

# SEDIMENTOLOGY OF THE SILURIAN RONDOUT SERIES (CEMENT SERIES), ROSENDALE, UPSTATE NEW FOSTER, Allen-Michael S.<sup>1</sup>, NAI, Tyn Tyn<sup>1</sup>, SAPPLETON, Akiel Anthony<sup>1</sup>, SHAMI, Malek<sup>2</sup>, KHANDAKER, Nazrul I.<sup>2</sup> and SCHLEIFER, Stanley<sup>3</sup> Earth and Physical Sciences Department - Geology Discipline, York College-CUNY, 94-20 Guy R. Brewer Blvd, AC-2F09, Jamaica, NY 11451

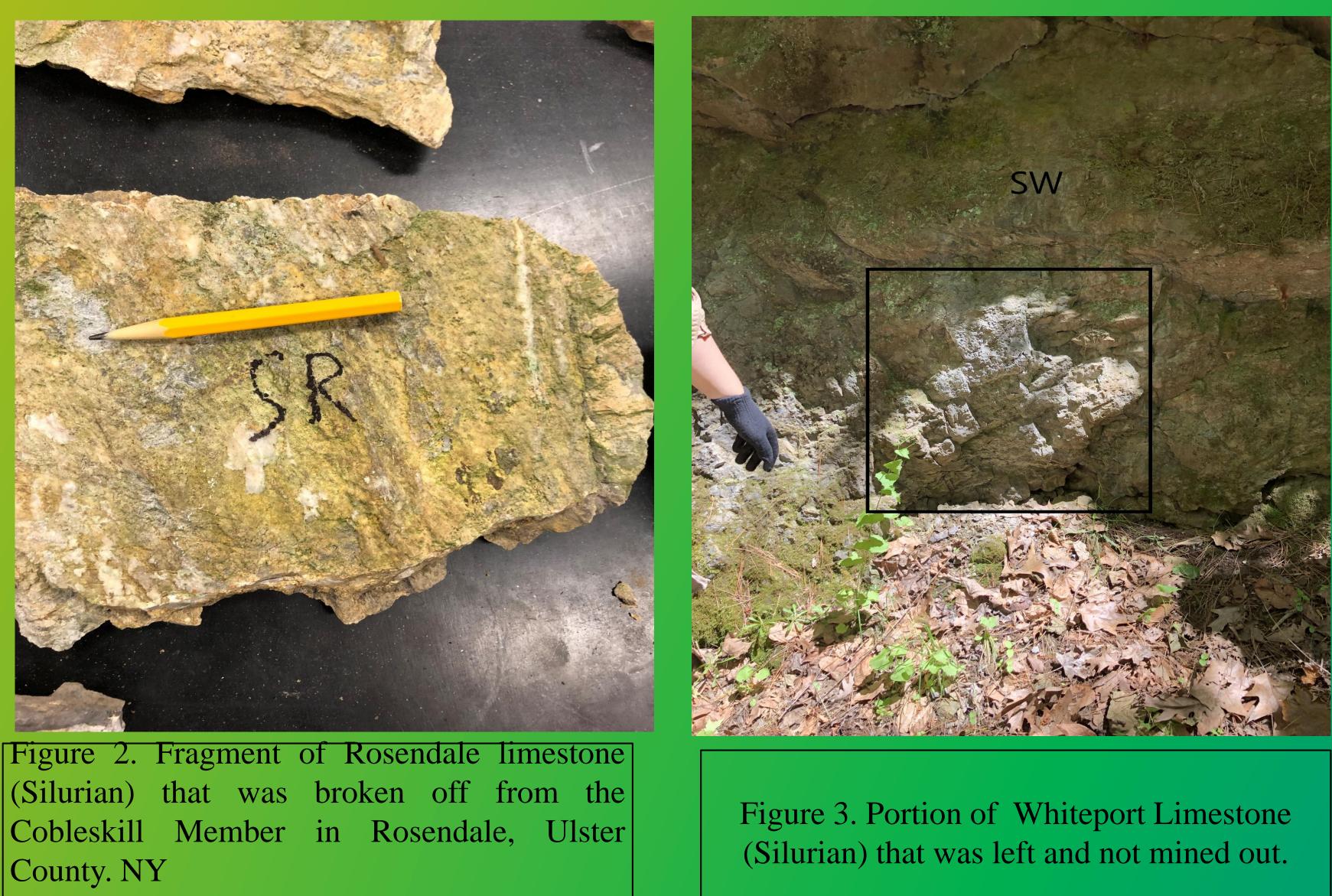
### Abstract

Only formation named the Hudson River Shale (Ordovician Period (490-443 Ma) was subjected to two orogenic episodes namely the Taconic and The exposed Silurian Rondout series (RS) include SR: Silurian Rosendale member, SC: Silurian Cobleskill member and the SW: Silurian Whiteport member Acadian. All other exposed units were deformed during the Acadian event (Devonian). The Ordovician witnessed the approach of a chain of volcanic and are located in Rosendale, upstate New York. Two of the three members of the RS were extensively quarried and mined out for natural cement production islands. These islands, called a volcanic island arc, were formed by the subduction of oceanic crust off the coast of Laurentia. A modern analogue are in the past, and include Whiteport and Rosendale. These two members were mined out because of the slightly argillaceous, calcitic to dolomitic component with lesser silica content. The repetitive nature of SR due to intense folding associated with the Acadian orogenic event that caused vertical stacking of thick the Aleutian Islands off Alaska where the Pacific seafloor is subducting beneath the Bering Sea. Between the volcanic island arc and the coast of Laurentia, a narrow, deep marine basin formed which accumulated mud in an anoxic strata and enabled mining companies to excavate entire units and supply raw materials for natural cement production in Rosendale. SR limestone is also rich environment. These later formed black shales. Interbedded with the shales are volcanic ash layers and thick sandstone beds from submarine turbidity in MgO and CaO, and poor in silica. Overall