

Geologic Resources Inventory Fact Sheet

Fact Sheet Compiled in September 2023

The Geologic Resources Inventory provides geologic map data, a written report, a map poster, and pertinent information to support resource management and science-informed decision making.

Scan QR code for access to the full report, map, and GIS data



<https://irma.nps.gov/DataStore/Reference/Profile/2194573>

Geologic Heritage

Geologic heritage exists at the overlap of geology and human experiences and values. It also draws connections between geologic resources and other park resources and stories. Pages 9–11.

Exceptionally Long Record

The preserve is one of the few locations in the world where rocks record approximately 900 million years of Earth’s history. The protection and interpretation of this geologic and paleontological record is an important part of the preserve’s mission.

Gold Rush and Mining

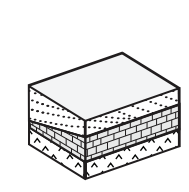
Gold deposits found within Cretaceous (145 million–66 million years ago) and Cenozoic (66 million years ago–present) sedimentary rocks have drawn people to the preserve for more than 100 years. The largest mining boom occurred during the Alaska-Yukon gold rush of the late 1800s. Artifacts, structures, and environmental changes associated with this long mining history can still be seen throughout the preserve today.

Bluffs

Bluffs along the Yukon River are a striking part of the scenic beauty enjoyed by many visitors. They are composed of rock and sediment that are part of the preserve’s long and varied geologic history, including:

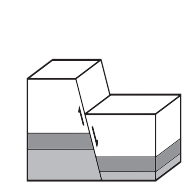
- Calico Bluff (Calico Bluff Formation)
- Montauk Bluff (Nation River Formation)
- Biederman Bluff (Biederman Argillite)
- Chester Bluff (surficial deposits)

Geologic Features, Processes, and Management Issues



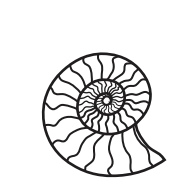
Bedrock Geology

The bedrock geology spans ~900 million years of Earth’s history. Geologic units are grouped into terranes (micro-continents) that share a geologic history. Pages 13–28.



Tintina Fault System

The Tintina fault system is a major terrane-bounding fault that cuts through the preserve just south of the Yukon River. Page 28.



Paleontological Resources

The preserve contains fossils from nearly every period of geologic time since the Neoproterozoic Era (1 billion years ago). Pages 29–32 and 51.



Coal Creek Dredge

NPS photo by Anna O’Brien



Mineral Resources

The preserve contains 39 known mineral resource localities that are primarily associated with gold, lead, and zinc deposits. Pages 32–34.



Caves

Some geologic units within the preserve contain caves, but a comprehensive cave survey has not yet been undertaken. Pages 34 and 53.



Geologic Features, Processes, and Management Issues (continued)

Glacial History

Deposits from five glacial episodes have been mapped in the Yukon-Tanana uplands (southern part of the preserve). *Pages 34–36.*

Quaternary Surficial Deposits

Surficial deposits in the preserve are composed of unconsolidated sediments deposited by rivers, slope processes, glaciers, and wind. *Pages 36–37.*

Fluvial Features

The preserve encompasses about 200 km (130 mi) of the Yukon River, as well as the entire Charley Wild and Scenic River. *Pages 37–39.*

Possible Geothermal Features

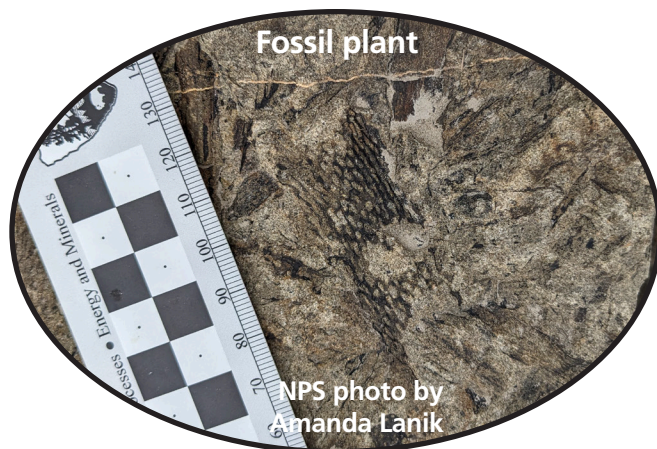
Two potential thermal springs have been reported in the Charley River basin, but their existence has not yet been verified. *Page 39.*

Permafrost

The preserve contains permafrost that forms distinctive landscape features. Climate change will lead to thawing of the preserve's permafrost. *Pages 39–41 and 55–56.*

Geohazards

Potential geologic hazards in the preserve include earthquakes, landslides, ice jam flooding, and river erosion. *Pages 47–50.*



Stratotypes

The preserve contains 17 stratotypes (exposures of rock that form the basis for defining a geologic unit). *Pages 25–27 and 50–51.*

Mineral Development

Mining is not currently taking place, but mining could potentially occur on private land or NPS land with unpatented mining claims. *Pages 51–52.*

Abandoned Mineral Lands (AML)

As a result of the region's long mining history, the preserve contains 41 AML features, such as tailings, equipment, and buildings, at 14 sites. *Pages 52–53.*

Placer-Mined Streams

Past mining activities have disturbed the natural function of some of the preserve's waterways—Woodchopper, Coal, Sam, and Fourth of July Creeks. *Pages 53–55.*

