U.S. Department of the Interior
National Park Service
Natural Resource Stewardship and Science Directorate
Geologic Resources Division

Roosevelt-Vanderbilt National Historic Sites

GRI Ancillary Map Information Document

Produced to accompany the Geologic Resources Inventory (GRI) Digital Geologic Data for Roosevelt-Vanderbilt National Historic Sites

rova_geology.pdf

Version: 5/2/2022

Geologic Resources Inventory Map Document for Roosevelt-Vanderbilt National Historic Sites

Table of Contents

Geologic Resources Inventory Map Document

Roosevelt-Vanderbilt National Historic Sites, New York

Document to Accompany Digital Geologic-GIS Data

rova_geology.pdf

Version: 5/2/2022

This document has been developed to accompany the digital geologic-GIS data developed by the Geologic Resources Inventory (GRI) program for Roosevelt-Vanderbilt National Historic Sites, New York (ROVA).

Attempts have been made to reproduce all aspects of the original source products, including the geologic units and their descriptions, geologic cross sections, the geologic report, references and all other pertinent images and information contained in the original publication.

This document contains the following information:

1) **About the NPS Geologic Resources Inventory Program** – A brief summary of the Geologic Resources Inventory (GRI) Program and its products. Included are web links to the GRI GIS data model, and to the GRI products page where digital geologic-GIS datasets, scoping reports and geology reports are available for download. In addition, web links to the NPS Data Store and GRI program home page, as well as contact information for the GRI coordinator, are also present.

2) **GRI Digital Map and Source Maps Citations** – The GRI digital geologic-GIS map produced for this project along with source maps used in its completion. In addition, a brief explanation of how each source map was used is provided.

3) **Map Unit List** – A listing of all geologic map units present on the map for this project, generally listed from youngest to oldest.

4) **Map Unit Descriptions** – Descriptions for all geologic map units.

5) **Ancillary Source Map Information** – Additional source map information presented by source map. For each source map this may include a stratigraphic column, index map, map legend and/or map notes.

6) **GRI Digital Data Credits** – GRI digital geologic-GIS data and ancillary map information document production credits.

For information about using GRI digital geologic-GIS data contact:

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About the NPS Geologic Resources Inventory Program

Background

The Geologic Resources Inventory (GRI) provides geologic map data and pertinent geologic information to support resource management and science-informed decision making in more than 270 natural resource parks throughout the National Park System. Geologic resources for management consideration include both the processes that act upon the Earth and the features formed as a result of these processes. Geologic processes include: erosion and sedimentation; seismic, volcanic, and geothermal activity; glaciation, rockfalls, landslides, and shoreline change. Geologic features include mountains, canyons, natural arches and bridges, minerals, rocks, fossils, cave and karst systems, beaches, dunes, glaciers, volcanoes, and faults.

The GRI is one of 12 inventories funded by the National Park Service (NPS) Inventory and Monitoring Program. The Geologic Resources Division of the NPS Natural Resource Stewardship and Science Directorate administers the GRI. The NPS Geologic Resources Division partners with the Colorado State University Department of Geosciences to produce GRI products. Many additional partners participate in the GRI process by contributing source maps or reviewing products.

The GRI team undertakes three tasks for each park in the Inventory and Monitoring program: (1) conduct a scoping meeting and provide a summary document, (2) provide digital geologic map data in a geographic information system (GIS) format, and (3) provide a GRI report. These products are designed and written for nongeoscientists.

Products

Scoping Meetings: These park-specific meetings bring together local geologic experts and park staff to inventory and review available geologic data and discuss geologic resource management issues. A summary document is prepared for each meeting that identifies a plan to provide digital map data for the park.

Digital Geologic Maps: Digital geologic maps reproduce all aspects of traditional paper maps, including notes, legend, and cross sections. Bedrock, surficial, and special purpose maps such as coastal or geologic hazard maps may be used by the GRI to create digital Geographic Information Systems (GIS) data and meet park needs. These digital GIS data allow geologic information to be easily viewed and analyzed in conjunction with a wide range of other resource management information data.