depositional environment associated with SR and SW is indicated to be shallow marine to intertidal to current landslides. supratidal based on lithofacies characteristics. The Cobleskill is a fossiliferous limestone and is well-known in the outcrop to possess a very distinct index Toward the latter part of the Ordovician Period, this volcanic island arc collided with Laurentia resulting in the Taconic Orogeny. This mountain fossil Halysites. The deconstruction of the limestone to turn into a cement requires soft materials to be broken down easily, which is why the Rosendale and building event severely folded and thrust faulted the black marine shales which can now be seen adjacent to the Hudson River north of the Hudson Whiteport members were mined out for cement. However, the Cobleskill was left alone as a "pillar" to hold up all the mined out Rosendale and Whiteport members. In addition, Cobleskill consists of dense material that cannot be broken down easily to be used in natural cement. As observed, the Whiteport Highlands up through Albany. member and Rosendale member would require less heating energy for it to be reduced to its cement form.



Figure 1. Cobleskill Limestone (Silurian). It is a highly fossiliferous limestone with index fossil Halysites (chain coral).

#### **Rondout Cement Series with various Formations**



County. NY

The exposed formations in Rosendale are (from oldest to youngest): Hudson River Shale, High Falls Shale, Binnewater Sandstone, Rondout Formation, Manlius and Coeymans Formations, Becraft Limestone, Alsen, Port Ewen, and Glenerie Formations, Kalkberg and New Scotland Formations, and Esopus Shale. The Rondout formation, as it occurs in this area, consists of three members: SR, SC and SW. SR: Rondout formation. SR group has SW: whiteport dolomitic limestone member, SC: Cobleskill limestone member, SR: Rosendale dolomitic limestone member. Many of these stratigraphic units are complexly folded, faulted and repetitions of strata, particularly in the cement series (Rondout) made these units economically feasible due to increased thickness.



