

SURFICIAL GEOLOGY OF THE FISHS EDDY 7.5-MINUTE QUADRANGLE, DELAWARE COUNTY, NEW YORK

prepared by
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Introduction

The geology of the Fishs Eddy 7.5-minute Quadrangle was mapped during 2016 and 2017 as part of the National Parks Service Task Agreement P15AC01482 for Geologic Mapping of the Upper Delaware Scenic and Recreational River (UDSRR). This map is part of Phase I of the mapping project in Delaware and Sullivan Counties, New York. The purpose of this map was to identify and delineate various geologic formations in the Fishs Eddy Quadrangle with the intent that this information can guide the National Parks Service and municipalities in land use, environmental, and natural resource decisions. The Fishs Eddy Quadrangle is within the Southern Tier Region of New York near the state border with Pennsylvania. The Town of Hancock is the only municipality that makes up the quadrangle and includes the hamlets of Fishs Eddy, Peas Eddy, and French Woods. The quadrangle is mainly wooded with large tracts of land for lumber and recreation. Bluestone mining is another major land uses in the quadrangle and surrounding area.

Situated at the western edge of the Catskill Mountain physiographic province the landscape varies from floodplain in the Delaware River Valleys to mountainous topography. The highest elevation is at 2,257 feet, or 688 meters, above mean sea level (amsl) in the northeastern portion of the quadrangle with the lowest elevation being 869 feet, or 265 meters, in Bouchoux Brook a creek that flows into the main branch of the Delaware River. The sediments found in the quadrangle includes sand, gravel, diamicton (till) and bedrock exposed throughout the quadrangle.

The portions of the Fishs Eddy Quadrangle within the boundaries of the UDSRR, consist primarily of exposed bedrock, till over rock, and alluvium on the floor of the Delaware River Valley. The topography of the Fishs Eddy Quadrangle while still being mountainous and rugged to the north, is noticeably subdued in the southern portion somewhat defined by a west to east orientation of small lakes, ponds and wetlands. Some summits and hill slopes have exposed bedrock and the lower hill tops are covered with till. There are also valleys that have deposits of sand and gravel along the walls. A New York City Water Supply investigation drilled several borings in Peas Eddy on a large meander of the East Branch of the Delaware River. It was determined that the site was not feasible for dam construction, but the geology here shows a considerable amount of till over lake sediments with the longest boring reaching over 300 feet.

Clastic Upper Devonian rocks make up virtually all bedrock in this region. These shales, mudstones, fine to coarse sandstone were observed in the area. There is some quartz pebble conglomerate beds and there is a possibility to have localized lacustrine carbonate beds (Ver Straeten, 2013). Multiple cycles and similar facies, that cover 25 million years, make this area difficult to correlate without spending great amounts of time exclusively mapping the bedrock. Extensive geophysical, geochemical, and fossil identification would need to be carried out to create a comprehensive bedrock map of the region. The age of the rocks spans the Frasnian stage, ~385 million year ago (Ma) to ~360 Ma. In that time, this region was an expansive coastline with a complex river system, transporting massive amounts of sediment coming from the ancestral Acadian Mountains, which occupied present day eastern New England

Methods

Field mapping for this quadrangle was completed from late 2015 through 2017. Mapping efforts included traversing the quadrangles primarily by vehicle along roadways, with some mapping taking place on private land. Sample collection was taken by pick and shovel from outcrops in drainage ditches, road and streams cuts or within quarry/sand and gravel pits. Sample collection was also taken with a two-meter long hand auger to collect samples below the soil layer where possible. A total of 109 observation points were made during the mapping process, with 41 samples collected for grain size analysis. Twelve Geoprobe samples were collected along Dirg Road.

Water wells (7 in total) and oil and gas boreholes (6 in total) from the Department of Environmental Conservation, and engineering borings (17 in total) by the Department of Transportation were also used to decipher the subsurface geology of the Fishs Eddy Quadrangle. The subsurface data from these wells were simplified using the drillers descriptions to more standard and uniform descriptions. The location, thickness and depths of all lithologies were also recorded and used to create cross-sections and 3D borings logs within the quadrangle.

Field data were digitized in ArcMap 10.6. Polygons were created based upon the lithology of the surface material and the sample and boring locations were plotted. The boring logs and map data were created using the Adobe Illustrator CS6 using the data created in the ArcMap program.

Surficial Map Units

Artificial Fill (Af)

This material is primarily noted in the large bluestone quarry in the western section of the map. This lithology is generally composed of coarse/fine, large cement mounds and/or crushed rock anthropogenically transported and used for construction purposes.

Holocene Alluvium (Ha) and Holocene Wetland Deposits (Hw)

Post glacial sediments occupy the low areas or land depression throughout the quadrangle. Ha is associated with fluvial process in areas along the three sections of the Delaware River and its tributaries. This lithology generally consists of stratified silt, sand, and gravel. Hw is associated with low areas and depressions in the highlands of the quadrangle where wetlands form due to poor drainage. This lithology consists of peat, marl, clay or sand in these areas of poor drainage.

