Hydrologic Benchmark Network Stations in the Eastern U.S. 1963-95 (USGS Circular 1173-A)

Young Womans Creek near Renovo, Pennsylvania (Station 01545600)

This report details one of the approximately 50 stations in the Hydrologic Benchmark Network (HBN) described in the four-volume U.S. Geological Survey Circular 1173. The suggested citation for the information on this page is:

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All of the tables and figures are numbered as they appear in each circular. Use the navigation bar above to view the abstract, introduction and methods for the entire circular, as well as a map and list of all of the HBN sites. Use the table of contents below to view the information on this particular station.

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Site Characteristics and Land Use

The Young Womans Creek HBN Basin is in the Appalachian Plateaus physiographic province in north-central Pennsylvania in an area characterized by high, flat-topped uplands dissected by steep- sided stream valleys. The basin drains 120 km^2 of forested terrain that ranges in elevation from 238 m at the gage to 665 m on the gently sloping upland surface. The HBN gage is in Sproul State Forest, about 8 km northeast of Renovo, Pa., at latitude 41°23'22" and longitude 77°41'28" (Figure 22. *Map of the study area in the Young Womans Creek Basin and photograph of the landscape of the basin*). Young Womans Creek is a southwest-flowing tributary of the West Branch of the Susquehanna River with a channel length of about 17 km upstream from the gage. Stream gradients range from 11 m/km in the lower one-half of the basin to as much as 35 m/km in the headwater tributaries. Mean monthly discharge at the gage ranges from 0.66 m^3/s in September to 4.62 m^3/s in April. Average annual runoff from the basin was 56 cm from 1965 through 1995 (U.S. Geological Survey, Water Resources Data, Pennsylvania). Climate of the area is characterized as a humid continental type with cold winters and warm summers. Average daily air temperatures range from -3.3°C in January to 22.5°C in July (Kohler, 1986). Precipitation averages 105 cm annually and is fairly evenly distributed throughout the year (Kohler, 1986). Frontal storms are the most common source of precipitation, although thundershowers are prevalent in summer. Average seasonal snowfall is 120 cm; however, a seasonal snowpack rarely persists through the winter.

The basin lies in the Laurentian Mixed Forest ecoregion (Bailey and others, 1994) and is covered by second and third growth oak-hickory and maple-beech-birch forest types. The dominant species are white oak, red oak, pignut hickory, shagbark hickory, sugar maple, red maple, beech, and yellow birch (Kohler, 1986). Several stands of eastern hemlock also are scattered throughout the basin (Overdorff, 1987). The dominant understory species is flowering dogwood; blueberry, mountain laurel, sweet-fern, and sassafras comprise most of the ground cover (Goodlett, 1955). Pine forest types account for less than 10 percent of the forest cover; the dominant pine species are white pine, Virginia pine, and pitch pine. Soils in the basin are classified as Ultisols and Inseptisols and are mapped in the Dekalb-Clymer-Cookport soil association (Kohler, 1986). These are acidic, well-drained soils on hillslopes and ridges and are formed in material weathered from sandstone, siltstone, and shale. A typical profile has a thin organic horizon (5 cm) and a brown loam surface layer down to 25 cm overlying a yellowish-brown, sandy clay loam down to a depth of 100 cm. Most soils are extremely rocky and contain between 15 and 60 percent thin fragments of sandstone and shale.

Bedrock that underlies the basin includes Late Devonian to Pennsylvanian sedimentary rocks that have been deformed into low-amplitude, northeast-trending folds that plunge to the southwest (Colton and Stanley, 1965). The lower one-half of Young Womans Creek runs roughly parallel to the axis of a large syncline, and the upper tributaries in the Lebo Run subbasin drain perpendicular to the northwest limb of the fold. The rock units exposed in the basin are, from oldest to youngest, the Catskill Formation, Pocono Group, and Pottsville Group (Colton and Stanley, 1965). The Pocono Group, the most common formation in the basin, is a massive gray sandstone with layers of conglomerate and shale. The sandstone is highly permeable and is a common source of spring water in the region (Dinicola, 1982). Rocks of the Pottsville Group crop out along the eastern edge of the basin and include sandstones and conglomerates separated by discontinuous beds of shale and coal. The Lebo Run subbasin is underlain by rocks of the Catskill Formation, which includes sandstones, siltstones, and shales with lenses of