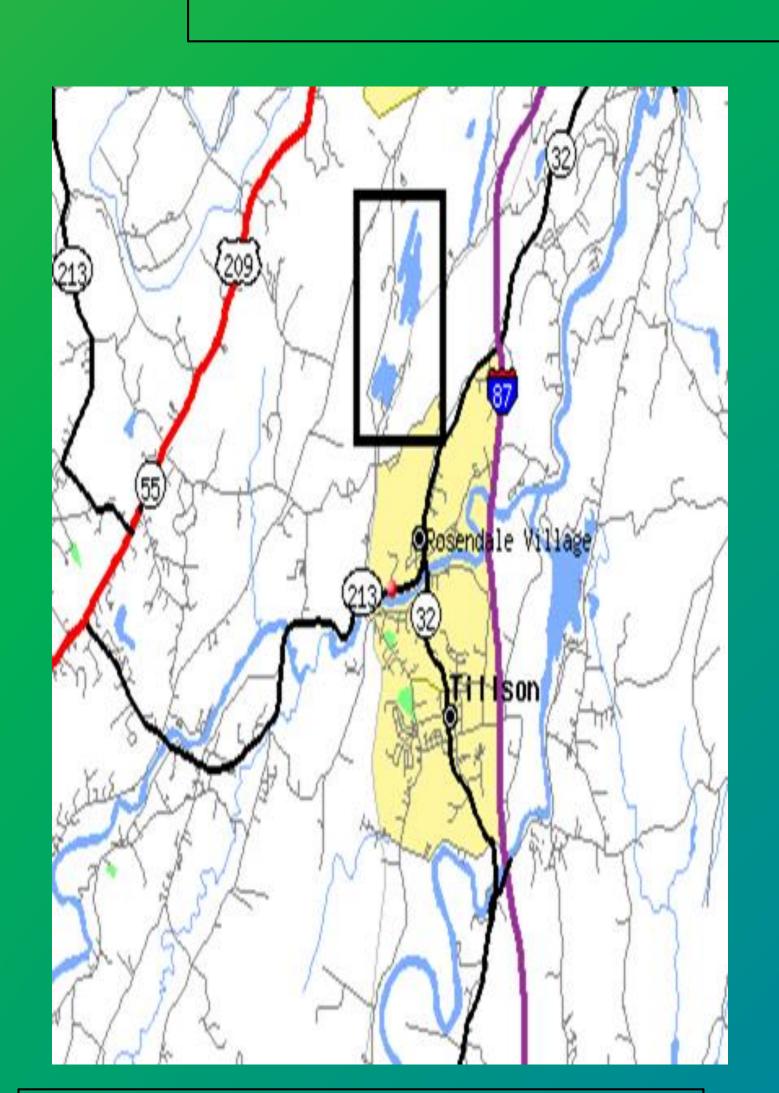


#### Discussion

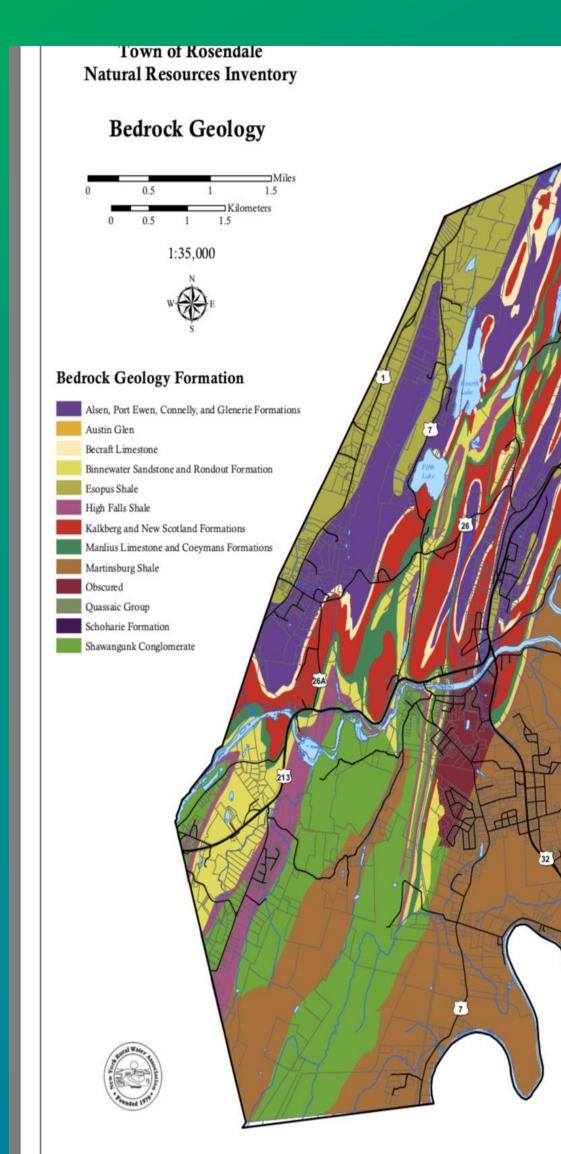


nationalgrid

# **Geologic History**



Map.1 – Area of study was conducted between the fourth and fifth lakes (as depicted in black box) The area of Rosendale Latitude 41°52'07.0", Longitude **74°04'53.9**"W

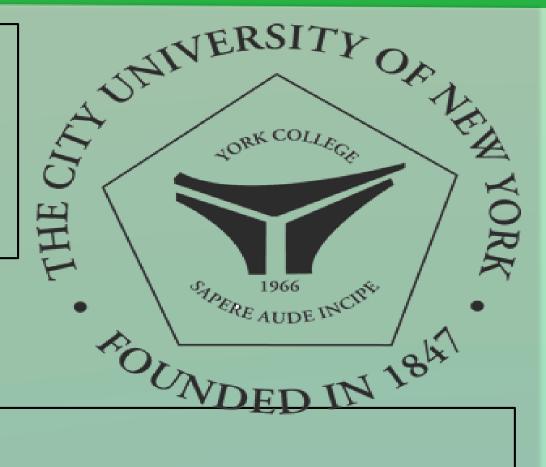


Map.2 – Shows the Bedrock Geology formations of Rosendale, Ulster County. NY.

# Rosendale Commission for Conservation of http://www.townofrosendale.com/government/commissions/environmental-commission/ news\_science\_products=0#qt-news\_science\_products DOI:10.1007/978-1-4419-0465-2 1765 Lutgens, F. K., & Tarbuck, E. J. (2003). *Essentials of geology*. Upper Saddle River, NJ: Prentice-Hall. Tucker, M. E. (2011). Sedimentary rocks in the field. Oxford: Wiley-Blackwell.







# **Study Site**



Google Maps Google maps version of the acetate Map

Map.3- A hand made GIS map using Google earth and Microsoft paint 3D, to depict the surficial geology of Rosendale, Ulster County. NY.

## References

Retrieved (n.d.). the Environment. from (n.d.). Retrieved from https://www.usgs.gov/faqs/where-are-fault-lines-eastern-united-states-east-rocky-mountains?qt-

Martin, P. (2014). Society for Industrial Archeology (SIA). Encyclopedia of Global Archaeology,6774-6775.

McKerrow, W. S. (1989). The ecology of fossils. An illustrated guide. Ed., (intr.) by W. S. McKerrow. London: Duckworth. Leet, L. D., Judson, S., & Kauffman, M. E. (1982). *Physical geology*. Englewood Cliffs, NJ: Prentice-Hall Levin, H. L., Levin, H. L., & Levin, H. L. (1990). Contemporary physical geology. Philadelphia: Saunders College.



