



NPGS Niagara Peninsula Geological Society Field Trip Info Sheet
Herkimer Diamond sites, Middleville, New York

Locations:

GPS co-ordinates:

Herkimer Diamond Mine 43.129722, -74.976944

mindat link: <https://www.mindat.org/loc-175680.html>

Ace of Diamonds Mine 43.132135 -74.974103

mindat link: <https://www.mindat.org/loc-6476.html>

Geologic dating:

Beekmantown Group in east-central NY includes (youngest at top, oldest at bottom):

Late Cambrian to Early Ordovician age ~490-470 Ma

Fort Cassin Formation.

Fort Ann Formation

Great Meadows Formation

Whitehall Formation - either side of ~485.4 Ma - Cambrian-Ordovician boundary

- predominant blue/light grey dolostone, some sandstone beds, some mixed sandstone & dolostone beds

Little Falls Unit:

- exceptionally clear, doubly terminated quartz crystals, named Herkimer Diamonds, found in vugs
- mineralogy can include calcite, pyrite, marcasite, galena, sphalerite, limonite, chalcocopyrite, hematite, chert, glauconite, & anthraxolite.
 - anthraxolite is a misnomer in that it's not a result of the Sudbury impact of 1.185 Ga
 - instead it's hydrocarbon material, indicating an extinction event
 - hydrocarbons can be found as a coating in vugs and both on & inside the Herkimer Diamonds
- overall, the Unit has few fossils, however, there are:
 - irregular masses of stromatolites (occur at several levels, particularly in informal unit B)
 - brachiopods, trilobites (very sporadic but can occur at several levels of the Little Falls Unit)

Ticonderoga Formation

Potsdam Sandstone

<http://archives.datapages.com/data/bulletns/1974-76/data/pg/0060/0009/1550/1570.htm>

Definition of Type Little Falls Dolostone, East-Central New York: Geologic Notes; Donald H. Zenger; AAPG; 1976

The Little Falls Dolostone is well known for its "Herkimer diamonds" (quartz crystals) and "cryptozoons" (algal stromatolites).

- Dolostone predominates, but sandstones and mixed dolostone-sandstone varieties are common.
- Gray colors, medium to thick bedding, and vuggy beds are characteristic.
- Calcite is a minor and late paragenetic constituent.
- Fossils are extremely rare.

Four subdivisions, informally designated as "units," herein are recognized:

- Unit D, characterized by very fine-crystalline dolostone, is 30 to 40 ft thick, and contains reddish-gray zones, glauconite, chert, and silicified ooids.
- Unit C, 25 to 40 ft thick, is primarily coarsely crystalline glauconitic dolostone containing quartzose intercalations.



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- Unit B consists of about 200 ft (61 m) of dark, fine to medium-crystalline dolostone with many vuggy beds;
 - within Unit B is a unique sequence of alternating algal-stromatolitic dolostone and sandstone.
- Unit A, the lowest subdivision, is 90 to 100 ft thick and has conglomerate and sandstone at its base overlain by coarse-crystalline dolostone.

References:

<https://mrdata.usgs.gov/geology/state/sgmc-unit.php?unit=NYCAbk%3B2>

- 1) The State Geologic Map Compilation (SGMC) geodatabase of the conterminous United States; J D Horton, C A San Juan, & D B Stoesser; USGS Data Series 1052
<http://pubs.er.usgs.gov/publication/b1887>
- 2) Thompson, J.B., Jr., 1990, An introduction to the geology and Paleozoic history of the Glens Falls 1 degrees x 2 degrees quadrangle, New York, Vermont, and New Hampshire, IN Slack, J.F., ed., Summary results of the Glens Falls CUSMAP project, New York, Vermont, and New Hampshire: U.S. Geological Survey Bulletin, 1887-A, p. A1-A13.
- 3) Age and relations of the Little Falls dolomite (calciferous) of the Mohawk Valley; E O Ulrich & H P Cushing; New York State Museum Bulletin #140; 1910
- 4) Cambrian-Ordovician boundary in the Adirondack-border region; R H Wheeler; American Journal of Science; 1942
- 5) Geologic Map of New York State, consisting of 5 sheets: Niagara, Finger Lakes, Hudson-Mohawk, Adirondack, and Lower Hudson; D W Fisher, Y W Isachsen, & L V Rickard; New York State Museum and Science Service, Map and Chart Series No. 15; 1970
- 6) Bedrock geology of the Glens Falls-Whitehall region, New York; D W Fisher; New York State Museum Map and Chart Series; 1984
- 7) Muskatt, H.S. and Tollerton, V.P., Jr., 1992, The Little Falls Dolostone (Late Cambrian); stratigraphy and mineralogy, IN April, R.H., ed., Field trip guidebook: New York State Geological Association Guidebook, no. 64, 64th Annual Meeting, Hamilton, NY, September 18-20, 1992, p. 200-215.

Herkimer Diamonds
field trip reports

<https://www.mindat.org/article.php/2612/30.+Herkimer+Diamonds+I+-+The+Collecting+Trip> - includes a bunch of different sites as well as stromatolites & other fossils

<https://www.mindat.org/article.php/2611/29.+Herkimer+Diamonds+I+-+The+Info> (both 2017 trip)

<http://fredmhaynes.com/2015/04/20/field-season-has-arrived/#more-879>

<http://fredmhaynes.com/2014/07/03/ny-state-mineral/#more-373>

<https://herkimerdiamondquartz.com/blog/index.php/2016/12/>

Stromatolites

Very little has been written up on the Little Falls Formation stromatolites
field trip report

<http://fredmhaynes.com/2015/12/26/ace-of-diamonds-for-stromatolites/>