18TH ANNUAL HARRISBURG AREA GEOLOGICAL SOCIETY FIELD TRIP GUIDEBOOK

MAY 15, 1999

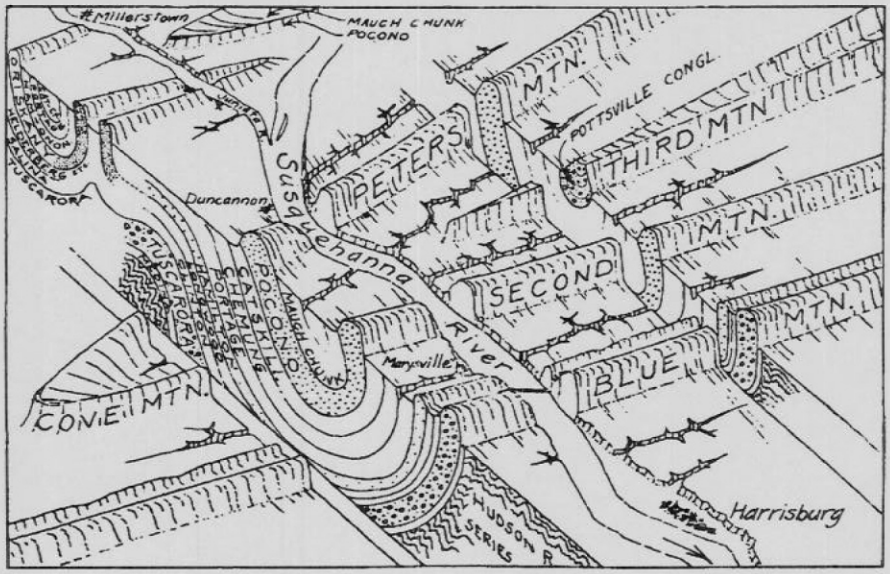
The Cove Syncline By Canoe

The Geographical Press
Columbia University
NEW YORK

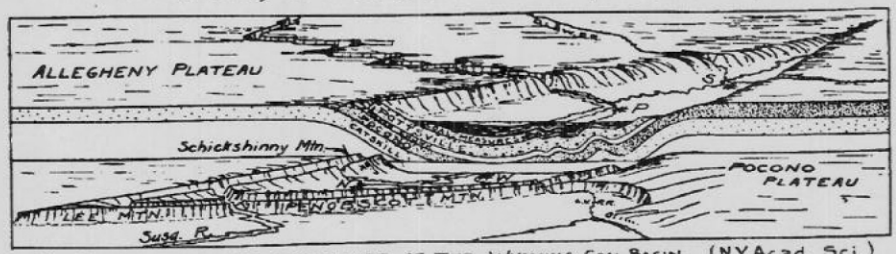
Atlas of
American Geology

Sheet No. 31

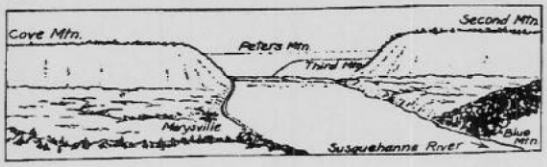
THE FOLDED APPALACHIANS



A. DIAGRAM SHOWING STRUCTURE OF THE FOLDED APPALACHIANS AT HARRISBURG. (N.Y.Acad.)
1. What is the essential structure of this region and in which direction does it pitch? What other feature on the map resembles Cove Mtn. in form and structure?
2. The coal beds occur immediately above the Pottsville Conglomerate. Where in this region, therefore would you expect to find coal?
3. Note a pitching anticline. Note also the three cycles of erosion represented here.



B. DIAGRAM SHOWING STRUCTURE OF THE WYOMING COAL BASIN. (N.Y.Acad. Sci.)
1. What is the structure of this basin? What cities lie in this basin?
2. Which of the formations represented here are resistant? Do they correspond with any in the Harrisburg region?



C. THE WATER GAPS ABOVE HARRISBURG.
1. Color this picture, as well as the Harrisburg map above, in order to show the different geological formations, using the same colors in each.