For detailed information regarding GIS parameters such as data attribute field definitions, attribute field codes, value definitions, and rules that govern relationships found in the data, refer to the NPS Geology-GIS Data Model document available at: https://www.nps.gov/articles/gri-geodatabase-model.htm

Geologic Reports: GRI reports synthesize discussions from the original scoping meeting, follow up conference call(s), and subsequent research. Chapters of each report discuss the geologic setting of the park, distinctive geologic features and processes within the park, highlight geologic issues facing resource managers, and describe the geologic history leading to the present-day landscape. Each report also includes a poster illustrating these GRI digital geologic-GIS data.

For a complete listing of GRI products visit the GRI publications webpage: https://go.nps.gov/gripubs. GRI digital geologic-GIS data is also available online at the NPS Data Store: https://irma.nps.gov/DataStore/Search/Quick. To find GRI data for a specific park or parks select the appropriate park(s), enter “GRI” as a Search Text term, and then select the Search button.

For more information about the Geologic Resources Inventory Program visit the GRI webpage: https://

www.nps.gov/subjects/geology/gri.htm. At the bottom of that webpage is a “Contact Us” link if you need additional information. You may also directly contact the program coordinator:

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The Geologic Resources Inventory (GRI) program is funded by the National Park Service (NPS) Inventory and Monitoring (I&M) Division. Learn more about I&M and the 12 baseline inventories at the I&M webpage: https://www.nps.gov/im/inventories.htm.

GRI Digital Map and Source Maps Citations

The GRI digital geologic-GIS map for Roosevelt-Vanderbilt National Historic Sites, New York (ROVA):

Digital Geologic Map of Roosevelt-Vanderbilt National Historic Sites and Vicinity, New York (*GRI MapCode ROVA*)

The source maps used in the completion of the above GRI digital geologic-GIS map are listed below. How each source map was used is also mentioned.

Fisher, D. W., 1968, Draft Geologic Map of the Hyde Park New York 7.5' Quadrangle: New York Geological Survey, Open File Report of-1gG745b (unpublished), scale 1:24,000 (Hyde Park Quadrangle (Geologic Map)). (*GRI Source Map ID 74990*).

The GRI used the full extent of the source map presented above, and captured all geologic features within its extent.

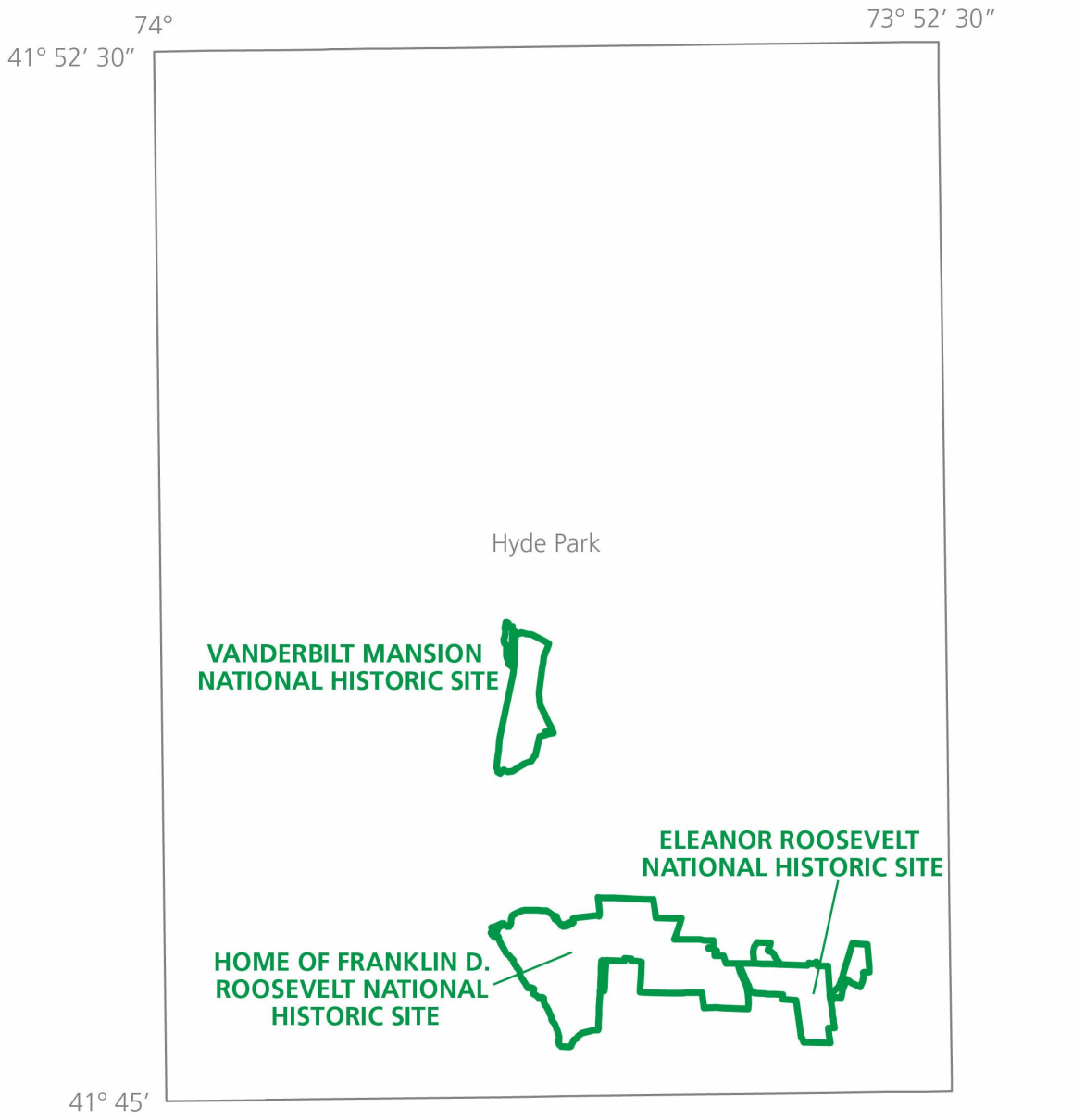
New York State Department of Transportation, 1973, Topographic Map of the Hyde Park Quadrangle, New York: New York State Department of Transportation, 7.5 Minute Series (2nd Edition), scale 1:24,000. (*GRI Source Map ID 75059*).

