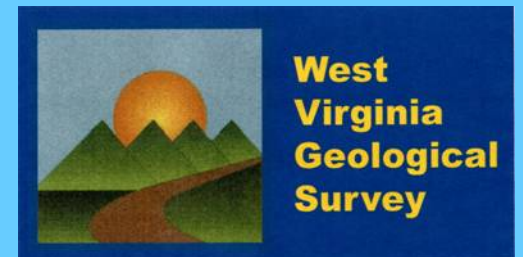


Geology of the Marcellus Shale

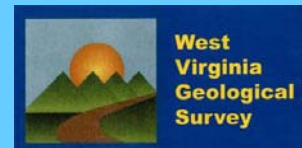
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The Marcellus Shale

- What is it?
- **Shale** is a fine-grained sedimentary rock.
- The **Marcellus** is a particular rock unit which is Devonian in age.



GENERALIZED STRATIGRAPHIC COLUMN
WITH OIL AND GAS RESERVOIRS
WEST VIRGINIA

PERMIAN	GEOLOGIC SYSTEMS AND SERIES	TERMINOLOGY USED ON 1968 STATE GEOLOGIC MAP	FORMER TERMINOLOGY (W.VA. GEOLOGICAL SURVEY COUNTY REPORTS) IF DIFFERENT	OIL AND GAS "SANDS" (DRILLERS' TERMS)
		DUNKARD GROUP		CARROLL MIDWELL MADISON MOUNDSVILLE EDIN RIVER LITTLE DUNKARD BIG DUNKARD
PENNSYLVANIAN	UPPER	MONONGAHELA GROUP		BURNING SPRINGS GAS AND LOWER GAS HORSE NECK SALT SANDS (1st, 2nd, 3rd)
	MIDDLE	ALLEGHENY FORMATION		PRINCETON RAVENCLIFF WAGON
LOWER	POTTSVILLE GROUP		LOWER HANCOCK LITTLE LIME	
MISSISSIPPIAN	UPPER	MADISON CHUNK GROUP		BLUE HOLLOW BIG LIME KELSO
	MIDDLE	GREENBRIER GROUP		CLAY INDIAN WEIP BERRY
	LOWER	MADDOCK FORMATION POCONO GROUP		GANTS FIFTY FOOT THIRTY FOOT SANDON STRAY GORDON FOURTH FIFTH SEWARD
DEVONIAN	UPPER	HAMPSHIRE FORMATION CHEMUNG GROUP	CATSKILL	ELIZABETH WARRICK FIRST WARRICK SECOND CLARENDON (TOSAI) SPEECHLEY BULLTOWN (CHERRY GROVE) RILEY BERSON ALEXANDER
	MIDDLE	BRALLIER FORMATION	PORTAGE	
		MARRELL SHALE	GENESSEE	
		MAHANTANGO FM. MARCELLUS FM. ONONDAGA LS. HUNTERSVILLE CHERT NEEDMORE SHALE	HAMILTON	HUNTERSVILLE
	LOWER	ORISKANY SANDSTONE HELDERBERG GROUP		CONYERDOLY YIELDS GAS IN OH. AND WESTERN W.VA. DESERAY SAND GAS IN MO., KY., OHIO, PA. AND W.VA. HELDERBERG YIELDS GAS FROM SEVERAL PA. AND W.VA. WELLS "BIG LIME" OF OHIO
	SILURIAN	UPPER	TONOLOWAY FM. WILLS CREEK FM. WILLIAMSPORT FM.	BOSSARDVILLE RONDOUT BLOOMSBURG
MIDDLE		MCKENZIE FM. ROCHESTER SHALE REDFIELD SANDSTONE ROSE HILL FORMATION	NIAGARA CLINTON	KEEFER SANDSTONE GAS IN OHIO, E. KY. AND SP. W. VA. CLINTON SAND OIL IN OHIO AND W.VA. MADISON GAS SAND IN N.Y. SOME OIL IN N.Y. AND OHIO
LOWER		TUSCARORA SANDSTONE	WHITE MEDINA	
ORDOVICIAN		UPPER	JUNIATA FORMATION OSWEGO FORMATION REDSVILLE SHALE	RED MEDINA GRAY MEDINA MARTINSBURG
	MIDDLE	TRENTON GROUP MARTINSBURG FM. NEALMONT LS.	CHAMBERSBURG MOCCASIN	CHAZY-STONES RIVER YIELDS OIL IN SOUTH CENTRAL KENTUCKY AT YONK. GAS AND OIL IN OHIO AND KENTUCKY
		BLACK RIVER GROUP ST. PAUL NEW MARKET LS. ROCKY HOOK SANDSTONE SANDSTONE SANDSTONE SANDSTONE	CHAZY STONES RIVER	
	LOWER	CONOCOCHACHEAGUE FORMATION ELBROOK FORMATION WAYNESBORO FORMATION		KNOS DOLOMITE OIL IN EASTERN KENTUCKY ROSE HILL SAND
	CAMBRIAN	UPPER	CONOCOCHACHEAGUE FORMATION	
MIDDLE		ELBROOK FORMATION		
PRECAMBRIAN	LOWER	WAYNESBORO FORMATION TOMSTOWN DOLOMITE ANTLETAM FM. HARRERS FM. CHILHOWEE GROUP MEYERTON-LONDON FORMATION CATDCTIN FORMATION		ROME SANDSTONE OIL IN E. KY. OIL IN EASTERN KENTUCKY
		CRYSTALLINE ROCKS		

