

Pennsylvania Geology from Pittsburgh International Airport to NSS Convention

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AGE	GROUP OR FORMATION	LITHOLOGY	UNIT		
PERM. 299 MA	Dunkard Gr.		Washington coal		
			Waynesburg coal		
PENNSYLVANIAN 303 MA	Monongahela Fm.		Uniontown coal		
			Benwood limestone		
			Sewickley coal		
			Fishpot limestone		
			Redstone coal		
			Pittsburgh sandstone		
			Pittsburgh coal		
		Conemaugh Gr.	Casselman Fm.		Connellsville sandstone
					Clarksburg redbeds
			Glenshaw Fm.		Morgantown sandstone
	Ames marine zone				
307 MA	Allegheny Fm.		Pittsburgh redbeds		
			Saltsburg sandstone		
			Buffalo sandstone		
			Pine Creek marine zone		
			Brush Creek marine zone		
			Mahoning sandstones		
			Mahoning coal		
			Upper Freeport coal		
			Bolivar fire clay		
			Lower Freeport coal		
310 MA	Pottsville Fm.		Freeport sandstone		
			Upper Kittanning coal		
			Middle Kittanning coal		
			Lower Kittanning coal		
			Vanport Limestone		
			Brookville coal		
318 MA	Mauch Chunk Fm.		Homewood sandstone		
			Upper Mercer coal		
			Lower Mercer coal		
			Upper Connoquenessing sandstone		
MISS.	Mauch Chunk Fm.		Quakertown coal		
			Lower Connoquenessing sandstone		

Figure 1: Stratigraphic column modified from Kollar and Harper (2019)

Introduction

As you travel south from the Pittsburgh International Airport to West Virginia, the terrain you will be crossing in Pennsylvania consists of relatively flat plateaus cut down as much as 600 feet by the various creeks and rivers.

The bedrock in southwestern Pennsylvania is mostly Pennsylvanian through Permian in age and is composed of thin cyclic sequences of sandstone, shale, claystone, coal and limestone (Figure 1).

These rocks were deposited in ancient river environments and the cycles are a result of fluctuating sea levels (Gray and others, 2012). The bedrock is mostly flat-lying and gently folded. The dominant structural trends are northeast to southwest.

Ice reached about 30 miles north of Pittsburgh during the last glacial period. This glacial advance changed the courses of the rivers in the Pittsburgh area. Before the glaciers, rivers in this area drained north into the "Ancestral Erie Basin" (Harper, 1997).

The route transverses the Chartiers Creek Watershed (Figure 2), the fourth largest watershed in southwestern Pennsylvania. The first six points of interest lie within it

The Pittsburgh International Airport is built on the Casselman Formation of the Conemaugh Group. This formation is made up of a cyclic sequence of sandstone, shale, red beds, thin limestone and coal.

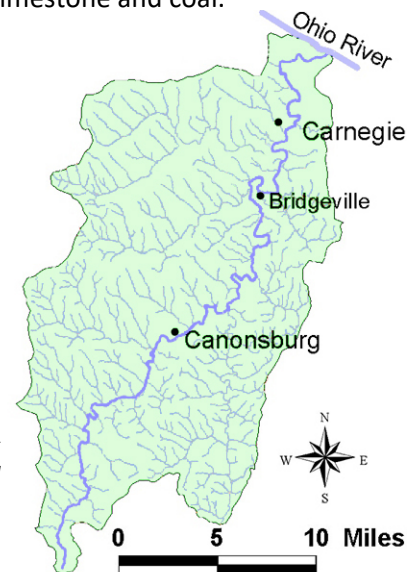


Figure 2: Chartiers Creek Watershed

Roadlog

I-79 mile 56: The exposure just south of the Carnegie interchange is considered one of the most spectacular roadcuts in western Pennsylvania (Figure 3). Over a half mile long, this roadcut exposes most of the Monongahela Formation, found near the top of the chart in Figure 1. This roadcut reveals the Benwood Limestone – the most prominent nonmarine limestone in the Appalachian basin (Kollar and Harper, 2019).



Figure 3: I-79 Carnegie Interchange roadcut exposes most of the Monongahela Formation. Note Benwood Limestone.

I-79 mile 54.5: Here I-79 crosses over the bypass channel of Chartiers Creek. The original channel, now a backchannel with reduced flow, lies east of here, joining the bypass channel below the east side of State Route 50 (Figure 4) at the back of the Guardian office building parking lot. This bypass was constructed to prevent flooding of the highly meandering creek. See Barner and others (2001) for more information. Numerous great blue herons call the Chartiers Creek Watershed home.



Figure 4: Bottom photo: confluence of the bypass channel (left) and back channel (right) of Chartiers Creek, looking downstream. Top left: dam on bypass channel, looking upstream. Top right: abandoned mine discharge (AMD) feeds into backchannel (arrow, bottom photo).

I-79 mile 53.5-52.5: First you will see a large coal pile (Figure 5) on the west side of the freeway, then I-79 will pass over State Route 50. Here the freeway passes over a former Pittsburgh coal bed strip mine. This former strip mine extends west under parts of the Kirwan Heights exit cloverleaf. South and west of this strip mine is the speculated extent of a Pleistocene bog (beneath the Hampton Inn and other businesses). Before this peat bog was covered, a few species of plants, numerous insect remains, and the bones of a fossil mastodon were identified. The bog is approximately 23,170 years old (Kollar and Harper, 2019b).



Figure 5: Large coal pile to the west, just before the Kirwan Heights interchange.

I-79 mile 52.25: Good outcrop of the Upper Pennsylvanian Benwood Limestone on both sides of the freeway at the Bridgeville interchange (Figure 6).