Prepared By: William M. Roman and Michael A. Knight

TABLE OF CONTENTS

FIGURES

TABLES

ATTACHMENT

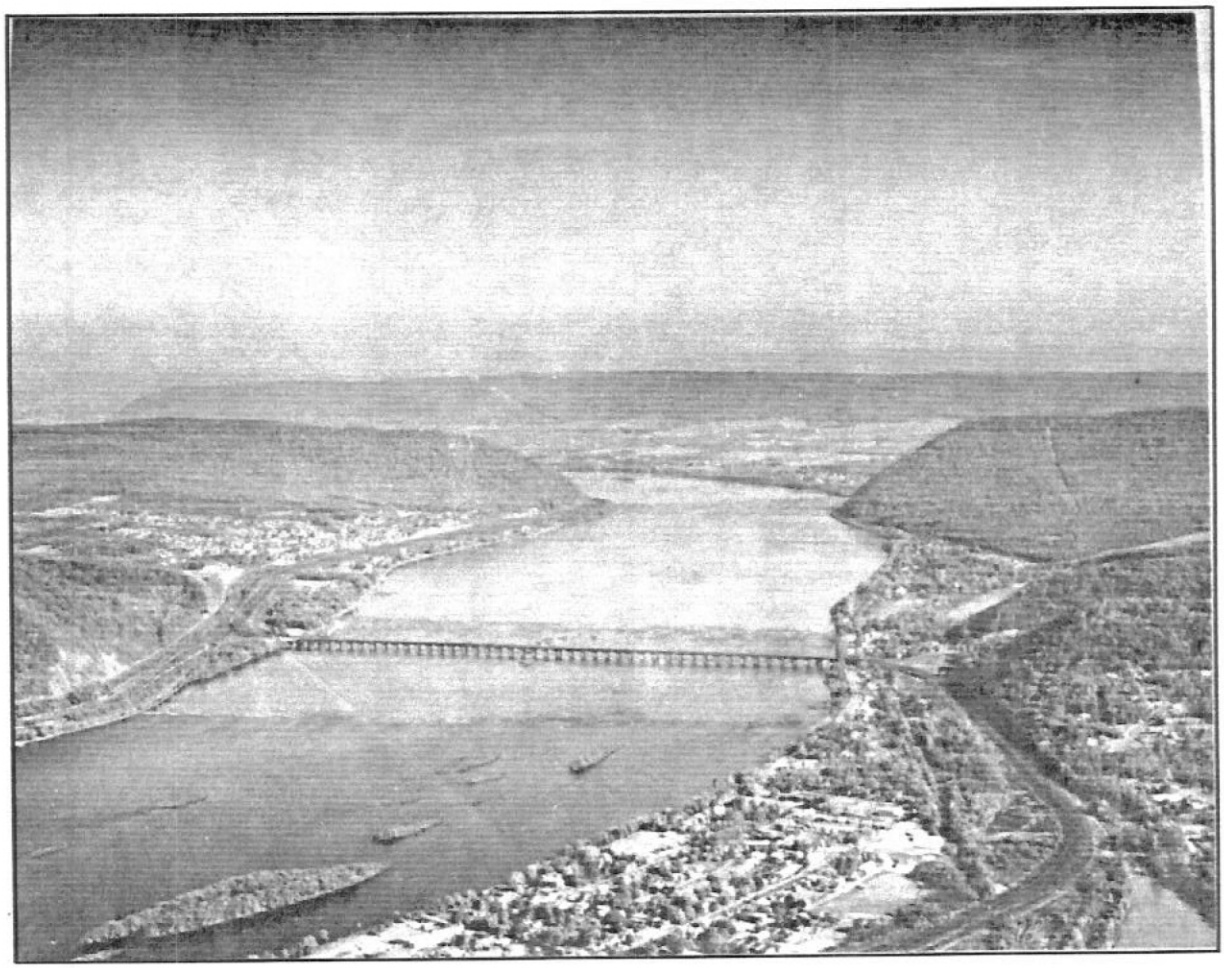


Figure 1. Susquehanna River water gaps north of Harrisburg. Photo by Grant Heilman in Geyer and Bolles, 1979, p. 327.

1. INTRODUCTION

The 1999 field trip of the Harrisburg Area Geological Society focuses on the structurally parallel and transverse drainage pattern developed in a portion of the Appalachian Mountain. By canoe, we will explore the stratigraphy and structure of the Cove syncline and the majestic Susquehanna River water gaps north of Harrisburg. We plan to put in on Sherman Creek at the covered bridge in Dellville and pull out of the Susquehanna River at the Marysville town access above the Rockville stone arch railroad bridge (Figure 1). The length of the trip is approximately 15 miles.

We will follow Sherman Creek for approximately 8 miles as it flows primarily northeastward along the strike of the north limb of the Cove syncline. Upper Devonian bedrock of the Catskill Formation underlies this stretch of Sherman Creek. We will see outcrops of the type section of the Sherman Creek member along the transverse legs of a tight meander away from Cove Mountain, outcrops of the Irish Valley member at the

northern end of this meander, and ledges formed by the Clarks Ferry member in the last transverse stretch of the stream before its confluence with the Susquehanna.

We will then follow the Susquehanna River through the gap in the north ridge of Cove Mountain, across the axis of the Cove Mountain syncline, and through the south ridge of Cove Mountain. Upper Devonian to Mississippian bedrock of the Specty Kopf and Pocono Formations form the ridges, while the Mauch Chunk Formation underlies the axis of the fold. The last leg of the trip follows a transverse stretch of the Susquehanna River back down the stratigraphic column through Devonian age rocks to our pullout point above the Rockville stone arch railroad bridge.

The water gaps have been a classic area of geologic study (see cover). The National Park Service has officially designated the area of the first five water gaps north of Harrisburg as a National Natural Landmark. The state geologist at the time, Dr. Arthur Socolow, was the featured speaker at the dedication ceremony held September 4, 1969 (Pennsylvania Geology). Numerous theories have been advanced to explain the geomorphic evolution of these scenic geologic features.

The trip has been designed to provide less experienced canoeists a warm-up on the intimate and shallow waters of Sherman Creek before moving on to the vast waters of the Susquehanna River.

2. PHYSIOGRAPHY

The area of the trip is situated entirely within the Appalachian Mountain Section of the Ridge and Valley Physiographic Province. This province is characterized by long narrow ridges and broad to narrow valleys of moderate to very high relief (Sevon, 1996). Numerous articles have been published on the evolution of the Appalachian geomorphology (Gardner and Sevon, 1989).

3. STRATIGRAPHY

Dyson (1963 and 1967) and Hoskins (in Root and Hoskins, 1975-1976) have mapped the stratigraphy of the trip area. The Sherman Creek from Dellville to its mouth at Duncannon is entirely underlain by the Catskill Formation. Dyson (1967) provides the following descriptions for the various members of the Catskill Formation in the southern half of the New Bloomfield 15-minute quadrangle:

> *Irish Valley Member (Dciv): medium-gray and reddish-gray siltstones, shales, and fine-grained sandstones. Includes some medium-gray sandstones up to 80 feet thick which may be persistent. Brachiopods and crinoids at numerous horizons in both gray and red beds.*
>
> *Sherman Creek Member (Dcsc): grayish-red-to brownish-red shales, siltstones, and fine-grained sandstones with some gray, fine-grained sandstone interbeds. The upper part is dominantly sandstone.*

Clark's Ferry Member (Dccf): gray-to grayish-red, cross-bedded quartzite and sandstone (in part conglomeratic) containing red shale pebbles.

Duncannon Member (Dcd): Upper sandy part contains medium gray- to medium-dark-gray, thick conglomeratic sandstones, separated by thinner units of grayish-red shale and siltstone and overlain by 100 feet of grayish-red shale containing pebbles (to 2 inches in diameter) of various lithologies. Characterized by pronounced cyclic sedimentation. Lower part contains grayish-red- to brownish-red shales, siltstones, and fine-grained sandstones with some gray, fine-grained sandstone interbeds. Characterized by pronounced cyclic sedimentation.

Bedrock lithology plays an important role in the drainage pattern. The more resistant sandstone layers within the Catskill Formation tend to turn the stream in a direction parallel to strike. The stream flows oblique to strike or normal to strike through the relatively less resistant lower parts of the Sherman Creek and Duncannon Members, which contain more shale than sandstone. The exception is a short stretch normal to strike through the resistant Clark's Ferry Member, where the ledges of sandstone and quartzite pose significant obstacles to canoeists when the creek is low.

Upper Devonian and Mississippian age strata of the Spechty Kopf and Pocono Formations form the backbone of Cove Mountain (Attachment). The Mauch Chunk Formation underlies the cove in the axis of the syncline. Dyson (1967) describes these formations as follows:

Spechty Kopf Formation (DMps): sandstone with some conglomerate and minor redbed and siltstone interbeds. (Dyson (1967) actually maps the Spechty Kopf as a member of the Pocono Formation. Hoskins (in Root and Hoskins, 1975-76) maps it as a separate formation.)

Pocono Formation (Mpo): medium- to thick-bedded, medium- to coarse-grained, cross-bedded, micaceous, gray conglomeratic sandstone and sandstone with some shale and siltstone interbeds. Quartz pebble conglomerate up to 20 feet thick about 200 feet above base. Carbonized plant remains and marcasite nodules abundant. Some marcasite zones are interleaved with films and lenses (1/4 inch thick) of anthracite. Most if not all the formation is characterized by cyclic (rythmic) sedimentation.

Mauch Chunk Formation (Mmc): grayish-red to moderate-red shales, mudstones, siltstones, and cross-bedded sandstones. Some sandstone units are channel fillings. Mud cracks and ripple marks common. In lower part of formation are several limestone-pebble conglomerates, a number of mud-plate conglomerates, and several sandstones containing lithic pebbles up to 4 inches long. Cyclic stratification pronounced. Lower 194 feet transitional with underlying Pocono Formation.

