• **RVCC's campus lies within the New Jersey Piedmont Physiographic province** that is underlain by mostly red shale and lesser gray shale of the Triassic Passaic Formation.

• Parts of the two US Geological Survey quadrangles cover campus.

• First, we will detail the regional geological setting based on the regional 1:100,000-scale geological maps by Drake and others (1997) and Owens and others (1999?).

• Then we will show you aspects of the more detailed 1:24,000 Geological Map of the Raritan, NJ Quadrangle published by the New Jersey Geological & Water Survey (Stanford and others, 2003).

• We conclude by detailing the 2020_RVCC_Campus_Geology.KMZ file that was built to prep introductory geology classes for an actual campus hike.
The 1:000-000 scale bedrock geology maps shows that RVCC sits in the Newark Basin just west of the Hopewell Fault, a large, intra-basin normal fault that dropped the eastern side down where the Watchung Mountain basalt flows are cut off to the North along the border faults.

The basin was stretched first to the southeast (SE) then to the East (E)


The 1:24,000 geological map shows that RVCC sits on Mesozoic Passaic Formation red and gray shale (TRp) that is locally capped with remnant surficial lenses of pre-Illinoian Quaternary till (Qpt).
Explanation of NJGWS Geology Map

Match the colors on the map in the previous slide to the corresponding color below to determine what kind of rock can be found throughout and around campus.

Source: https://www.state.nj.us/dep/njgs/pricelist/amseries/gms03-2.pdf
RVCC3 is Passaic Formation red and gray/green shale.

RVCC5 is Passaic Formation red and tan shale.

RVCC5 is Passaic Formation thick-laminated to thin-bedded red shale and siltstone.
RVCC Solid-Waste Landfill

- The map area labeled 'Landfill' contains visible solid waste at land surface that likely stems from mid- to late 20th Century farming.

- The debris seems to be mixed with dirt fill to make elongate lenses. One area contains a drum, and battery cores were seen weathering out of the hillslope at the head of ravines leading downslope to wetlands.

- The material was likely placed during campus construction from 1969 to 1973. The NJ Dept. of Environmental Protection was founded in 1970 and the first toxic landfill in NJ was closed in 1976. Love Canal In New York happened in 1978 and brought national attention to the problems stemming from solid-waste dumping of toxic materials.
RVCC Solid-Waste Landfill Profile Lines A and B

- Google Earth (GE) Maps of RVCC campus showing Profile Lines A & B, The two landfill polygons, nearby streams (blue lines) and some nearby geological structural readings of bedding and joints (white symbols and annotation).

Detailed view showing a semi-transparent LiDAR hillshaded-relief map overlain on Google Earth imagery with the areas of concern highlighted.

The same view as above with the model polygons showing.
The profiles above depict the generalized subsurface conditions on campus and the locations of the suspected solid-waste landfills. The weathered bedrock is depicted as extending about 10 meters (~33 feet) below the surface but may extend twice as far.
RVCC Solid-Waste Landfill Subsurface Characterization

Oblique North view of the Campus in SketchUp Pro showing the two polygons (white) used for the volume calculations.

Landfill A was also modified to taper towards the Western edge to reflect dumping over an embankment.

Oblique Northeast view of profiles A and B that are georegistered in 3D using SketchUp Pro.

Oblique Northwest view of profiles A and B with respect to the 3D polygon faces that are extruded downwards 4-meters vertically.

LANDFILL A est. ~ 7,500 m³

LANDFILL B est. ~12,000 m³