Figure 6: Outcrop of the Upper Pennsylvanian Benwood Limestone at the Bridgeville interchange.

I-79 mile 43.1: Just before mile marker 43, I-79 passes beneath a blue bridge known as the Canon-McMillan Alumni Bridge (Figure 7). Canon-McMillan High School is up the hill on the west side of the freeway. Behind it, in the valley below, is the disposal site for a former mill that processed uranium and other ores between 1911 and 1957. Madame Curie visited it in 1921, when the plant produced more radium in a year than all plants in the rest of the world combined. Historical milling operations at the site generated radioactive mill tailings, a predominantly sandy material. Between 1957 and 1967, the site was used only for storage under a U.S. Atomic Energy Commission contract. In 1967, the property was purchased by the Canon Development Company and was leased to tenant companies for light industrial use. Surface remediation consisted of consolidating and encapsulating all contaminated material from the Canonsburg site and locally contaminated properties into an on-site engineered disposal cell. The disposal cell occupies approximately 6 acres of the 37-acre tract of land (PGS roadlog, 2019).

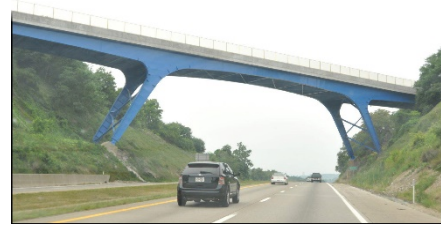


Figure 7: Canon-McMillan Alumni Bridge



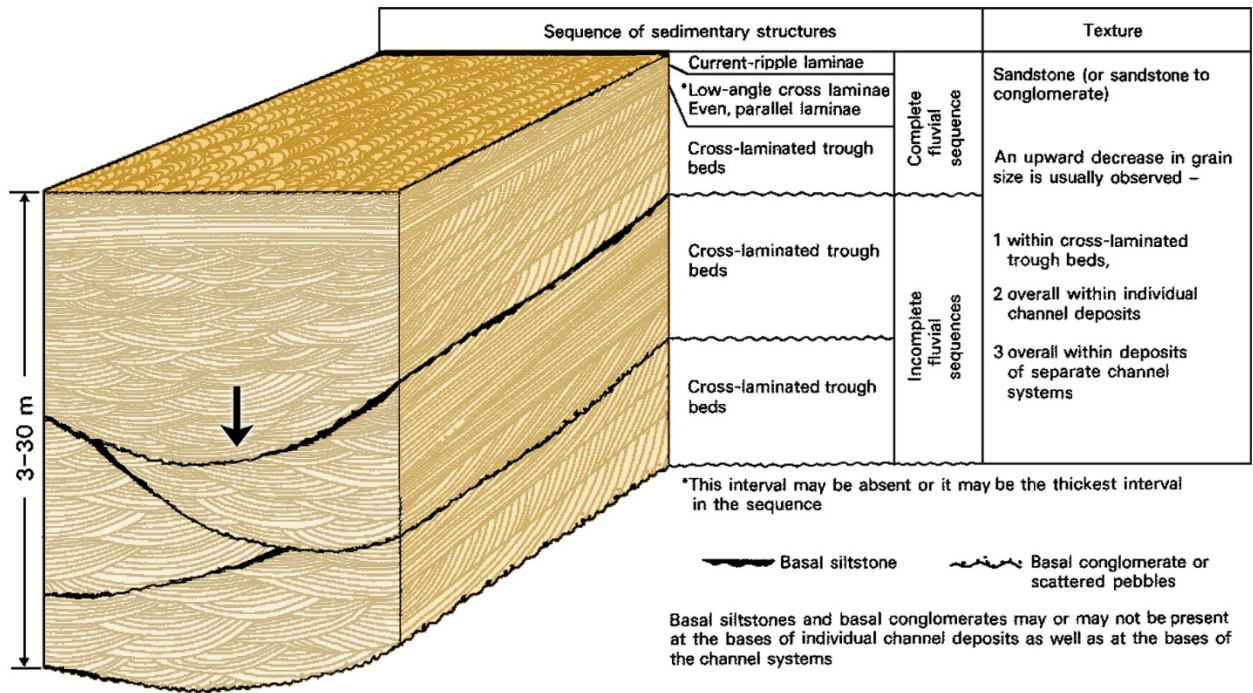
I-79 mile 6 rest area: Green County Coal Miner's Monument (Figure 8). This rest area is only accessible to north-bound traffic. It might make a good stop on your way back to the airport. Coal mining is an important part of the history of this area and the monument is dedicated to all coal miners. A display inside the rest area shows some old mining artifacts including old lamps and helmet-mounted carbide lights.

Figure 8: Coal miners monument from https://live.staticflickr.com/264/19869755476_d056208ef4_b.jpg

I-79 mile 0: Roadcuts at the West Virginia border show fluvial cut and fill deposits in the Morgantown Sandstone (Figure 9).



Photo: Channel fill along I-79 at the West Virginia - Pennsylvania border



after Collinson, J.D. (1986)

Figure 9: Outcrop of Morgantown Sandstone channel fill deposits at the Pennsylvania-West Virginia border. This Pennsylvanian age massive sandstone is in the Casselman Formation of the Conemaugh Group. Diagram (after Collinson, 1986) illustrates the concave upward bases of individual channel deposits (dark lines). Arrows point to concave upward base of an individual channel in the diagram and on the photo.

References and additional information:

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Heron rookery:

<http://www.chartiersgreenway.net/rivers5.htm>

AMD (abandoned mine drainage)

http://www.chartiersgreenway.net/amd_body.htm

<https://alleghenylandtrust.org/green-space/wingfield-pines/>

<http://www.scottconservancy.org/projects.htm>