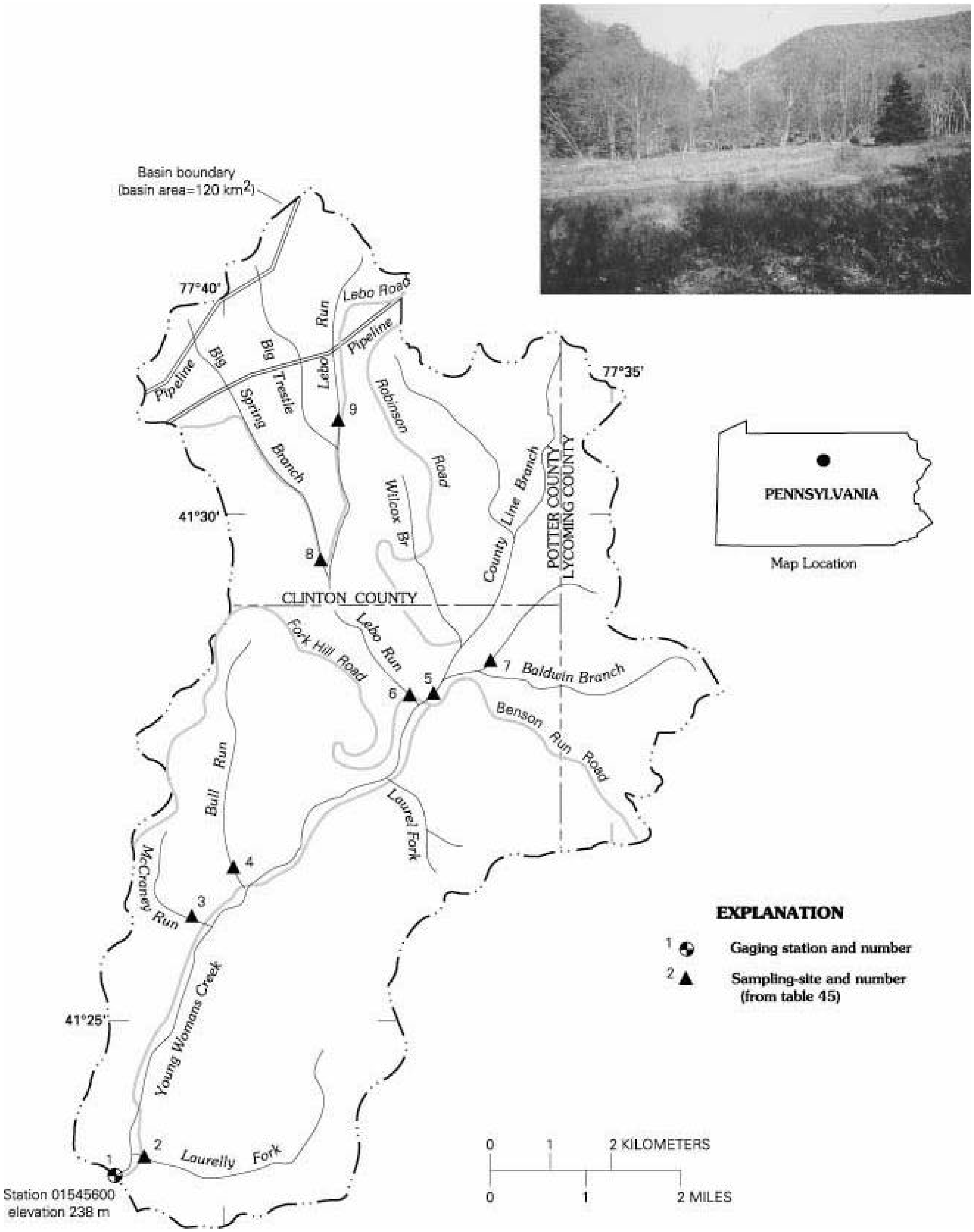

Figure 22. *Map of the study area in the Young Womans Creek Basin and photograph of the landscape of the basin*

calcareous conglomerate and limestone (Colton and Stanley, 1965). The basin is unglaciated and lies about 12 km southeast of the lower limit of Wisconsinan glacial deposits (Denny, 1956).

Young Womans Creek Basin drains parts of Potter and Clinton Counties, and more than 95 percent is State forest land administered by the Pennsylvania Bureau of Forestry. The southern one-half of the basin is in the boundaries of the Sproul State Forest and the northern one-half is in the boundaries of the Susquehannock State Forest. A 3-km strip of land adjacent to Young Womans Creek downstream from Bull Run is privately owned (fig. 22). Several private cabins are situated along Lebo Run and Big Spring Branch in the upper part of the basin. Access into the basin is by way of an improved road that parallels the main stem of Young Womans Creek from the gage to the confluence with Bull Run. This road was earthen until the early 1980’s when it was resurfaced with limestone chips (Robert Davey, Sproul State Forest, oral commun., 1994). Secondary roads or foot trails parallel almost every major tributary in the basin, and several roads traverse the upper plateau area. Roads in the basin are not plowed in winter, although many are used as snowmobile trails.