Diamict Colluvium (Hdc)

Unsorted and unstratified deposit of gravel, sand, silt, clay, with boulders/cobbles possible. Described as a mass-wasting deposit at the base of steep hillslopes and cliffs as part of a slump or hillslope failure. A small portion of a meander in the East Branch of the Delaware has been identified as slope failure.

Pleistocene Sand and Gravel (Psg)

Characterized as well-sorted and stratified sand and gravel this unit is interpreted to be deposited by glacial meltwater at or very near the glacier and can be found several meters in elevation higher than the present-day river valley floors. Psg is found within the valleys of the East Branch of the Delaware River and its tributaries.

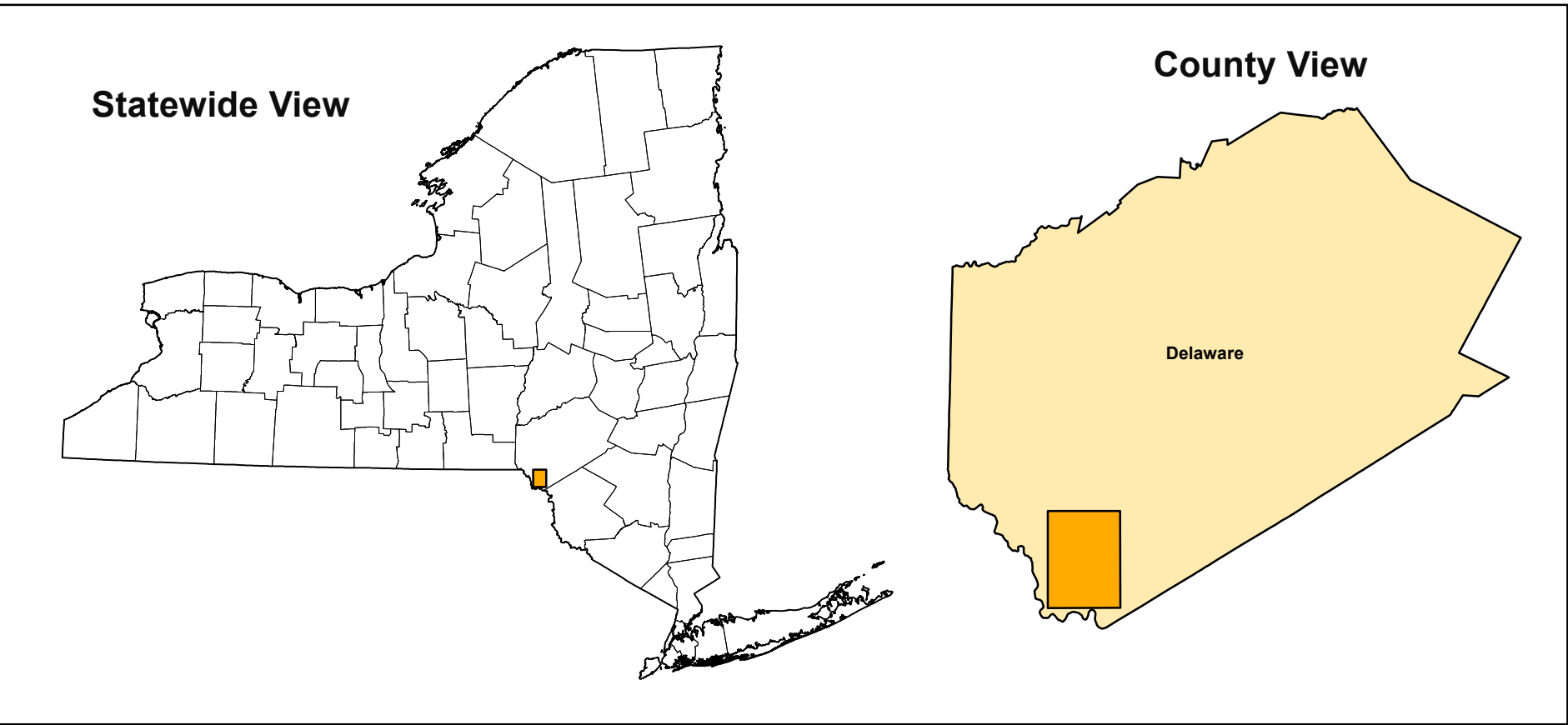
Pleistocene Diamicton (Pd)

This unit is a mixture of sediment grains that range from clay to boulders in size. In this quadrangle, all diamicton in interpreted to be glacial till, sediment deposited directly beneath the glacier. This material is found throughout much of the quadrangle covering most valley floors in the uplands, hillsides of the taller mountains, and hilltops of the smaller hills. It is generally matrix supported, sand-dominant, and tan and reddish brown in color.

