

Water in the West Program

A group of hikers with backpacks and trekking poles are crossing a river on a rocky path in a canyon. The river is shallow and flows over a bed of smooth, light-colored rocks. The canyon walls are steep and rocky, with some green vegetation on the right side. The scene is brightly lit, suggesting a sunny day.

Information Session - November 9, 2022

A Short Introduction to the Professors



PhD
M.S.
B.S.

Oregon State University - Fluvial Geomorphology
Oregon State University - Geographic Info Systems
Western Washington University



PhD
M.S.
B.S.

University of Wisconsin-Madison - Hydrogeology
University of Utah - Sedimentology
University of Michigan

Previous Field Experiences for Students



Wampler has led a GVSU study abroad programs to Haiti (4-weeks) and Ghana (7 weeks).



Riemersma designed Geo 380 (Geology, Natural History and Water Resources of Florida) that spent over a week in Florida.

Geology Field Trips We Led Together

San Juan Islands, Washington



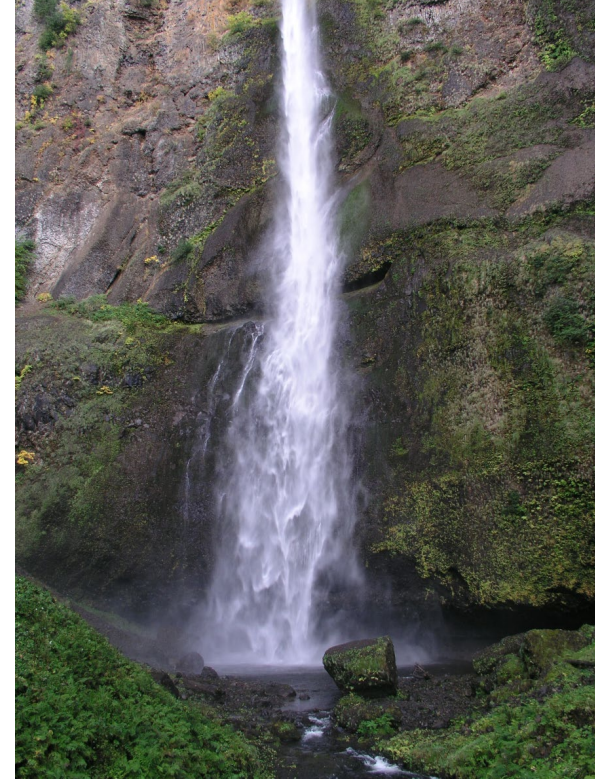
Lava Tubes, Lahars, and Catastrophic Floods - Portland, Oregon, 2009



Crater Lake



**Yapoah Lava Flow,
Dee Wright Observatory**



Multnomah waterfall in Columbia Gorge

Dates and Deadlines

Event/Deadline	Date/Deadline
Information Session	<u>November 9</u>
Online Application Available (Date of application submission will be considered in the selection process)	<u>November 9</u>
Applications Due Online (www.gvsu.edu/wiwp)	<u>December 15</u>
Participation Confirmation and \$200* deposit (submitted online)	<u>January 10</u>
Program Fee Balance \$1,750	<u>March 31</u>

* \$200 deposit non-refundable unless another student takes the spot on the trip



Trip Costs

- All participants will be required to sign up for 6 credits during the first Spring/Summer Term, GEO380 and GEO399
- The program fee, which covers all food, transportation, lodging, and most activities will be **\$1,950.**
- The program fee **does not** cover tuition for the credits



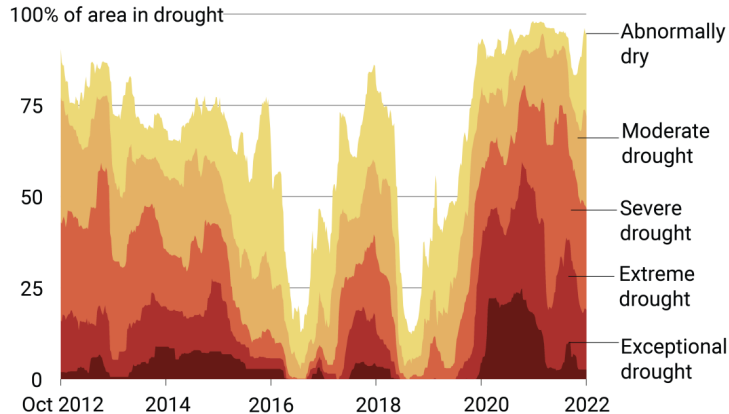
“Walter’s Wiggles” in Zion National Park

A Timely Topic – Water in the West

How Bad Is the Western Drought? Worst in 12 Centuries, Study Finds.