The history of logging and settlement in the Young Womans Creek Basin and surrounding areas can be found in Goodlett (1955) and Beebe (1934). During the 1800’s, most forests in the area were harvested for white pine, hardwoods, and hemlock. Owing to concerns about the impact of logging and associated fires on the water quality of streams, the State of Pennsylvania began purchasing land as tax sales from the County Commissioners. The first such purchase, in 1898, was a parcel of land near Bull Run in the Young Womans Creek Basin and marks the beginning of the Pennsylvania State Forest system. Since the establishment of the HBN station in 1967, land in the basin has been managed for timber production, recreation, and wildlife habitat. The most intensive period of logging occurred during the late 1970's when 150 ha of timber were clearcut on the upland plateau (J.D. Thomas, Susquehannock State Forest, written commun., 1993). In the mid-1980’s, 40 ha were cut in the upland area at the head of Laurelly Fork, and in the early 1990’s, a 7.2-ha parcel was clearcut in the upland area north of Wilcox Branch (Robert Davey, oral commun., 1994). All roads built by logging companies are gated and reseeded with grasses after completion of the timber sale (Robert Davey, oral commun., 1994). The basin overlies the Leidy gas field, which is situated 1,500 m below the surface in the Devonian Ridgeley Formation (Harper, 1989). Natural gas was first discovered in the Leidy field in 1950, but the field was quickly exhausted and was converted to a gas storage field around 1961 (Harper, 1989). Although most gas wells in the basin were drilled in the 1950’s, two storage wells and an observation well were drilled in the late 1980's at the upper end of Big Spring Branch. Several shallow exploratory wells (1,525 m) were drilled along the southeast basin divide in the early 1990’s (J.D. Thomas, written commun., 1993). There are currently two gas pipelines that access several gas storage wells in the headwaters of Lebo Run and Big Spring Branch. Gas wells have yielded salty water to surface-water systems in the area, but there is no evidence that surface waters are contaminated in the Young Womans Creek Basin (R.E. Hughey, Pennsylvania Department of Environmental Resources, oral commun., 1993). Coal mine drainage presents another major water-quality problem in the region (Hainly and others, 1989);

however, no active or abandoned coal mines are present upstream from the Young Womans Creek gage. In 1994, intense rainfall from tropical storm Beryl washed out several roads and bridges in the basin. Limestone quarry waste was used to reconstruct the main channel just downstream from Laurel Fork, and a limestone ford was added where Fork Hill Road crosses Young Womans Creek (Robert Davey, oral commun., 1994). There are no campgrounds in the basin, and camping along waterways on State forest land is prohibited. Several small cabins scattered throughout the basin are used primarily during hunting season.

Historical Water-Quality Data and Time-Series Trends

The data set analyzed for this report includes 213 water-quality samples that were collected from October 1967 through August 1995. Sampling frequency was monthly from 1967 to 1982 and quarterly from 1983 through 1995. Although not documented, water-quality samples in the early part of the record probably were analyzed at a USGS laboratory in Harrisburg, Pa., which was operated until 1973 (Durum, 1978). Following establishment of the Central Laboratory System, samples were analyzed at the Central Laboratory in Atlanta, Ga., from 1973 to 1985 and at the NWQL in Arvada, Colo., from 1986 through 1995. Daily discharge records for Young Womans Creek (station 01545600) are available beginning in December 1964.

Calculated ion balances for 211 samples with complete major ion analyses are shown in Figures 23a and 23b. *Temporal variation of discharge, field pH, major ion concentrations, and ion balance at Young Womans Creek, Pennsylvania*. Ion balances ranged from -35 to +21 percent, and 62 percent of the samples were in the ±10 percent range. This large range of concentrations was not unexpected considering the difficulty of making precise analytical measurements at the solute concentrations typical of this station. The mean charge balance of all samples was -3.8 percent, and 68 percent of the samples had a slight excess of measured anions over cations in solution. Laboratory alkalinity in HBN samples was determined by a fixed-endpoint titration to pH 4.5. For waters with low alkalinities, however, the endpoint pH is closer to 5.0, and titration to pH 4.5 may overestimate alkalinity by as much as 25 meq/L (Barnes, 1964). Because the average alkalinity and anion excess for this station were 160 meq/L and 13 meq/L, respectively, a positive bias in the laboratory alkalinity appears to be a reasonable explanation for the negative ion balances.