The GRI used the full extent of the source map presented above, however, only mine features and water/shoreline was captured.

Additional information pertaining to each source map is also presented in the GRI Source Map Information (ROVAMAP) table included with the GRI digital geologic-GIS data.

Index Map

The following index map displays the extent (that of the Hyde Park 7.5' quadrangle) of the GRI digital geologic-GIS map produced for Roosevelt-Vanderbilt National Historic Sites (ROVA). The boundary for the three national historic sites that make up Roosevelt-Vanderbilt National Historic Sites (as of April, 2022) are outlined in green.



Index map by Kajsa Holland-Goon (Colorado State University).

Map Unit List

The geologic units present in the digital geologic-GIS data produced for Roosevelt-Vanderbilt National Historic Sites, New York (ROVA) are listed below. Units are listed with their assigned unit symbol and unit name (e.g., PLt - Till deposits). Units are listed from youngest to oldest. No description for water is provided. Information about each geologic unit is also presented in the GRI Geologic Unit Information (ROVAUNIT) table included with the GRI digital geologic-GIS data. Some source unit symbols, names and/or ages may have been changed in this document and in the GRI digital geologic-GIS data. Unit symbols, names and/or ages in unit descriptions, correlation figures or other source map figures were not edited. If a unit symbol, name or age was changed by the GRI the unit's source map symbol, name and/or age appears with the unit's source map description.

Cenozoic Era

Quaternary Period

PLt - Till deposits
PLd - Delta deposits
PLl - Lake deposits

Paleozoic Era

Ordovician Period

Og - Quassaic Quartzite
Oag - Austin Glen Formation (by Fisher)
Omm - Mount Morino Formation (by Fisher)
Osf - Stuyvesant Falls Formation

Cambrian Period

Cg - Germantown Formation

Map Unit Descriptions

Descriptions of all geologic map units, generally listed from youngest to oldest, are presented below. All unit descriptions from source map: Hyde Park Quadrangle (Geologic Map) unless otherwise denoted.

PLt - Till deposits (Pleistocene)

Variable texture (e.g. clay, silt-clay, boulder clay); usually poorly sorted diamict, deposition beneath glacier ice, more variably drained, may include ablation till, thickness variable (10-30 meters).