Fueled by climate change, the drought that started in 2000 is now the driest two decades since 800 A.D.

A decade of drought in the West

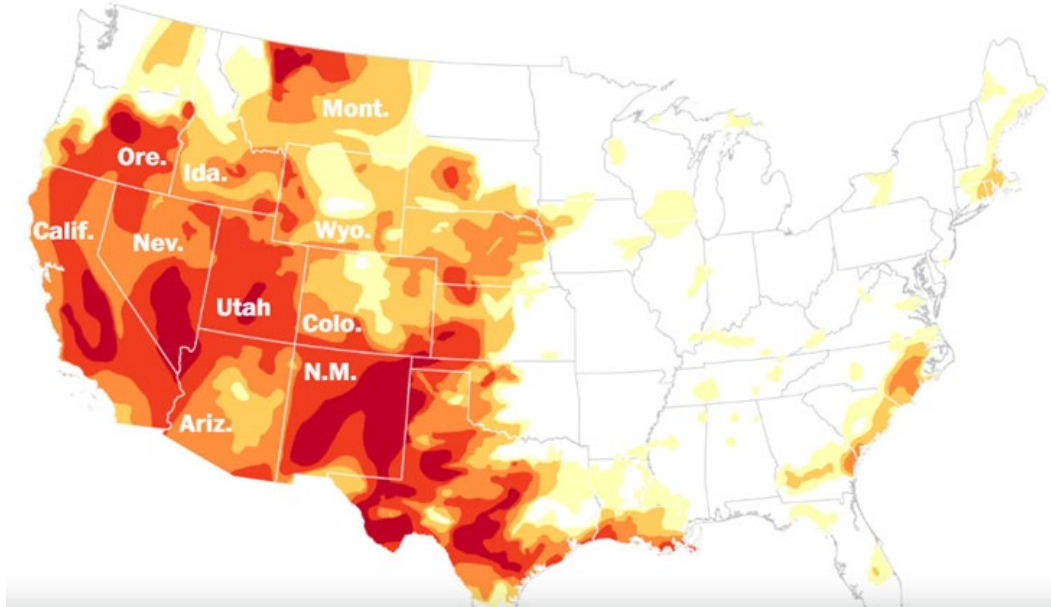


Data source: National Drought Mitigation Center
By Emma Rubin

2022 Drought intensity

Data as of June 7

Abnormally dry Exceptional drought

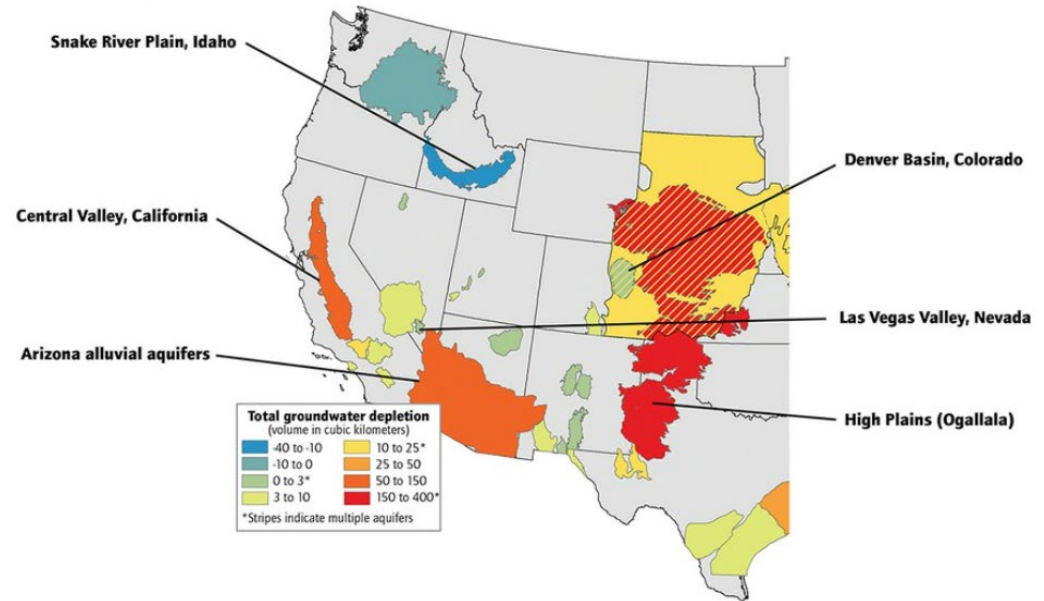


Water Use in the West - Groundwater



Aerial View of **Center-Pivot irrigation** in Finney County Kansas using groundwater from the **stressed Ogallala aquifer**. New Mexico also relies on the Ogallala aquifer. (USGS photo)