Median concentrations and ranges of major dissolved constituents in stream water collected at the HBN gaging station and VWM concentrations in wet-only deposition measured at the Jasper NADP station are presented in table 42. Precipitation chemistry at the NADP station, which is about 80 km northeast of the basin, is dilute and acidic, with a VWM pH of 4.3 during 16 years of record. The major cations were hydrogen ion, which contributed 66 percent of the cation charge, and ammonium, which contributed 17 percent. Sulfate accounted for 65 percent of the total anion charge and nitrate accounted for 31 percent. The low pH and predominance of strong acid anions indicates that precipitation at the NADP site probably is affected by anthropogenic emissions of sulfur and nitrogen compounds, which cause acid rain (Lynch and others, 1988).

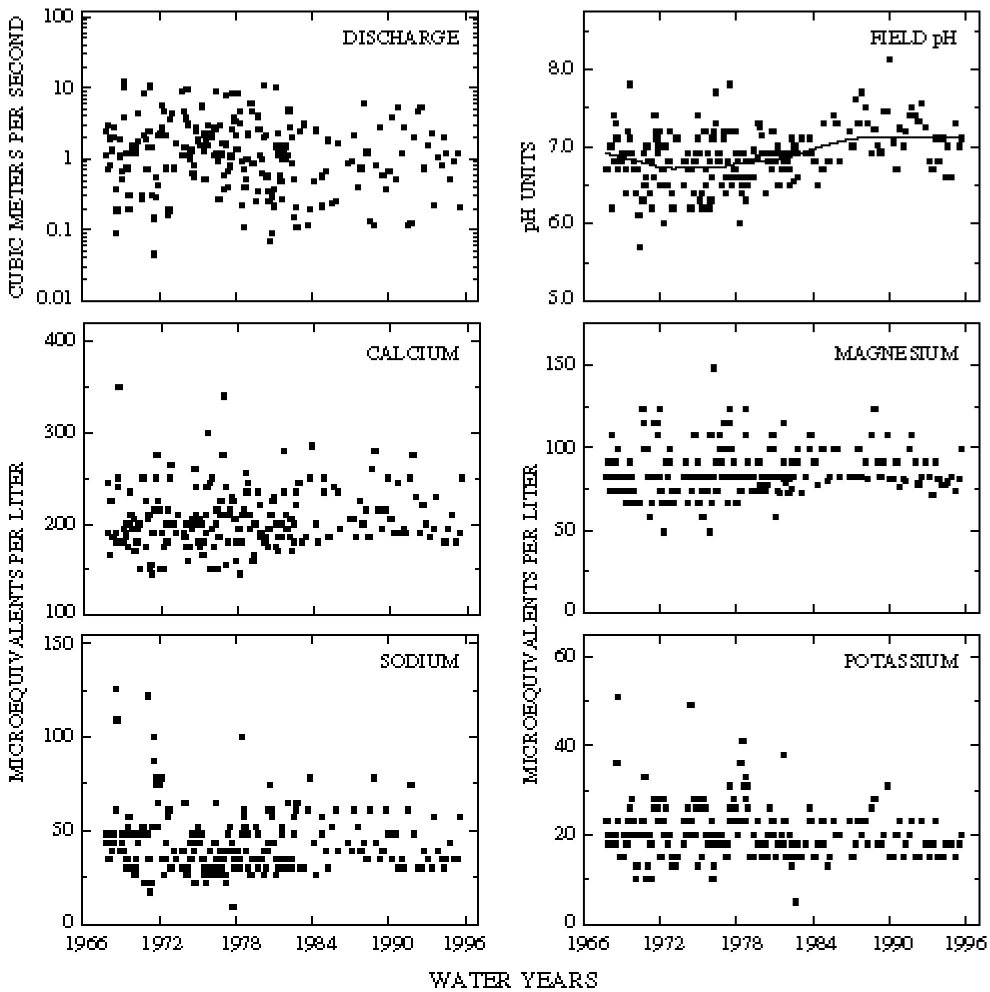

Figure 23a. *Temporal variation of discharge, field pH, major ion concentrations, and ion balance at Young Womans Creek, Pennsylvania*

