



YELLOWSTONE FOREVER

GLACIAL GEOLOGY UNDERFOOT

Itinerary & Details

FIELD SEMINAR - SUMMER 2023

INSTRUCTORS: Karen Williams, Ph.D. and William Locke, Ph.D.

INSTRUCTOR BIOGRAPHY: Karen Williams is a geomorphologist with a Ph.D. in Earth Sciences from Montana State University. She has taught geomorphology at Montana State and led field trips and geology hikes for MSU, Montana Wilderness Association, and Yellowstone Forever. She has worked in glaciated landscapes ranging from the Yukon to Yellowstone. She also has over twenty years of experience in stream restoration and serves on the board of directors of the Clearwater Resource Council, the watershed conservation group of the Clearwater River in western Montana.

Bill Locke earned a Ph.D. in Geology from University of Colorado-Boulder and is Emeritus Professor at Montana State University where he taught glacial geology and geomorphology for 30 years. He has studied geomorphology, glacial geology, and paleoclimate from Baffin Island to the Rockies.

ACTIVITY LEVEL: This course is an activity **level 3** and students enrolled in this course are expected to be active participants. Be prepared to hike up to 6 miles per day, comfortably, with occasional elevation gains up to 1000 feet in undulating terrain.*

**All field activities will be conducted as a group. If you cannot meet the activity level expectations during your program, you may be restricted from participation in daily outings. We will not alter program itineraries or activities to accommodate participants who cannot meet the expectations of the stated activity level.*

LOCATION: Lamar Buffalo Ranch – Yellowstone National Park, WY

PROGRAM DATES & TIMES: The program begins at 7:00 p.m. on Monday, July 24, 2023, and ends on Tuesday, July 25, 2023, at 5:00 p.m.

LODGING CHECK-IN & CHECK-OUT: Lodging check-in begins at 4:00 p.m. on Monday, July 24, 2023, and lodging check-out is at 9:00 a.m. on Wednesday, July 26, 2023.

MEALS: You will need to bring your own food; lunch should be able to travel in the field with you.

For general information about the facilities, preparing for classes, what to expect, cancellation policies, and more, please see the [Lamar Buffalo Ranch - Summer General Information](#) document.

FROM THE INSTRUCTOR

Welcome to Yellowstone National Park!

Yellowstone's ice cap, which was a kilometer thick at maximum, left a uniquely accessible glaciated landscape in its wake. Yellowstone ice flowed into the Paradise Valley from the Beartooth Plateau, and both onto and off the Yellowstone Plateau. In this two-day course, we will see and hike the glacial features of Yellowstone.

We look forward to seeing you!

- Karen Williams and Bill Locke

PROGRAM ITINERARY

The itinerary is designed to take advantage of the best opportunities in the park, but may be adjusted to adapt to weather conditions, wildlife activity, holidays, and road construction. *The details and timing of the agenda are subject to change.*

Day 1

7:00 PM Orientation and Welcome

Day 2

Our first full day will be a driving tour to prominent glacial landforms beginning where the glacier ended! We will drive down the Paradise Valley to the terminal moraine and work our way back up the ice cap interior, including part of the Beartooth Plateau.

Day 3

Check out by 9:00 a.m.

PROGRAM EQUIPMENT

For a full list of recommended equipment for all courses see the [Lamar Buffalo Ranch - Summer General Information](#) document.

Items specific to this course are:

- ☐ **Binoculars**
- ☐ **Camera**
- ☐ **Journal**, for notes (optional)

RECOMMENDED READING

No prior reading is required, but participants might enjoy the following publications, that complement the program. Note, too, that the Lamar Buffalo Ranch has a diverse library with many relevant books.

- Mueller, P. A., Locke, W. W., and Wooden, J. L., 1987, *A study in contrasts, Archean and Quaternary geology of the Beartooth Highway, Montana and Wyoming*, in Beus, S. S., ed., *Centennial Field Guide Volume 2*, Geological Society of America, p. 75-78.

WHOM TO CONTACT

For any questions, concerns, or additional information please contact the following:

- Program itinerary, health forms, payment, and activity questions please contact Yellowstone Forever at institute@yellowstone.org or 406-848-2400
- Road updates, park conditions, and general park information please contact Yellowstone National Park Service at <https://www.nps.gov/yell/contacts.htm>
- If running late for a program, please contact 406-848-2400