A diabase dike of Triassic age cuts diagonally across the river just downstream of the mouth of Sherman Creek (Attachment).

The transverse stretch of the Susquehanna River from the southern gap of Cove Mountain to the Rockville Bridge is underlain by progressively older bedrock of the Catskill Formation (described above) and the Devonian age Trimmers Rock Formation and Hamilton Group (Root and Hoskins, 1975-76). The Trimmers Rock Formation includes fossiliferous, medium-dark-gray, very fine-grained sandstone, siltstone, and shale (Dyson, 1967). The Hamilton Group includes shales and sandstones belonging to the Mahantango and Marcellus Formations. The Rockville Bridge is underlain by the Bloomsburg Formation, which according to Dyson (1967) may contain strata equivalent to the Keyser, Tonoloway, Wills Creek, and Mifflintown Formations.

4. STRUCTURE

The axis of the Cove Mountain syncline is shown in the geologic map (Attachment). The plunge of the syncline in the map area is approximately 10 degrees east (Dyson, 1967, p. 44).

5. SHERMAN CREEK BASIN

Figure 2. Red dot indicates the location of Sherman Creek gaging station at Shermansdale.

Sherman Creek drains an area of 244 miles^2 (USGS/wwwrvares). USGS maintains gaging station no. 01568000 on the left bank of the creek on the downstream side of the PA Route 34 bridge over Sherman Creek at Shermansdale (Figure 2). The drainage area above the gaging station is 207 miles^2 and the gage datum is 426.63 feet (USGS/waterdata). A hydrograph of discharge in cubic feet per second (cfs) from October 1, 1929 to September 30, 1997 is presented in Figure 3.

The NOAA National Weather Service flood threshold for the Sherman Creek gaging station at Shermansdale as of March 1996 is a stage of 9.0 feet, which represents a flow of 6,220 feet^3/second. The ten highest floods during the period of record are listed in Table 1. The June 1972 and September 1996 floods were a result of Tropical Storms Agnes and Fran, respectively. The extreme flood outside the period of record occurred on July 22, 1927, when floodmarks indicate the creek reached a stage of 20.34 feet with a discharge of about 44,000 feet^3/second *(http://wwwpah2o.er.usgs.gov/)*.

Sherman Creek below PA Route 34 is generally canoeable when the stage is at least 1.5 feet at Shermansdale (Gertler, 1993). The stream usually maintains this stage within ten days of rain and until late May. Stage information may be obtained from the State College

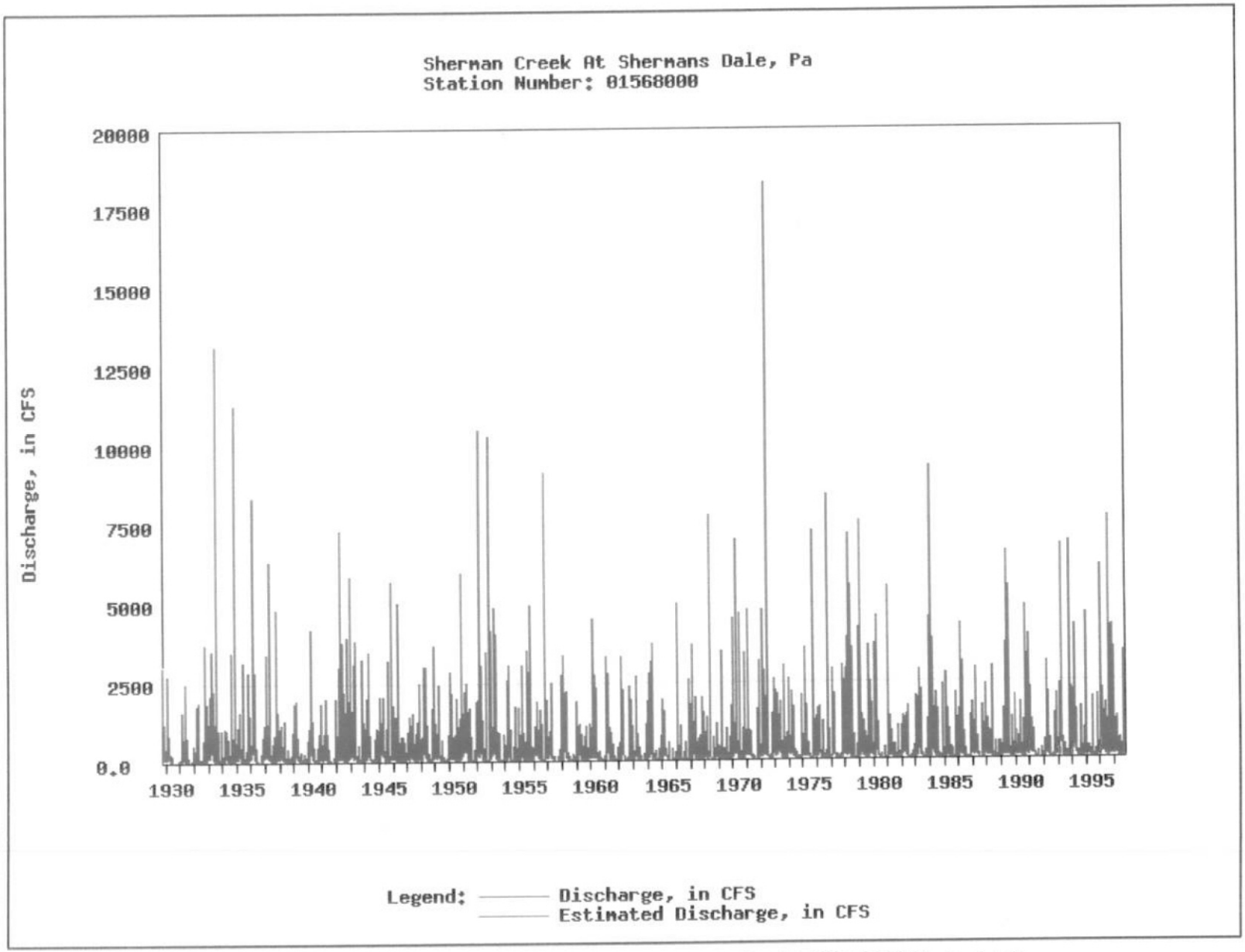


Figure 3. Discharge at Sherman Creek from October 1, 1929 through September 30, 1997 (USGS/waterdata)

Forecast Office at (814)234-9861 or (800)362-0335 or from the USGS internet website at http://wwwpah2o.er.usgs.gov.

Table 1. Ten highest floods on Sherman Creek at Shermansdale from October 01, 1929 to September 30, 1997.