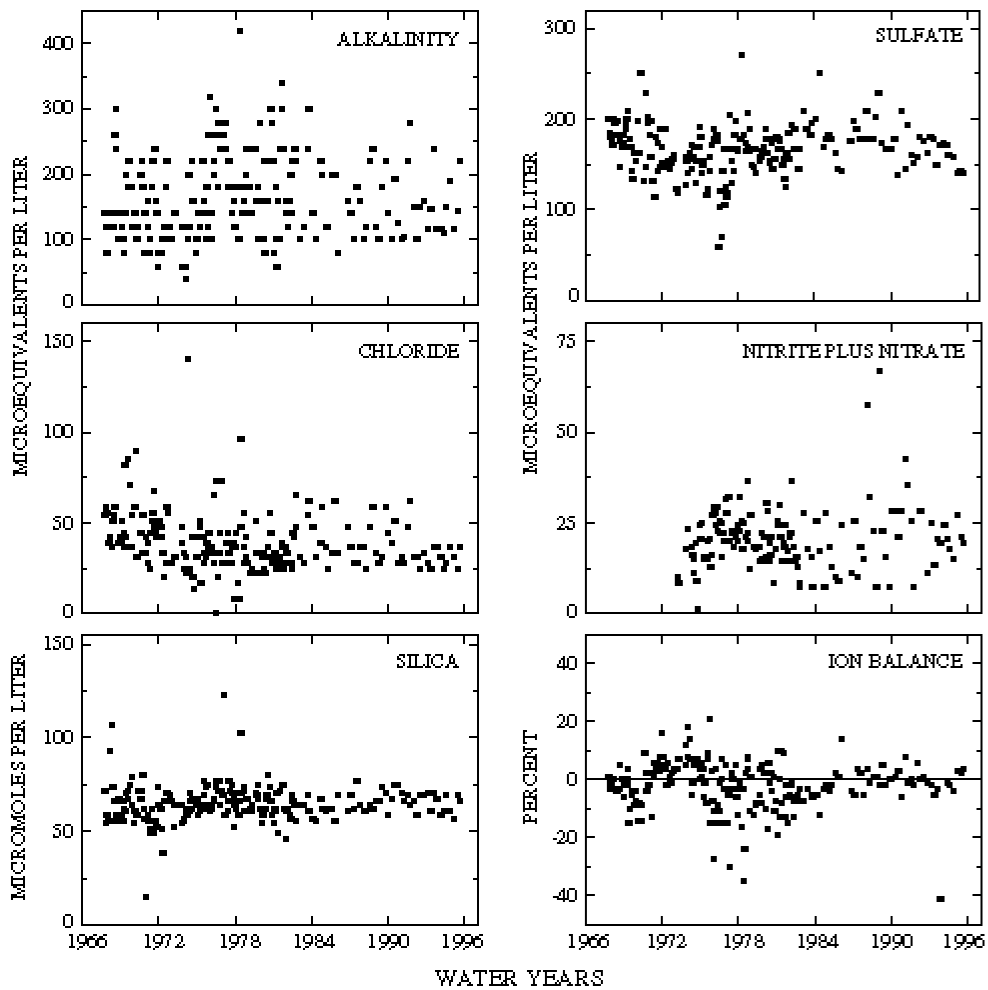

Figure 23b. *Temporal variation of discharge, field pH, major ion concentrations, and ion balance at Young Womans Creek, Pennsylvania - Continued*

Table 42. Minimum, first quartile, median, third quartile, and maximum values of physical properties and major ion concentrations measured in water-quality samples from Young Womans Creek, Pennsylvania, October 1967 through August 1995, and volume-weighted mean concentrations in wet precipitation collected at the Jasper Station, New York

[Concentrations in units of microequivalents per liter, discharge in cubic meters per second, specific conductance in microsiemens per centimeter at 25 degrees Celsius, pH in standard units, and silica in micromoles per liter; n, number of stream samples; VWM, volume-weighted mean; inst., instantaneous; spec. cond., specific conductance at 25 degrees Celsius; <, less than; --, not reported]

Parameter	Stream Water						Precipitation VMA[a]
	Minimum	First quartile	Median	Third quartile	Maximum	n	
Discharge, inst.	0.05	0.51	1.2	2.3	12	214	--
Spec. cond., field	25	37	39	42	56	213	--
pH, field	5.7	6.6	6.9	7.1	8.1	212	4.3[b]
Calcium	150	190	200	230	350	210	5.1
Magnesium	50	74	82	91	150	211	1.7
Sodium	9.0	30	39	48	130	212	2.4
Potassium	5.0	18	21	23	51	211	.4
Ammonium	<.7	<.7	.7	1.4	14	68	14
Alkalinity, laboratory	40	120	150	220	420	213	--
Sulfate	58	150	170	180	270	213	53
Chloride	8.0	28	37	45	140	212	3.2
Nitrite plus nitrate	1.4	16	20	25	67	147	26[c]
Silica	15	61	64	69	120	212	--

[a] Values are volume-weighted mean concentrations for 1980—95.