Coalbed methane

Marcellus Shale

Trenton-Black River

Different age rocks of recent interest to oil and gas producers



West Virginia Geological Survey

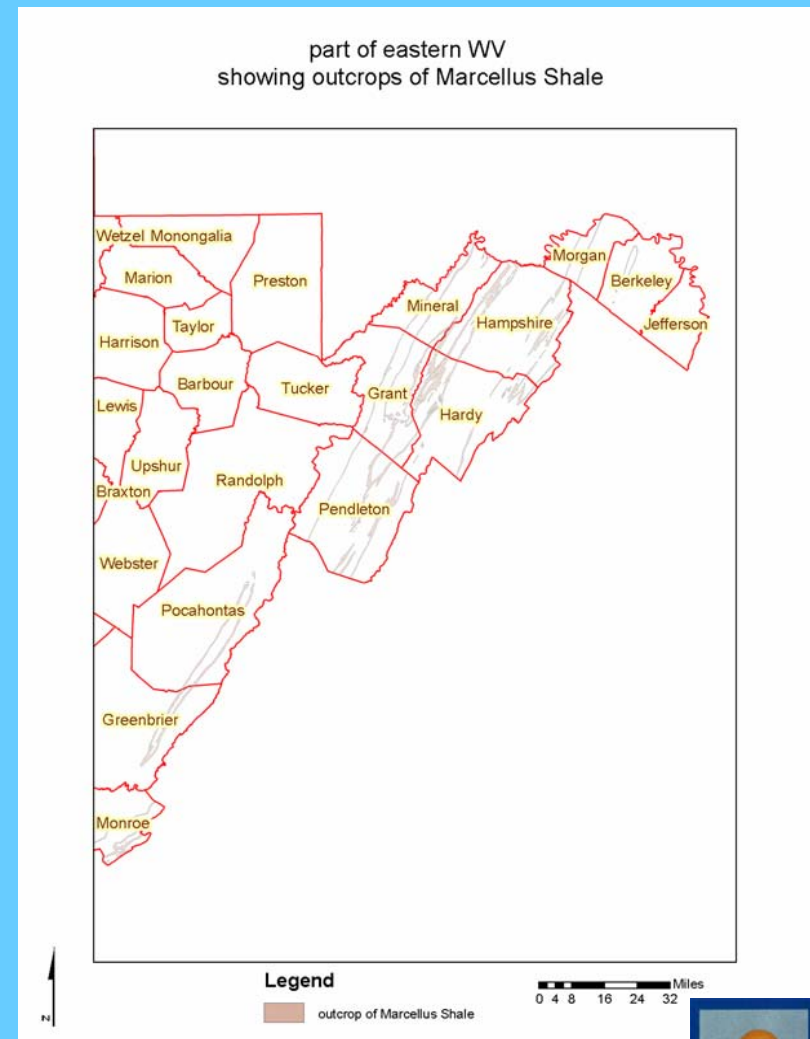
Where is the Marcellus present in WV?