Date	Stage (feet)	Discharge (feet^3/second)
June 23, 1972	18.09	27,500
February 14, 1984	16.10	20,300
September 7, 1996	14.56	16,700
October 9, 1976	14.15	15,500
August 24, 1933	14.05	22,300
March 11, 1952	13.59	17,800
November 2, 1956	12.75	18,300
July 16, 1989	12.57	12,500
December 1, 1934	12.28	16,700
June 21, 1989	12.25	11,900

Source: http://waterdata.usgs.gov/nwis-w/PA/data.components/peak.cgi?statnum=01568000

6. LOWER SUSQUEHANNA RIVER BASIN

The Susquehanna River drains an area of 27,000 mile^2 of New York, Pennsylvania, and Maryland. Approximately 9,200 mile^2 of the drainage area lies within the basin of the lower Susquehanna River between Sunbury and the river's mouth at Havre de Grace, Maryland. The lower Susquehanna River supplies water for eight municipalities that withdraw a total of 20 million gallons per day (http://wwwrvares.er. usgs.gov/nawqa/ne /lsus/lsus_factsheet.html).

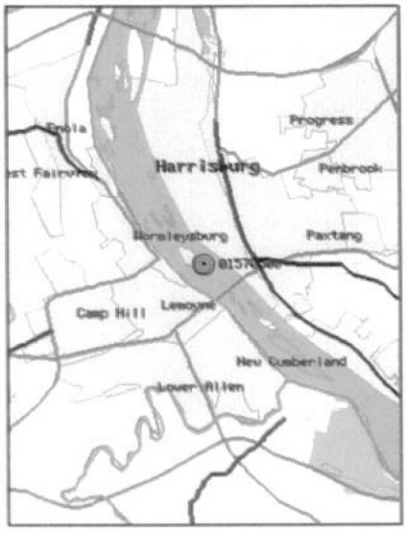


Figure 4. Red dot indicates location of Susquehanna River gaging station at Harrisburg.

A gaging station is located on the east bank of City Island, 60 feet downstream of the Market Street bridge in Harrisburg (Figure 4). The drainage area upstream of the gage is 24,100 mile^2, and the gage datum is 290.01 feet (http://wwwpah2o.er.usgs.gov/). A hydrograph of discharge in feet^3/second is presented in Figure 5.

The NOAA National Weather Service flood threshold for the Susquehanna River gaging station at Harrisburg as of March 1996 is a stage of 17 feet, which represents a flow of 309,100 feet^3/second *(http://wwwpah2o .er.usgs.gov/)*. The ten highest floods at Harrisburg are listed in Table 2. The June 1972 flood was a result of Tropical Storm Agnes. The Susquehanna River is always canoeable below Clarks Ferry except when flooding or frozen (Gertler, 1993, p. 121).

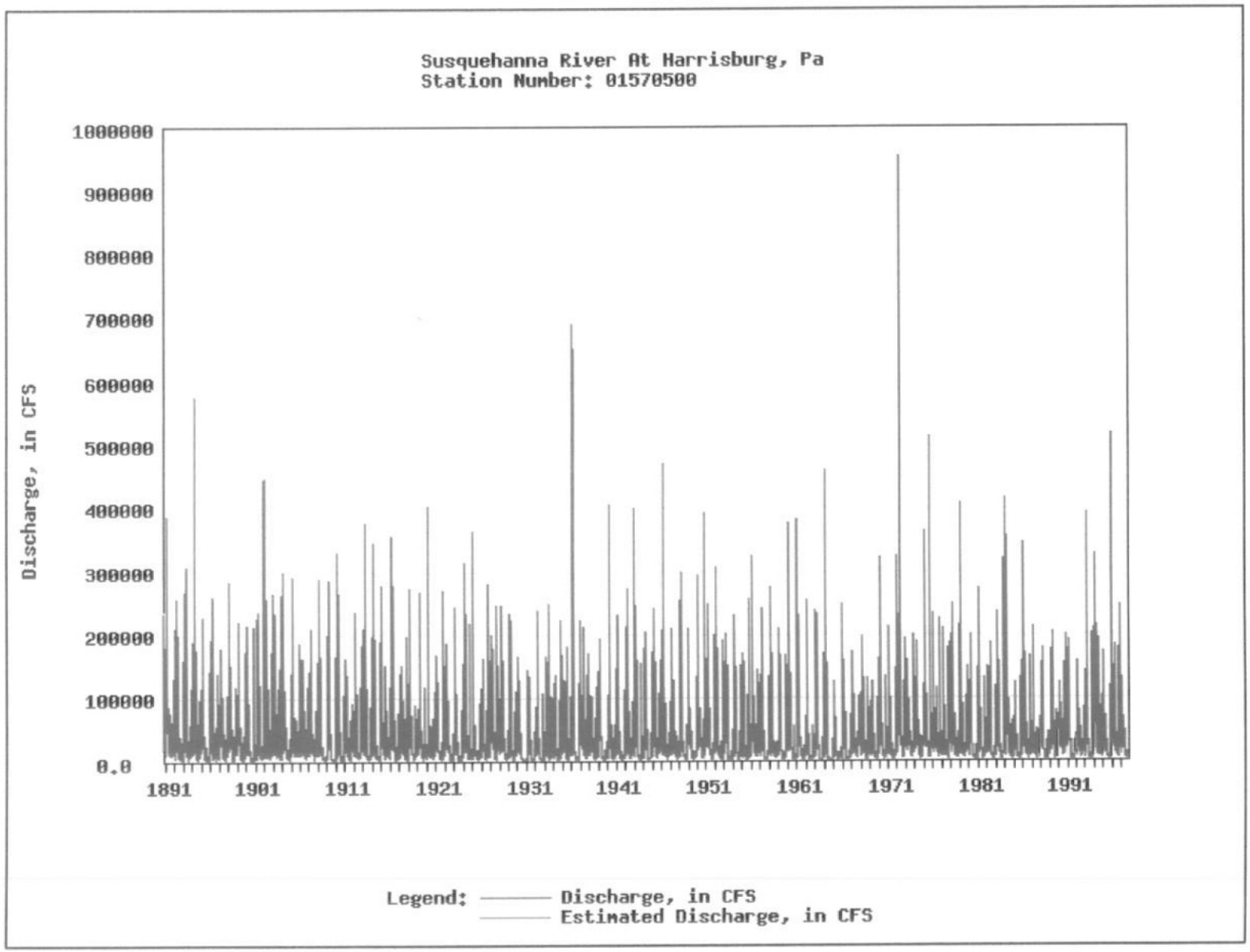


Figure 5. Discharge of Susquehanna River at Harrisburg from October 1, 1890 through September 30, 1997 (USGS/waterdata).

Table 2. Ten highest floods on the Susquehanna River at Harrisburg, 1786 to September 30, 1997.