[b] Laboratory pH.

[c] Nitrate only.

Stream water in Young Womans Creek is dilute and weakly buffered; total ionic constituents ranged from 470 to 1,120 meq/L, and alkalinities generally were between 120 and 220 meq/L. The major cation in stream water was calcium and the major anions were sulfate and bicarbonate. The low concentrations of weathering-derived constituents, particularly alkalinity, are attributed to the lack of weatherable minerals in the underlying sandstones. High rates of acidic deposition probably also contribute to the low stream-water alkalinities at this station. The median chloride concentration in stream water was 37 meq/L compared to the VWM concentration of 3.2 in precipitation. Based on the difference between annual precipitation and runoff, evapotranspiration can account for about a twofold increase in the concentration of precipitation, indicating that some stream-water chloride is derived from sources other than precipitation. Because deicing salts are not used in the basin, the most likely additional sources of chloride are dissolution of trace amounts of halite in the underlying sedimentary rocks or possibly leakage of brine from the gas storage wells in the upper part of the basin. The median sulfate concentration in stream water was 170 meq/L, which was about three times larger than the VWM concentration of 53 meq/L in precipitation, indicating sulfate is derived from sources other than wet deposition. Assuming bedrock sources of sulfate are minor, dry deposition can account for most of the additional stream-water sulfate. Lynch and Corbett (1989) estimated that dry deposition accounted for as much as 30 percent of stream-water sulfate in a forested basin in central Pennsylvania. Concentrations of nitrate and ammonium in stream water were well below the VWM concentrations in precipitation, indicating that most atmospheric nitrogen was retained by vegetation and soils in the basin.

The solute composition of stream water was further evaluated by analyzing correlations between solutes and stream discharge (table 43). Discharge was inversely correlated with the weathering-derived constituents with the exception of silica. These results are consistent with a hydrologic system where weathering-enriched base flow is diluted by waters from shallow or surficial sources during periods of increased discharge. In contrast, sulfate and nitrate had positive correlations with discharge, implying that these solutes are controlled by processes in the soil environment. Atmospherically deposited sulfate probably is stored in soils during low-flow conditions and subsequently exported to the stream during periods of high flow (Lynch and Corbett, 1989). Overdorff (1987) observed a similar relationship between nitrate and discharge in a tributary of Young Womans Creek and determined that increases in stream-water nitrate during high-flow conditions in winter and spring were the result of nitrate influx from the snowpack and soils. Among the ions, the strongest correlations were found between base cations, alkalinity, and chloride; the weakest correlations were with silica. The strong correlations between calcium, magnesium, and alkalinity and the lack of correlation with silica are consistent with the weathering stoichiometry of carbonate minerals. The strong correlations between chloride and base cations, particularly sodium, provide additional evidence that stream-water chloride is derived from bedrock sources. The processes that control silica concentrations in stream water are not clear, particularly since concentrations varied relatively little over a wide range of streamflows. Weathering of silicate minerals in the sandstones and shales is the most likely source of silica in base flow. During high-flow periods, however, dissolution of amorphous silica minerals, biological activity, and sorption reactions along shallow flow paths may be the dominant processes that control stream-water concentrations of silica.

Table 43. Spearman rank correlation coefficients (rho values) showing the relation among discharge, pH, and major ion concentrations, Young Womans Creek, Pennsylvania, 1980 through 1995

[Q, discharge; Ca, calcium, Mg, magnesium; Na, sodium; K, potassium; Alk, alkalinity; SO_4, sulfate; Cl, chloride; N, nitrite plus nitrate; Si, silica]

	Q	pH	Ca	Mg	Na	K	Alk	SO_4	Cl	N
pH	-0.149									
Ca	-.742	0.294								
Mg	-.723	.277	0.840							
Na	-.799	.390	.816	0.835						
K	-.390	.308	.662	.591	0.534					
Alk	-.848	.200	.796	.679	.678	0.579				
SO_4	.491	-.069	-.430	-.315	-.383	-.224	-0.414			
Cl	-.631	.169	.698	.589	.713	.291	.542	-0.293		
N	.371	.004	-.175	-.289	-.283	-.329	-.464	.328	-0.095	
Si	-.095	-.029	.229	.203	.058	.284	.165	-.225	-.125	0.123