- It is present below the surface, at varying depths throughout much, but not all of WV.
- It is not present in extreme eastern or western WV.
- It crops out at the surface in parts of the Valley and Ridge province in eastern WV.
- It varies in thickness across WV.



Outcrops of Marcellus

The Marcellus is exposed at the surface in eastern WV as shown by the outcrop map. In the eastern-most counties, older rocks are exposed at the surface and the Marcellus is not present.

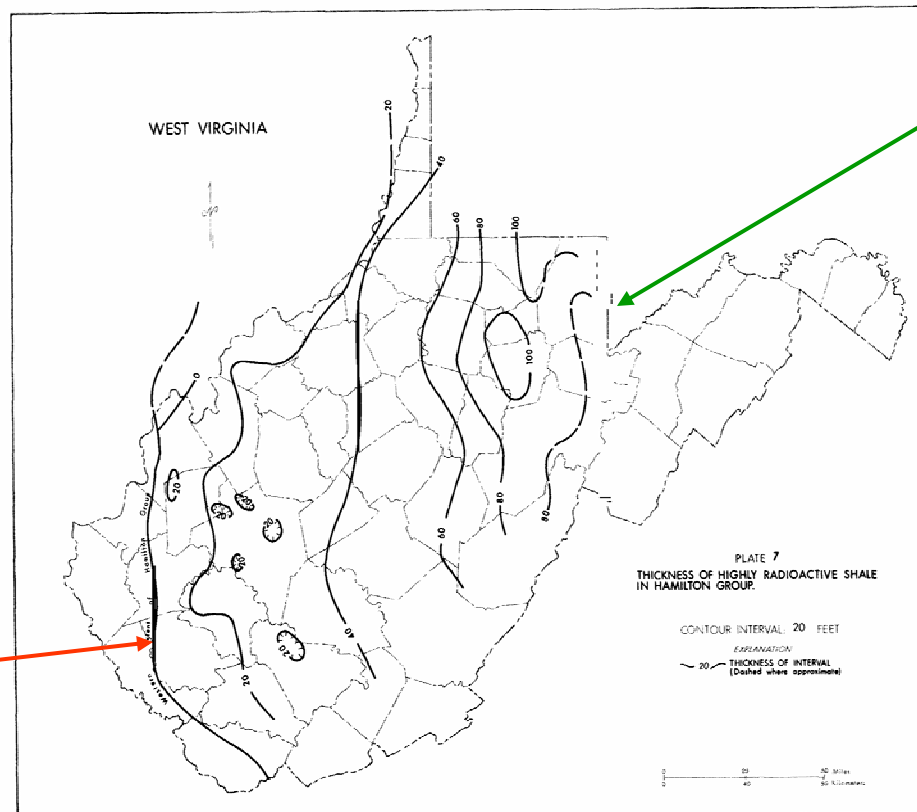


From 1968 state geologic map



Thickness in feet and extent of Marcellus Shale in subsurface

Area of thicker Marcellus



Marcellus not present west of this line

For Further Information:

- WV Geological & Economic Survey,
<http://www.wvgs.wvnet.edu/>
- WV Department of Environmental Protection,
Office of Oil and Gas,
<http://www.wvdep.org/item.cfm?ssid=23>