Unit description provided via written communication from William Kelly (New York Geological Survey).

PLd - Delta deposits (Pleistocene)

Coarse to fine gravel and sand, stratified, generally well sorted, deposited at a lake shoreline, thickness variable (3-15 meters).

Unit description provided via written communication from William Kelly (New York Geological Survey) by one of the NYGS's glacial geologists.

PLl - Lake deposits (Pleistocene)

Generally laminated silt and clay, deposited in proglacial lakes, thickness variable (up to 100 meters).

Unit description provided via written communication from William Kelly (New York Geological Survey) by one of the NYGS's glacial geologists.

Oq - Quassaic Quartzite (Ordovician)

Thick bedded red and green quartzite, greenish-gray sandstone and conglomerate with pebbles of red and black chert, shale and limestone.

Oag - Austin Glen Formation (by Fisher) (Ordovician)

300 to 2,000+ft (93 to 610+m).

The following units were grouped into the Austin Glen Formation and provide a description of the unit per communication with William Kelly (NYGS):

> Oagu - Austin Glen Formation, upper member (Ordovician) - Medium-thick bedded, massive medium-coarse textured, bluish gray to medium gray, light brown weathering, micaceous greywacke with many types of turbidite features. Usually exposed within two miles of the Hudson River.
>
> Oagl - Austin Glen Formation, lower member (Ordovician) - Thin-medium bedded, medium-coarse textured, bluish gray to medium gray, light brown weathering, micaceous greywacke with interbedded subgraywacke, sandstone, siltstone, and silty light-dark gray shale. Rare graptolites.
>
> Osh Snake Hill Formation (Ordovician) - (only exists at its type locality, otherwise now grouped with the Martinsburg Formation and the Austin Glen Formation) - Exotic lithofacies and faunas have long been known from Snake Hill, eastern New York, USA. The faunally diverse, sandstone dominated Upper Ordovician succession at Snake Hill sharply contrasts with surrounding

tectonized sparsely fossiliferous distal shale. Re-examination of the Snake Hill section shows that it is a storm- and wave-dominated nearshore facies with a benthic fauna analogous to that of the younger Lorraine Group (Ashgillian) of central New York, and to that of the upper Martinsburg Group (upper Caradocian) of eastern Pennsylvania. Orthograptus ruedemanni Chron graptolites indicate that the Snake Hill succession is older than the surrounding tectonized, deep-water shale (Climacograptus spiniferous Chron). Snake Hill is best interpreted as a parautochthonous block in mélange originally deposited close to the shoreline of the emergent Taconic accretionary prism. Because the Snake Hill succession is sandstone-dominated, it is inappropriate to refer mudstone-dominated facies that underlie the western margin of the Taconic allochthon in the Hudson River valley region to the Snake Hill "Shale," as has been done in the past. The thick (ca. 150 m), lithologically distinct succession at Snake Hill is therefore referred to as the "Snake Hill Formation." The Snake Hill Formation is the only known example of proximal, near-shore facies deposited on the western side of the outer Taconic arc, and represents easternmost deposition in the Taconic foreland basin. The Snake Hill Formation is a unique occurrence, and thus is restricted to its type locality at Snake Hill, New York.

Oshu - Snake Hill Formation, upper member (Ordovician) - No additional unit description provided.

Oshl - Snake Hill Formation, lower member (Ordovician) - No additional unit description provided.

Omm - Mount Morino Formation (by Fisher) (Ordovician)

Thin to nodular bedded, fine textured, dark gray to black shale with dark green to black chert; locally pyretic, and usually criss-crossed by white milky quartz and calcite veins. Significant graptolites in some of the black shale. 150 to 650ft (45 to 200m) thick.

Osf - Stuyvesant Falls Formation (Ordovician)

Thin-medium bedded, fine textured, greenish-gray siltstone; thin bedded, tan weathering silty dolostone; thin-bedded laminated quartzite; all interbedded with light green to medium gray shale and green-gray bedded chert; rare black shale. The siltstone and dolostone units have abundant trace fossils, diagnostic graptolites are rare. 300 to ~ 650ft (92 to ~ 198m) thick.

The Poultney Formation (Op) is considered, as per written communication from William Kelly (NYGS), to be a part of the Stuyvesant Falls Formation (Osf).