Results of the seasonal Kendall test for trends in discharge and major dissolved constituents are shown in table 44. Statistically significant upward trends were detected in field pH and magnesium at the 0.01 confidence level. The trend in pH was similar for unadjusted and flow-adjusted values. The trend in magnesium, however, was not significant for the flow-adjusted concentrations, indicating that the trend in magnesium probably was related to variations in stream discharge. The LOWESS curve in figure 23 shows that most of the increase in pH occurred between the late 1970's and early 1980's. Hainly and others (1989) studied trends in water-quality parameters for 12 tributary basins of the West Branch of the Susquehanna River from 1972 to 1982. Significant upward trends in pH at seven of the stations, including Young Womans Creek, were attributed to improvement in the treatment of acidic mine drainage from coal mines. However, this is not a reasonable explanation for the pH trend in Young Womans Creek because no active or abandoned coal mines are present upstream from the gage. Smith and Alexander (1983) reported increases in stream-water alkalinity and sulfate concentrations at this station from 1967 through 1981 that they attributed to regional declines in acidic deposition. Although the increase in pH detected in this study is consistent with the acidic deposition hypothesis, trends in alkalinity and sulfate were not detected from 1967 through 1995. The extensive network of roads also might be considered a likely mechanism for producing upward trends in stream-water pH. The Bureau of Forestry has increasingly used limestone gravel to resurface unpaved roads in the State Forests not only for its physical properties but also for its buffering effect on acidic precipitation (Robert Davey, oral commun., 1994).

Table 44. Results of the seasonal Kendall test for trends in discharge and unadjusted and flow-adjusted pH and major ion concentrations, Young Womans Creek, Pennsylvania, October 1967 through August 1995

[Trends in units of microequivalents per liter per year, except discharge in cubic meters per second per year, pH in standard units per year, and silica in micromoles per liter per year; <, less than; --, not calculated]

Parameter	Unadjusted		Flow adjusted	
	Trend	p-value	Trend	p-value
Discharge	-0.01	0.056	--	--
pH, field	.02	.000	0.02	0.000
Calcium	.4	.056	<.1	.974
Magnesium	.2	.010	.2	.102
Sodium	<.1	.663	<-.1	.494
Potassium	<.1	.192	<-.1	.098
Alkalinity, laboratory	<.1	.646	.2	.746
Sulfate	-.1	.716	<-.1	.889
Chloride	<-.1	.132	-.2	.035
Nitrite plus nitrate	<.1	.673	.2	.065
Silica	<.1	.690	<-.1	.889

Synoptic Water-Quality Data

Results of the surface-water synoptic sampling of October 22, 1991, are presented in table 45; locations of sampling sites are shown in figure 22. Discharge at the gage was 0.093 m^3/s compared to the median daily discharge of 0.45 m^3/s for October (Lawrence, 1987), indicating that low-flow conditions existed for that time of year. Concentrations measured at the gage (site 1) during the synoptic sampling were generally above the third-quartile concentrations that were measured at the gage during the entire period of record (table 42). The tributary sites were generally similar in composition to the gage, with calcium the dominant cation and alkalinity and sulfate the dominant anions. Ion balances of the synoptic samples ranged from -2.5 to 4.5 percent, inferring that organic anions did not contribute significantly to the ionic content of stream water during the sampling period.

Table 45. Physical properties and major ion concentrations from surface-water sampling sites in the Young Womans Creek Basin, Pennsylvania, October 22, 1991

[Site locations shown in fig. 22; Q, discharge in cubic meters per second; SC, specific conductance in microsiemens per centimeter at 25 degrees Celsius; pH in standard units; Ca, calcium; Mg, magnesium; Na, sodium; K, potassium; Alk, alkalinity; SO_4, sulfate; Cl, chloride; NO_3, nitrate; concentrations in microequivalents per liter; Si, silica in micromoles per liter; Fm, Formation; <, less than; --, not measured]

Site	Station number	Q	SC	pH	Ca	Mg	Na	K	Alk	SO_4	Cl	NO_3	Si	Criteria [a]	Remarks
1	01545600	0.093	56	7.1	270	110	74	22	200	160	62	10	62	--	--
2	412335077410700	.009	43	6.8	180	99	65	24	130	190	27	25	73	BG	Pocono Group
3	412554077401600	<.001	61	6.9	290	120	74	24	170	250	31	93	87	BG	Pocono Group
4	412607077395100	--	57	6.9	250	110	61	21	170	200	23	71	63	BG	Pocono Group
5	412748077374600	.040	44	7.1	210	91	61	19	160	160	42	14	65	MT, BG	Pocono and Pottsville Group
6	412753077374800	.017	63	7.2	350	120	78	21	310	190	60	16	70	MT, BG	Pocono and Catskill Group
7	412812077365600	--	40	6.0	170	82	30	23	22	230	23	36	65	BG	Pottsville Group
8	412919077385600	.002	59	7.3	320	110	78	20	300	170	54	8.6	82	LU, BG	Gas wells, Catskill Group
9	413021077385000	.004	88	7.5	460	140	170	20	470	190	160	<0.7	78	BG	Catskill Fm