Date	Stage (feet)	Discharge (feet^3/second)
June 24, 1972	32.57	1,020,000
March 13, 1936	29.23	740,000
June 2, 1889	26.80	654,000
May 22, 1894	25.70	613,000
January 21, 1996	24.66	568,000
March 18, 1865	24.60	573,000
September 27, 1975	23.82	102,000
March 3, 1902	22.94	449,000
March 15, 1846	22.00	482,000
January 5, 1886	22.00	482,000

Source: http://waterdata.usgs.gov/nwis-w/PA/data.components/peak.cgi?statnum=01570500

From scour channels and large diabase blocks found along the Susquehanna River at Conewago Falls south of Harrisburg, Sevon (1993) has inferred that extraordinary floods may have surged down the river during the Pleistocene. These tremendous floods would result from the catastrophic failure of ice dams blocking the West Branch Susquehanna River near Williamsport during pre-Illinoian ice advances. Such a failure would have drained glacial Lake Lesley, which would have contained 26 miles^3 of water and stretched along the Allegheny Front from Williamsport to a natural drain at Dix on the Blair-Centre County line. In the area of the field trip, periglacial activity and outwash deposition during Illinoian and late Wisconsinan may have obliterated evidence of such catastrophic floods. Please keep your eyes open for evidence as you paddle.

The Susquehanna River Basin Commission (SRBC) was established under a 100-year compact signed on December 24, 1970, by the federal government and the states of New York, Pennsylvania, and Maryland. It is charged with protecting and wisely managing the waters of the Susquehanna River Basin (http://www.srbc.net/). The commission's headquarters is on North Front Street in Harrisburg.

7. STREAM LOG

The trip begins at Blue Mountain Outfitters, which is located along the east side of U.S. Routes 11 and 15 in Marysville. Marysville is the largest borough in Perry County and was developed largely as a "railroad town" (Hain, 1922, p. 1000). Blue Mountain will provide canoe rental and livery service. From Marysville, we will travel north on U.S. Routes 11 and 15 to the south end of Duncannon, where we will take PA 274 West to S.R. 2002, which we will follow to Dellville and the point of departure for our canoe trip. Our stream log begins at the covered bridge over Sherman Creek in Dellville.

Mile Description

0.0 Put in on the right bank of Sherman Creek just upstream of the Dellville Bridge. Stream elevation is approximately 478 feet above sea level.

Dellville Bridge (Figure 6) is the largest of 14 covered bridges in Perry County. The bridge, originally known as Billows Bridge, was built in 1889, following the

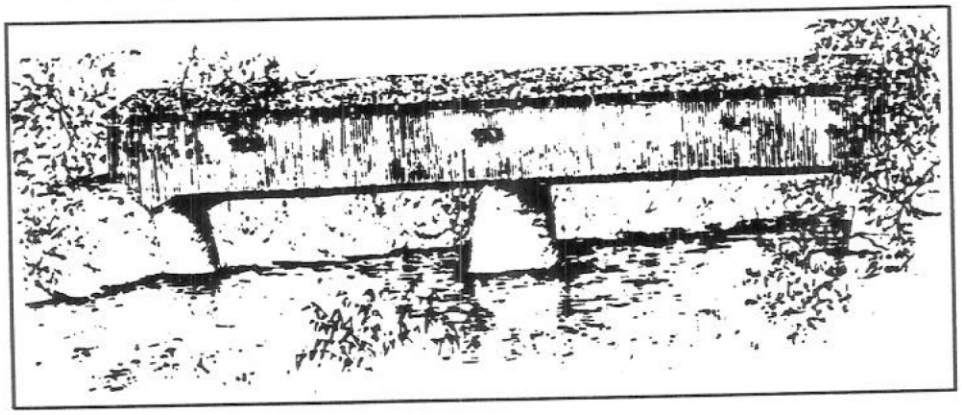


Figure 6. Upstream side of Dellville Bridge. Drawing by Scotty Brown.

flood of that year. The original construction was Burr arch single span. In 1932, it was reinforced with a concrete center pier, and in 1957, reinforced again with two 36-inch steel I beams. The bridge is 174 feet long, 20 feet wide, and features a wooden planking roadway. It carries Township Road 305 over Sherman Creek and is owned by the County (Perry County Tourist Bureau, 1983).

Dellville Mill lies approximately 1,000 feet upstream of Delville Bridge on the left bank of Sherman Creek. The mill was built about 1880, was turbine-operated, and equipped with mill stone and flour rollers. It ceased operation in the 1930's (Perry County Tourist Bureau, 1989). A now crumbling 3-foot dam upstream of the mill provided head to run the mill.

The lower part (shales, siltstones, and fine-grained sandstones) of the Sherman Creek Member of the Catskill Formation underlies the stream from the Dellville Bridge to Mile 0.7. The stream flows in a generally southeasterly direction, normal or oblique to bedrock strike, from Dellville to Mile 0.8.

0.4 Small tributary enters on left.

0.7 Downstream end of a small island coincides with the contact with the upper part (predominantly sandstone) of the Sherman Creek Member. An intermittent tributary, which flows roughly parallel to the contact, enters from the right just past the end of the island.

0.8 Stream bends sharply to the northeast and runs roughly parallel to strike and to the crest of Pine Ridge on the right. The more resistant cross-bedded quartzites and

conglomeratic sandstones of the Clark's Ferry Member underlie the crest of Pine Ridge.

1.5 Re-cross the contact between upper and lower parts of the Sherman Creek Member. The stream is now flowing over the lower part. The upper part underlies the north slope of Pine Ridge on the right.

1.9 Just past a house on the right, a tributary enters from the right. This stream drains a portion of the valley between Pine Ridge and Cove Mountain through a gap in the Clark's Ferry Member at the crest of Pine Ridge. At its mouth, the tributary is flowing over sandstone of the upper part of the Sherman Creek Member. At this point, Sherman Creek is bending to the left, away from Pine Ridge, to follow a meander limb running normal to bedrock strike.

2.7 Pass beneath metal bridge carrying S.R. 2002 over Sherman Creek. Sandstone outcrop of the lower part of the Sherman Creek Member on the right just upstream of the bridge.

3.0 Contact between the Sherman Creek and Irish Valley Members of the Catskill Formation. In the next 0.75 mile, the stream will turn 180 degrees to the right.

3.2 Spectacular bluff on left shows differential weathering of shale and sandstone layers in the Irish Valley Member.

3.3 Stream enters from left through mini-water gap near the apex of the meander.

3.4 Spectacular bluff on left shows differential weathering of shale and sandstone layers in the Irish Valley Member.

3.8 Contact between the Irish Valley and Sherman Creek Members of the Catskill Formation.

4.1 Pass beneath metal bridge carrying S.R. 2002 over Sherman Creek. Sandstone outcrop of the lower part of the Sherman Creek Member on the left just upstream of the bridge.

4.6 Cross contact between lower and upper parts of the Sherman Creek Member.

4.7 End of meander away from Pine Ridge. Sherman Creek now bends left and flows generally parallel to bedrock strike and Pine Ridge for the next 1.6 miles. The upper part of the Sherman Creek member underlies the stream and the north slope of Pine Ridge to the right. The Clark's Ferry Member forms the crest of Pine Ridge.