Cg - Germantown Formation (Cambrian)

200 to 700ft (62-210m) thick. These similar lithologic units cannot be separated in Columbia County. 400 to ~ 850ft (122 to ~ 280m) thick. Thin-bedded, fine grained, dark gray-black, white weathering, ribbon limestone interbedded with dark gray-black shale; thin-thick bedded, dolomitic and calcareous sandstone and siltstone; limestone and dolostone conglomerate and breccia with round quartz sand and black phosphate fragments in matrix; platy, silty, slatey medium gray-black shale. The quartzitic sandstone and conglomerate are, locally, heavily iron-oxide bearing such as at the old Burden iron mine. Yields diagnostic trilobites of Early, Middle and Late Cambrian ages and Early Ordovician age; graptolites, inarticulate brachiopods and other problematica are rare. Diamond Rock Quartzite (10-20ft; 3.1-3.2m) as basal member.

As per written communication with William Kelly the unit is now recognized to be Cambrian in age.

Ancillary Source Map Information

The following section presents ancillary source map information associated with the geologic source map used for this project.

Hyde Park Quadrangle (Geologic Map)

The formal citation for this source.

> Fisher, D. W., 1968, Draft Geologic Map of the Hyde Park New York 7.5' Quadrangle: New York Geological Survey, Open File Report of-1gG745b (unpublished), scale 1:24,000 (*GRI Source Map ID 74990*).

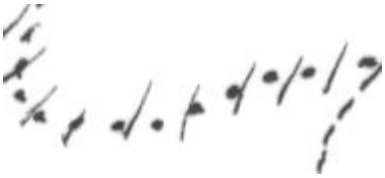
Prominent graphics and text associated with this source:

Quadrangle Location

Graphic from source map: Hyde Park Quadrangle (Geologic Map)

Symbols

Symbol descriptions provided via written communication from William Kelly.

a.  b.  c.  d.  e. 

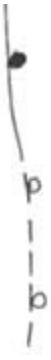
a and b.) @ and @-> are symbols for fossil localities, in this case shelly fauna. Fisher was big on noting where people could go to see outcrops with fossils. The arrowhead supposedly pointed to a specific spot. I never checked but this was the theory. It was a spiral symbol that was supposed to look like a snail shell.

c.) ->->-> is the symbol for a graptolite fossil locality. Supposed to be a line with feathers coming off of it to represent the theca of pelagic graptolites. Or so it is said.

d.) ~~~ is a symbol Fisher used for "highly deformed rock". He used this when the rocks were really messed up by the Taconic thrusts.

e.) ././././ (dots in the center of the slashes) - here I think Fisher was trying to kill a line on the map. I have never seen this before. (Remember, this is unpublished draft material.) This line separates Pleistocene lake deposits from Pleistocene till presumably. Don used to use a line of dots to indicate "limit of outcrop" to show where the glacial stuff just buried everything and outline areas where there was no outcrop, period. I think he was extending his limit of outcrop line to the south and needed to kill the original line. My best guess anyway.

Fault Symbols

triangles  circles 

Both symbols indicate reverse (thrust) faults: solid where confidently mapped, dashed where inferred; spurs on relatively overriding rock slice

Graphics from source map: Hyde Park Quadrangle (Geologic Map)

GRI Digital Data Credits

This document was developed and completed by Georgia Hybels and James Winter (Colorado State University) for the NPS Geologic Resources Division (GRD) Geologic Resources Inventory (GRI) Program. Quality control of this document by Stephanie O'Meara and James Winter(Colorado State University).

The information in this document was compiled from GRI source maps, and is intended to accompany the digital geologic-GIS map and other digital data for Roosevelt-Vanderbilt National Historic Sites, New York (ROVA) developed by Georgia Hybels, James Winter and Stephanie O'Meara (Colorado State University) (see the GRI Digital Map and Source Map Citations section of this document for all sources used by the GRI in the completion of this document and related GRI digital geologic-GIS map).

GRI finalization by Stephanie O'Meara and James Winter (Colorado State University).

GRI program coordination and scoping provided by Bruce Heise, Jason Kenworthy and Tim Connors (NPS GRD, Lakewood, Colorado).