[a]Criteria used in selection of sampling sites: BG = bedrock geology, MT = major tributary, LU = land use.

Stream chemistry during the sampling period varied markedly over the basin, particularly the concentrations of calcium, magnesium, and alkalinity. For example, alkalinities ranged from a minimum of 22 meq/L in North Baldwin Branch (site 7) to a maximum of 470 meq/L in the upper reaches of Lebo Run (site 9). A similar pattern was measured in pH, which ranged from 6.0 at site 7 to 7.5 at site 9. These differences in stream-water chemistry can be explained by the distribution of major rock types in the basin. The three tributaries with the highest alkalinity and pH values (sites 6, 8, and 9) drain areas underlain by rocks of the Catskill Formation, whereas the tributary with the lowest alkalinity and pH, North Baldwin Branch, drains rocks belonging to the Pottsville Group. Tributaries with intermediate compositions drain rocks of the Pocono Group. Base-cation concentrations showed the same relation with rock type. Streams that drain rocks of the Catskill Formation had substantially larger concentrations than tributaries that drain the other two bedrock units. A similar relation between stream chemistry and rock type was observed by Dinicola (1982) and DeWalle and others (1987) for streams that drain areas underlain by rocks of the Pottsville and Pocono Groups in southwestern Pennsylvania. The authors attributed the pattern to differences in the amounts of limestone and carbonate cements in the sedimentary units.

In contrast to alkalinity, sulfate concentrations did not vary markedly among the sampling sites. This consistency in stream-water concentrations probably reflects the fact the sulfate is derived from atmospheric sources and behaves relatively conservatively in the basin. Chloride concentrations also were fairly uniform (23 to 62 meq/L) with the exception of Lebo Run above Big Trestle (site 9) that had a concentration of 160 meq/L. This subbasin has a high density of cabins and gas storage wells, both of which are potential sources of chloride. Nitrate concentrations in the tributary streams ranged from less than 0.7 meq/L to 93 meq/L. The highest nitrate concentrations were measured in McCraney Run (site 3) and Bull Run (site 4), both of which were sampled downstream from ground-water discharge zones. Hainly and Ritter (1986) also reported elevated nitrate concentrations for three small tributaries in the basin including Bull Run. Relatively high nitrate concentrations were measured in ground-water-fed streams in the Catskill Mountains of New York (Burns, 1993). Burns hypothesized that ground water discharging from springs was enriched in nitrate because it was recharged predominantly during the nongrowing season when plant demand for nitrogen is minimal.

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Appendix A. List of Map References

a. U.S. Geological Survey topographic maps:

- Oleona, Pennsylvania (1: 24,000)
- Lee Fire Tower, Pennsylvania (1: 24,000)
- Slate Run, Pennsylvania (1: 24,000)
- Young Womans Creek Pennsylvania (1: 24,000), gaging station on this quadrangle
- Williamsport West, Pennsylvania (1: 100,000)
- Wellsboro, Pennsylvania (1: 100,000)

b. Geologic maps:

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Appendix B - NWIS Site-Identification Numbers

Table B-1. NWIS site identification numbers and site names for water-quality sampling sites.

Site	Identification Number	Site Name
1	01545600	YOUNG WOMANS CREEK NEAR RENOVO, PA
2	412335077410700	LAURELLY FORK NEAR RENOVO, PA
3	412554077401600	MCCRANEY RUN NEAR RENOVO, PA
4	412607077395100	BULL RUN NEAR RENOVO, PA
5	412748077374600	COUNTY LINE BRANCH NEAR RENOVO, PA
6	412753077374800	LEBO RUN NEAR RENOVO, PA
7	412812077365600	N BALWIN BRANCH NEAR RENOVO, PA
8	412919077385600	BIG SPRING BRANCH NEAR RENOVO, PA
9	413021077385000	LEBO RUN AB BIG TRESTLE RUN NR RENOVO, PA

This page maintained by Nichole Bisceglia.
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