Groundwater depletion across the West

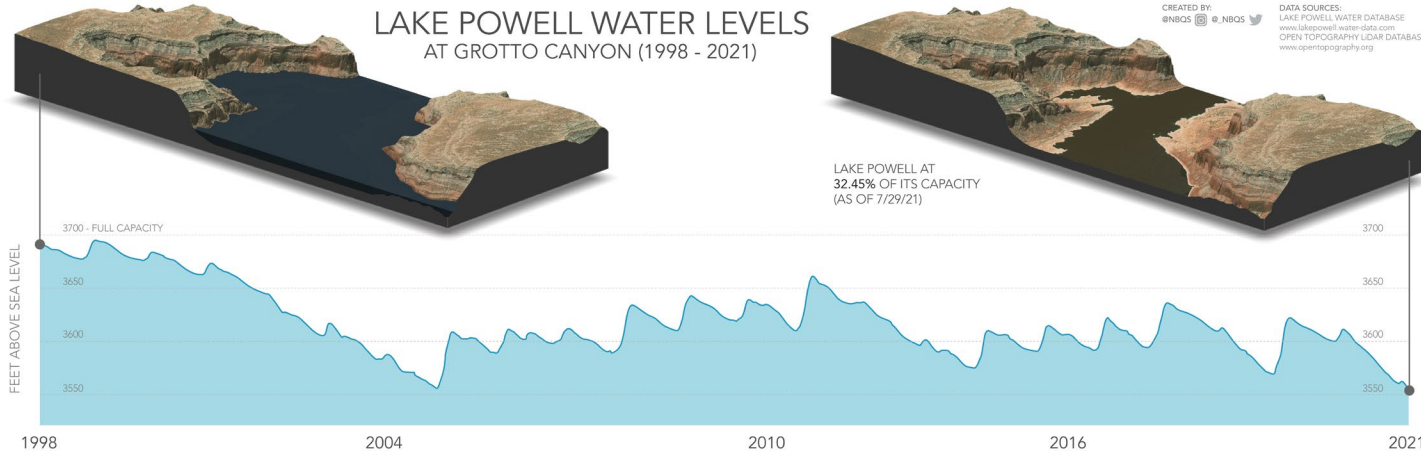


<https://www.hcn.org/issues/45.12/a-new-report-says-were-draining-our-aquifers-faster-than-ever>

Water Use in the West – Surface Water

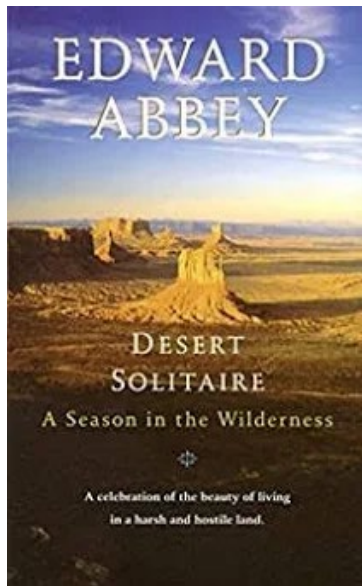


The white bathtub ring documents the drop in water level and storage in Lake Powell which is currently at some of its lowest levels since construction of the Glen Canyon Dam.

