 69	7 8	7.20	46.00	.89)	8 8	1.90	37.00	.19)	9 8	0.00	0.00	0.00
WCAR 69	7 9	5.80	35.00	.55)	8 9	.84	37.00	.08)	9 9	0.00	0.00	0.00
WCAR 69	7 10	4.90	27.00	.36)	8 10	.77	37.00	.08)	9 10	0.00	0.00	0.00
WCAR 69	7 11	3.70	42.00	.42)	8 11	1.20	37.00	.12)	9 11	0.00	0.00	0.00
WCAR 69	7 12	3.10	55.00	.46)	8 12	.64	37.00	.06)	9 12	0.00	0.00	0.00
WCAR 69	7 13	3.20	55.64	.48)	8 13	.80	37.00	.08)	9 13	0.00	0.00	0.00
WCAR 69	7 14	3.00	54.00	.44)	8 14	.65	37.00	.06)	9 14	0.00	0.00	0.00
WCAR 69	7 15	1.80	94.00	.46)	8 15	1.40	37.00	.14)	9 15	0.00	0.00	0.00
WCAR 69	7 16	1.60	74.00	.32)	8 16	1.20	37.00	.12)	9 16	0.00	0.00	0.00
WCAR 69	7 17	1.40	72.00	.27)	8 17	1.80	37.00	.18)	9 17	0.00	0.00	0.00
WCAR 69	7 18	1.10	88.00	.26)	8 18	1.90	37.00	.19)	9 18	12.00	468.00	15.14
WCAR 69	7 19	.88	37.00	.09)	8 19	2.10	37.00	.21)	9 19	19.00	7600.00	389.26
WCAR 69	7 20	.70	37.00	.07)	8 20	2.00	37.00	.20)	9 20	7.30	9600.00	188.91
WCAR 69	7 21	.95	37.00	.10)	8 21	2.40	37.00	.24)	9 21	3.20	3920.00	33.91
WCAR 69	7 22	1.30	37.00	.13)	8 22	2.90	37.00	.29)	9 22	2.40	1820.00	11.77
WCAR 69	7 23	1.80	37.00	.18)	8 23	2.60	37.00	.26)	9 23	1.70	1000.00	4.58
WCAR 69	7 24	1.50	37.00	.15)	8 24	1.60	37.00	.16)	9 24	1.40	567.00	2.14
WCAR 69	7 25	.92	37.00	.09)	8 25	1.30	37.00	.13)	9 25	1.00	464.00	1.25
WCAR 69	7 26	.90	37.00	.09)	8 26	.23	16.13	.01)	9 26	.27	356.00	.26
WCAR 69	7 27	.71	37.00	.07)	8 27	.06	8.00	.00)	9 27	.17	274.00	.13
WCAR 69	7 28	1.10	37.00	.11)	8 28	.19	39.05	.02)	9 28	.13	250.00	.09
WCAR 69	7 29	1.10	37.00	.11)	8 29	.02	5.00	.00)	9 29	.09	214.00	.05
WCAR 69	7 30	.72	37.00	.07)	8 30	.12	30.91	.01)	9 30	.01	257.00	.01
WCAR 69	7 31	.72	37.00	.07)	8 31	.01	6.00	.00)				
MONTHLY TOTALS:		120.11	1429.83	14.46		37.28	1030.09	3.70		48.67	26790.00	647.40
AVERAGES:		3.87	46.12	.47		1.20	33.23	.12		1.62	893.00	21.58

WATER YEAR STATISTICS ENDING SEP 69

	SUM	AVERAGE	
DISCHARGE VOLUME:	17747.88	48.62	(CFS)
CONCENTRATION:		844.4J	(PPM)
SEDIMENT FLOW	503781.07	1380.22	(TONS)

APPENDIX B

Particle-size Analyses of Suspended Sediment in the Willow Creek Basin as Reported by the U. S. Geological Survey

Arlington

Date	Discharge cfs	Sed. conc. ppm	Suspended Sediment % finer than size indicated, mm 0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	Method of Analysis[a]
Jan. 29, 1964	46	345	60	73	81	86	92	95	97	100		VPWC
June 8, 1964	37	1,720	56	82	100							PWC
Mar. 27, 1969	224	1,850	5	7	11	20	40	68	94	99	100	VPWC
June 10, 1969	800	114,000	22	34	47	61	69	98	100			VPWC
Sept.23, 1969	1.7	1,080	37	47	59	72	88	100				PWC

Heppner

June 4, 1964	12	2,220	28	43	68	98	100					PWC
Jan. 29, 1968	82	1,290	28	30	45	56	84	90	97	99	100	VPWC

[a] V= visual accumulation tube, P= pipet, W= in distilled water, C= chemically dispersed