6.1 Perry County Recreation Association swimming pool and picnic pavillion on left.

6.3 Tributary enters from left just as Sherman Creek commences a 90-degree bend to the right toward a water gap through Pine Ridge. On a clear day, a prominent sandstone outcrop forming a ledge known as Hawk Rock is visible below the crest of Cove Mountain to the southeast through the gap in Pine Ridge. The sandstone is in the upper part of the Duncannon Member of the Catskill Formation (Wilshusen, 1983). The Appalachian Trail, a footpath running from Maine to Georgia, passes over Hawk Rock, which provides a spectacular vista on Duncannon, the confluence of the Juniata and Susquehanna Rivers, the western end of Peters Mountain, and most of eastern Perry County.

6.4 Cross contact between upper part of the Sherman Creek Member and Clark's Ferry Member of the Catskill Formation in the water gap in Pine Ridge. The creek is now flowing nearly normal to bedrock strike. Exercise care to avoid resistant rock ledges extending across the creek through the gap. The creek crosses into the lower part of the Duncannon Member of the Catskill Formation as the channel widens approximately 100 feet upstream of a house on the right side of the gap.

6.5 The Duncannon Water Company's water supply reservoir is located approximately 900 feet up the hollow on the right. This hollow is underlain by the lower part of the Duncannon Member, which is less resistant than the Clark's Ferry Member forming the crest of Pine Ridge and the upper part of the Duncannon Member forming the north flank of Cove Mountain.

6.6 Sherman Creek begins to bend to the left (northeast) for the final leg of its journey to the Susquehanna River. This last leg is underlain by the lower part of the Duncannon Member and roughly parallels bedrock strike, with some sinuosity, through the narrow valley between Pine Ridge to the north and Cove Mountain to the south.

7.2 On the left, the stream impinges on the Clark's Ferry Member underlying Pine Ridge to the north.

7.5 Pass beneath old local traffic bridge carrying the Appalachian Trail across Sherman Creek. From the bridge, it is 1,021 miles to the northern terminus of the trail on Mount Katahdin in Maine, and 1,113 miles to the southern terminus on Springer Mountain in Georgia (Chazin, 1988).

7.6 Pass beneath U.S. Routes 11 and 15 highway bridge. Note marks on upstream side of bridge pier indicating height of 1972 flood caused by tropical storm Agnes.

7.7 Leave Perry and enter Dauphin County as you pass beneath the stone arch railroad bridge and head out into the Susquehanna River. (Dauphin County claims its territory extends to the west side of the river.) The Clark's Ferry bridge over the Susquehanna River and the PA 849 bridge over the Juniata River are visible upriver. Tilted strata of the Catskill, Spechty Kopf, and Pocono Formations are visible across the river in the western end of Peters Mountain. The Clark's Ferry Member of the Catskill Formation forms the bench on the north side of Peters Mountain. A change in slope

marks the contact between the lower and upper parts of the Duncannon Member. A 45-foot-thick diabase dike cuts through the grayish-red shales of the Catskill Formation near this contact on the Peters Mountain side of the gap (Dyson, 1967, p. 41). The Spechty Kopf Formation forms the crest of Peters Mountain, and the Pocono Formation underlies the southern flank of the mountain. Alluvium at the mouth of Sherman Creek contains slag from Duncannon Ironworks, which began operation in 1828, but is now vanished.

7.9 Stay to the right of the ledge in the upper part of the Duncannon Member.

8.0 Pass over diabase dike.

8.1 Stay to the right of the ledge in the Pocono Formation.

8.2 Stay to the right of another ledge in the Pocono Formation, but begin crossing sharply to the left side of the river immediately after this ledge.

8.9 Stay to the left of the cluster of islands and ledges situated in the middle of the river.

9.8 Enter into the area of the Harrisburg West 7.5-minute quadrangle map (Attachment 1) and cross the axis of the Cove Mountain Syncline. Grayish-red to moderate-red shales, mudstones, siltstones, and cross-bedded sandstones of the Mauch Chunk Formation underlie the valley between North and South Cove Mountain as the ridges are known on the Perry County side of the river. In Dauphin County on the east side of the river, these ridges are known as Peters Mountain and Second Mountain. As the Cove Mountain Syncline plunges eastward, Third Mountain emerges within the valley between Peters and Second Mountains (see guidebook cover). Farther east, the crest of Third Mountain forks into two ridges known as Sharp and Stony Ridges, which are underlain by the Pottsville Formation, and form the rim of the anthracite basin.

11.3 The river is now flowing east, nearly parallel to bedrock strike. The large island on the right is called Berrier Island. The central portion of the island contains State Game Lands 319.

11.8 Clark Creek enters the Susquehanna on the left. The Dehart Dam on Clark Creek creates a water reservoir that serves the City of Harrisburg.

13.2 Borough of Dauphin is on the left bank.

13.4 Stoney Creek enters the Susquehanna on the left at the south end of Dauphin. Look for the Statue of Liberty on your right.

13.5 Cross contact between the Mauch Chunk and Pocono Formations and enter Susquehanna River gap between South Cove Mountain to the west and Second Mountain to the east (Figure 8).

CAUTION: REFER TO CIRCULAR INSERT IN FIGURE 8 FOR ADVICE ON AVOIDING LEDGES IN THE POCONO FORMATION.

Figure 7. USGS digital orthophoto of Susquehanna River gaps through South Cove (or Second) and Blue Mountains taken April 8, 1993.

13.5 Pass through ledges in Pocono Formation.

13.6 Cross contact between Pocono and Spechty Kopf Formations. This contact follows crest of South Cove Mountain on the west and Second Mountain on the east side of the water gap. Note that the older Spechty Kopf Formation overlies the younger Pocono Formation as a result of the overturning of the beds of Second Mountain.

13.7 Cross contact between Spechty Kopf and Catskill Formation.

14.2 Cross contact between Duncannon and Clark's Ferry Members of the Catskill Formation. The resistant quartzites and sandstones of the Clark's Ferry Member form a bench on the south side of South Cove and Second Mountains similar to the bench seen on the north side of Peters Mountain on the north limb of the syncline. Borough of Marysville is on the right.

15.1 Fishing Creek enters on the left at Fort Hunter. Another Fishing Creek enters on the right at the southern end of Marysville.

15.2 Cross contact between Catskill and Trimmers Rock Formations.

15.3 Cross contact between Trimmers Rock and Hamilton Group. The resistant coarse sandstones and conglomerates found in the middle section of the Hamilton Group form the ridge known as Little Mountain as well as the ledges that cross the water gap through the mountain.

CAUTION: REFER TO CIRCULAR INSERT IN FIGURE 8 FOR ADVICE ON AVOIDING LEDGES IN THE HAMILTON GROUP.

15.4 Pass through ledges in Hamilton Group and veer sharply to the right toward pull out point on the right bank just upstream of the Rockville railroad bridge. The water gap downstream of the Rockville Bridge is the gap in Blue Mountain, which is the southernmost mountain of the Appalachian Mountain section. The Great Valley section (Cumberland Valley) lies south of the water gap.