SYMBOLS

| | | |
|--------------------|----------------------------|--------------------------------|
| Streets | Water Bodies | NYSDEC Water Well Location |
| Highways | Streams | NYSOT Boring Location |
| Contours | NYSGS Soil Sample Location | NYSDEC Oil & Gas Well Location |
| Cross-Section Line | NYSGS Borehole Location | |

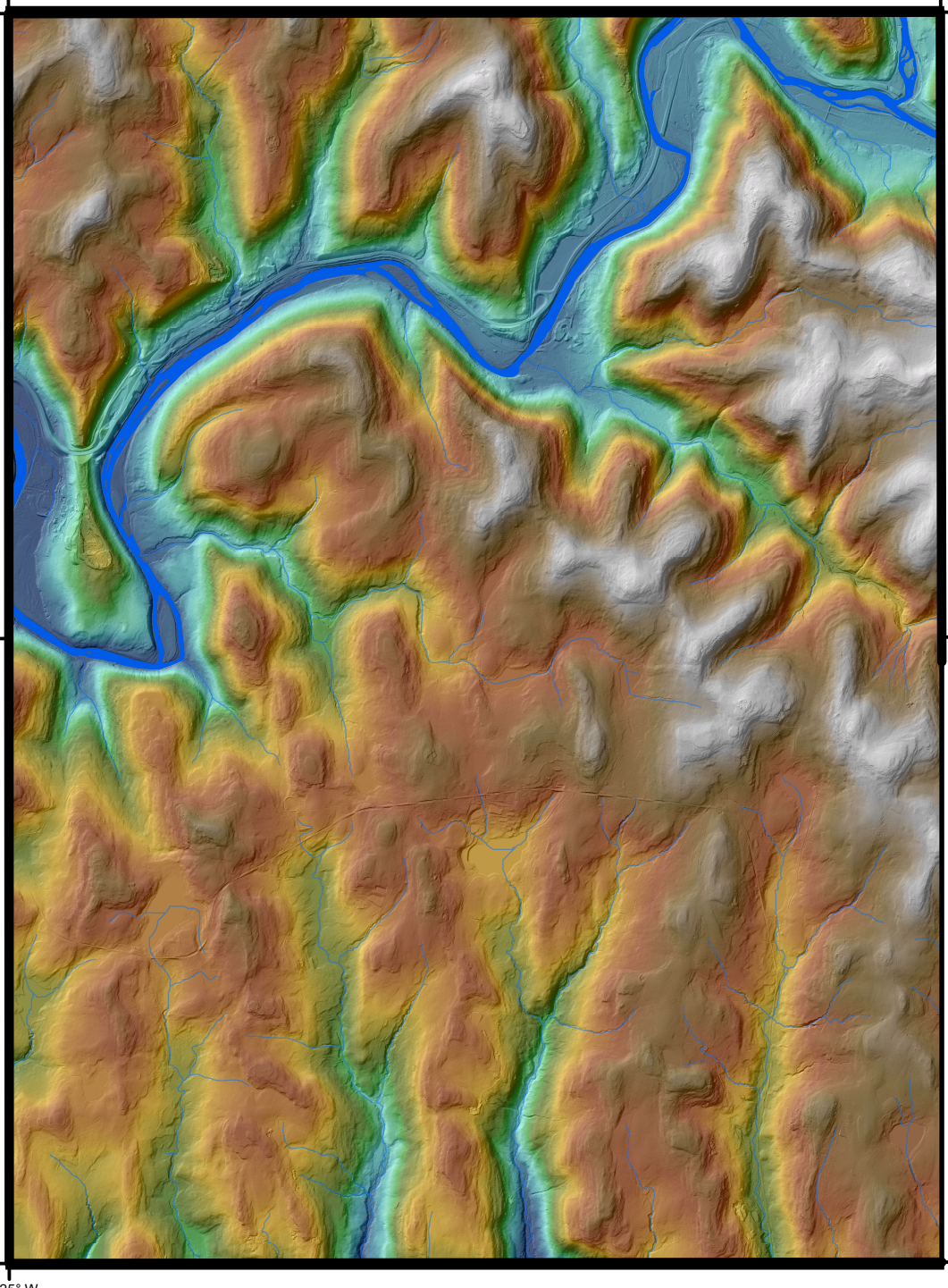
QUADRANGLE LOCATION



ADJOINING QUADRANGLES

| | | |
|------------------|-------------------|---------|
| Catskill Plateau | Redburn | Cornett |
| Hancock | Fishs Eddy | Watson |
| Laurel | Long Eddy | Calkins |

QUADRANGLE ELEVATION



NOTICE

This geologic map was funded in part by the National Park Service Task Agreement Number P15AC01482 for the Geologic Mapping in Upper Delaware Scenic and Recreational River Phase 1 in the year 2015.

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