15.8 Pass to the upstream side of the small island near the middle of the river just upstream of the Rockville Bridge.

16.2 Pull out at the Marysville town access on the right bank just upstream of the Rockville Bridge.

Hain (1922, p. 424) provides the following account of the construction of the Rockville Bridge and its precursor:

"The first Susquehanna bridge 3,670 feet in length, crossing the river at Rockville, was let and commenced in 1847. The contractor abandoned the job and the masonry was relet to Helman & Simons, of Harrisburg, through whose energy, aided by Robert McAllister, of Juniata County, the bridge was completed in 1848. At the same place now is located the famous stone arch bridge, the west half of which was begun March 13, 1900, by H. S. Kerbaugh, Inc., and the east half at the same time by the Drake & Stratton Company, contractors. The bridge is 3,830 feet long, and 52 feet wide, accomodating four tracks. It was completed March 30, 1902, train No. 20 being the first to cross it."

440,000,000 tons of stones were used to construct the bridge, and as of 1922, it was the longest stone arch bridge in the world (Hain, 1922, p. 1003).

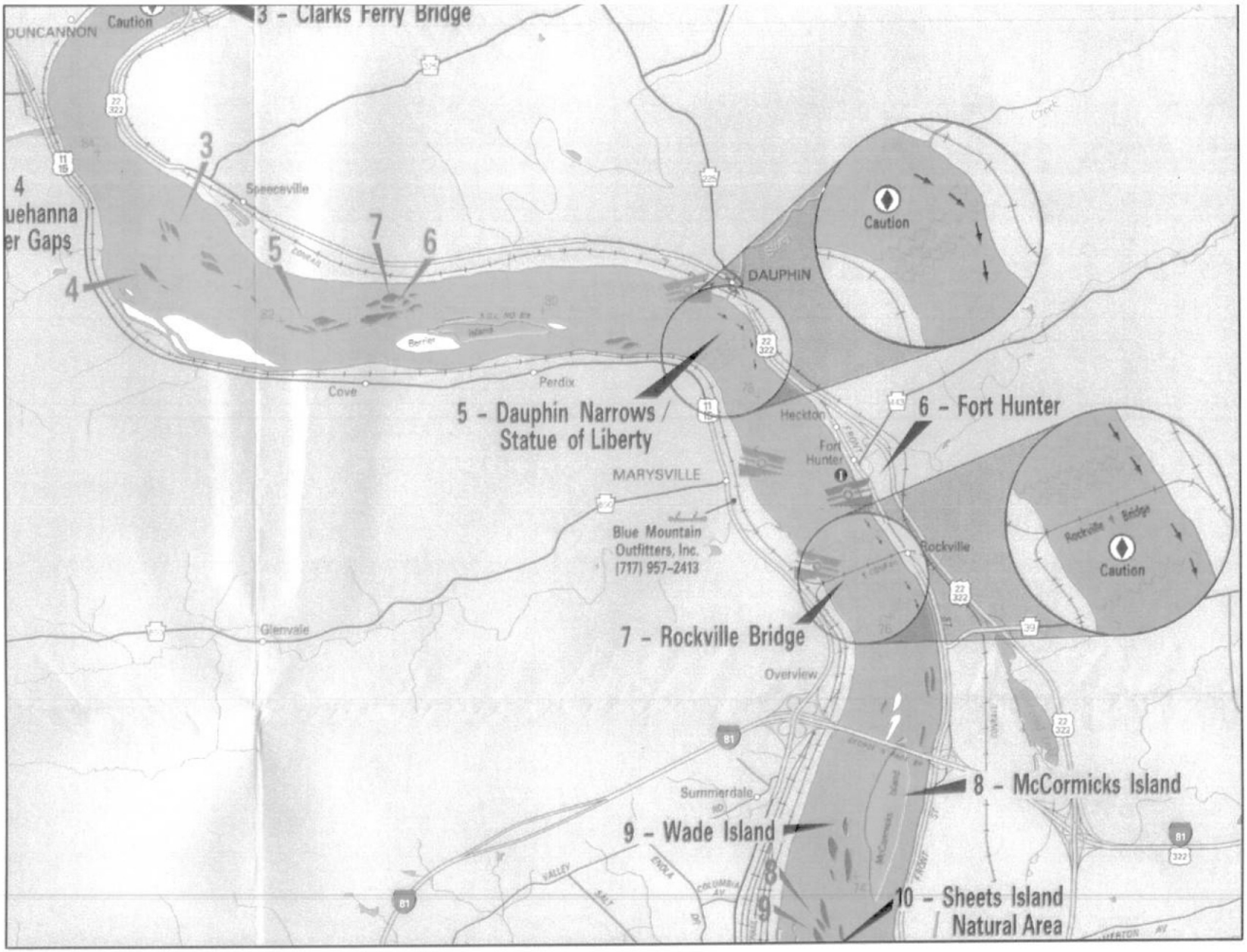


Figure 8. Stay river left when traversing ledges in the Pocono Formation and the Hamilton Group (See circular inserts).

REFERENCES

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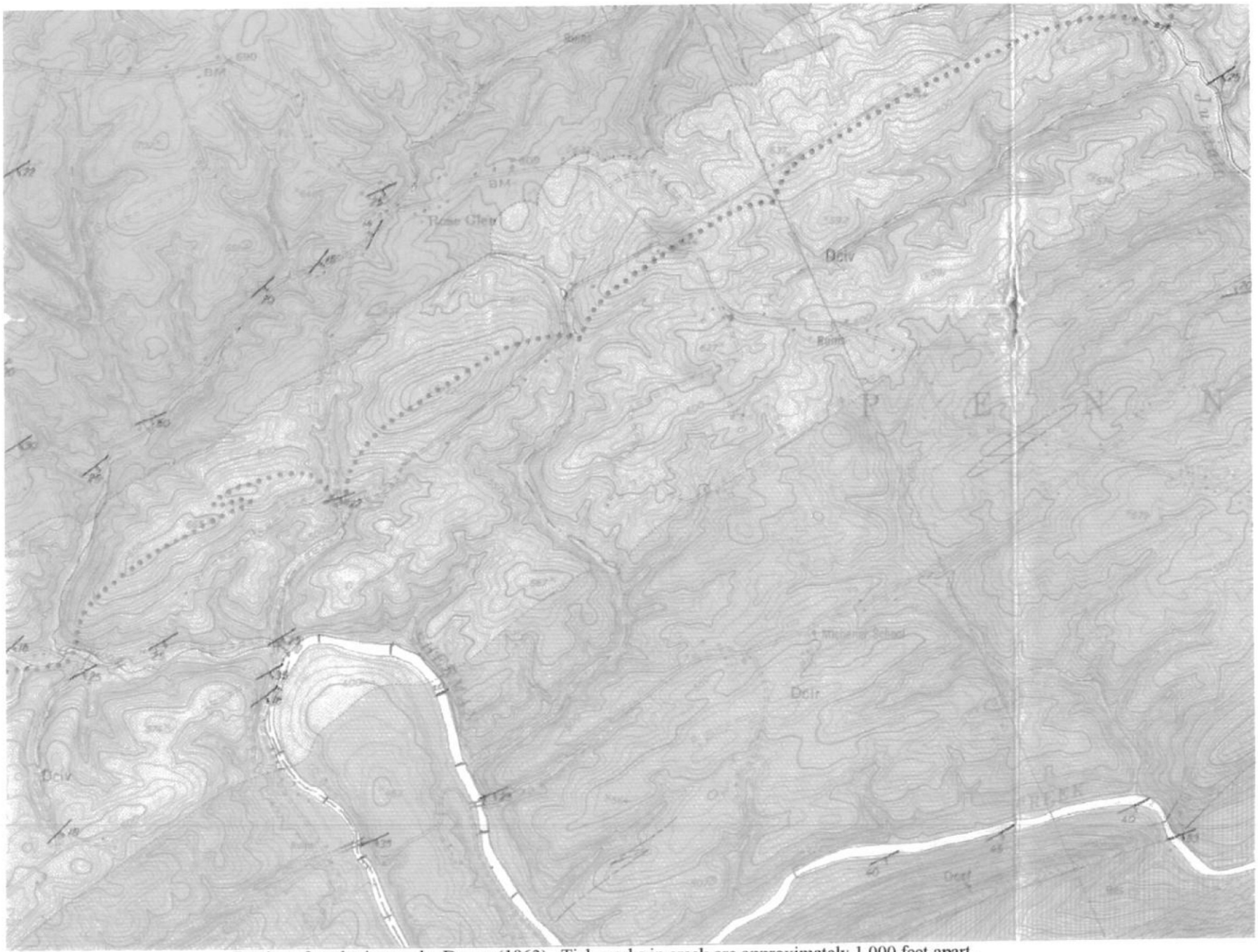
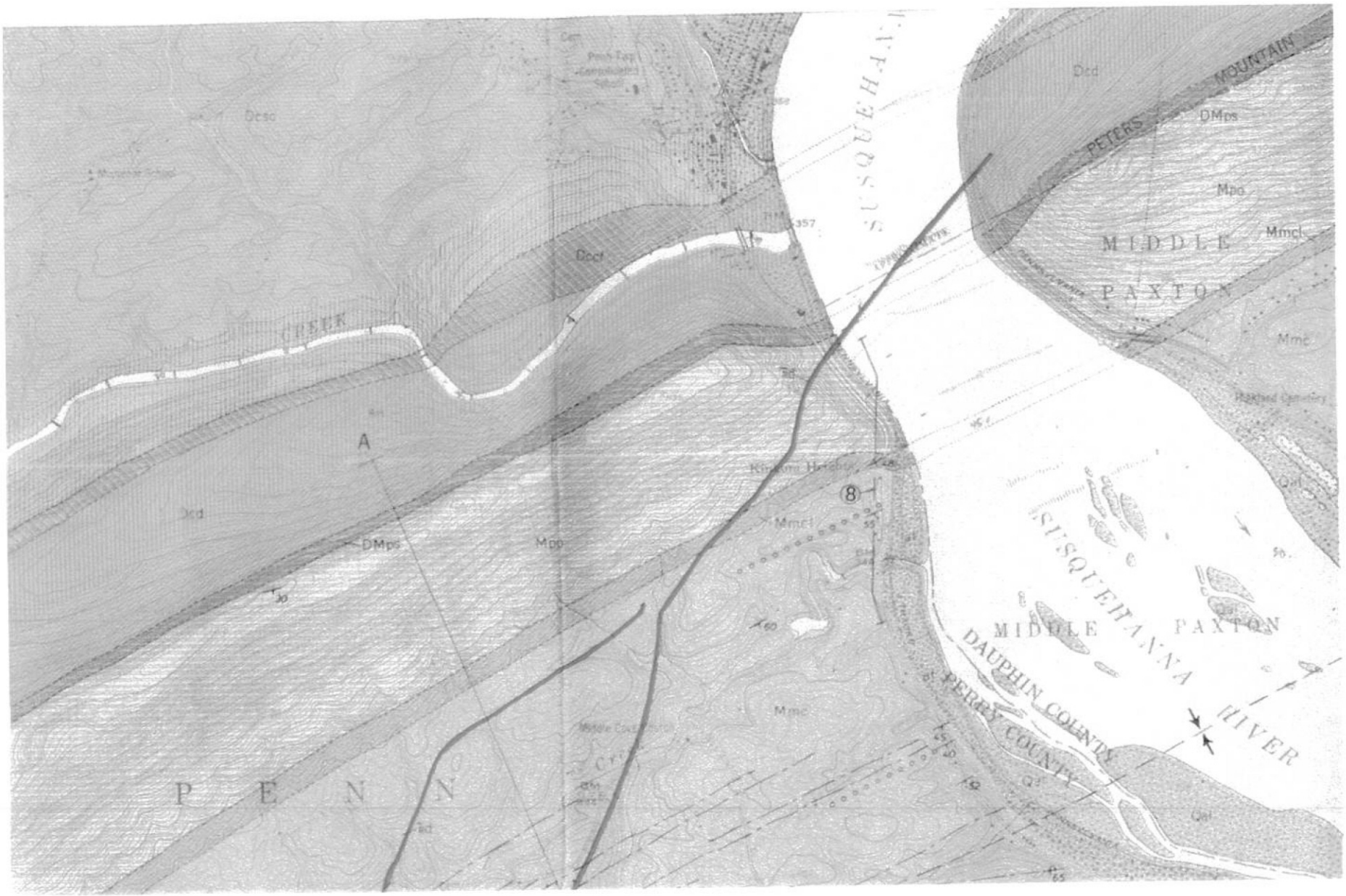
ATTACHMENT

Portion of geologic map by Dyson (1967). Tick marks in stream are approximately 1000 feet apart.



Portion of geologic map by Dyson (1963). Tick marks in creek are approximately 1,000 feet apart.



Portion of geologic map by Dyson (1967). Tick marks in stream are approximately 1,000 feet apart.

Part of geologic map by Dyson (1963). Dyson (1967) revised names of members of the Catskill Formation as follows: Lower Red Bed Member (Dclr)=Sherman Creek Member; Upper Red Bed Member (Dcur)=lower part of Duncannon Member; Upper Sandstone Member (Dcs)=upper part of Duncannon Member. Scale = 1:24:000.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Scale 1:24,000

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY

Harrisburg West 7.5' Quadrangle
Compilation Sheet.
PA Geologic Survey Library

HARRISBU
7.5 MINUTE

aerial
interp. +
field
Pa.G.S. Rept. W24
EG4
8ab
Pa.G.S. Rept. EG4

Chunk

MDsK
Spechty Kopf

canum