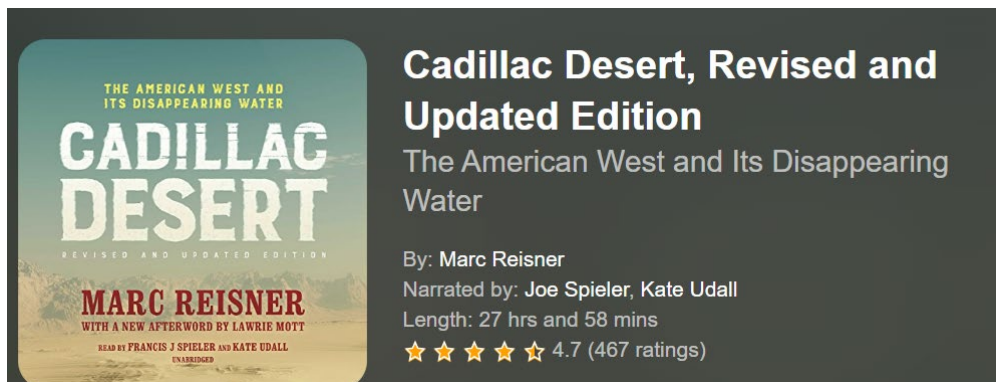
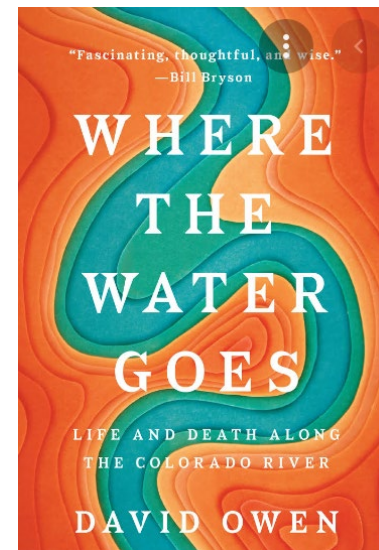
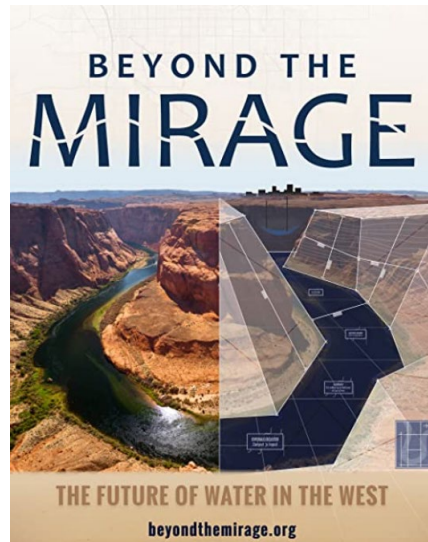


<https://www.nationalparkstraveler.org/2021/06/decline-lake-powell-points-waning-colorado-river>

<https://www.msn.com/en-us/news/us/lake-powell-water-levels-fall-to-historic-low/ss-AAVDsf5?li=BBnb7Kz&cv=id=bdfedccdf1bd4b5b808895fbc818c28b>



Books and Movies About Water in the West



How am I going to be Graded?

Given the field-based nature and structure for the course, assessment and grading will be based on a variety of assignments rather than exams and quizzes.

These assignments include:

- a detailed field trip journal that summarizes observations, interpretations and reflections at stops
- reflective essay assignments in response to field experiences, book readings, and outside speakers, and
- student presentations, and trip blogs.

Logo-making interlude.....

Please take a few moments and use the tools at your table to sketch a possible logo for the WIWP. It should incorporate the name or first letters of the name and something related to water. Here are a couple of very rough examples I sketched



WIWP

WIWP

Itinerary and Highlights

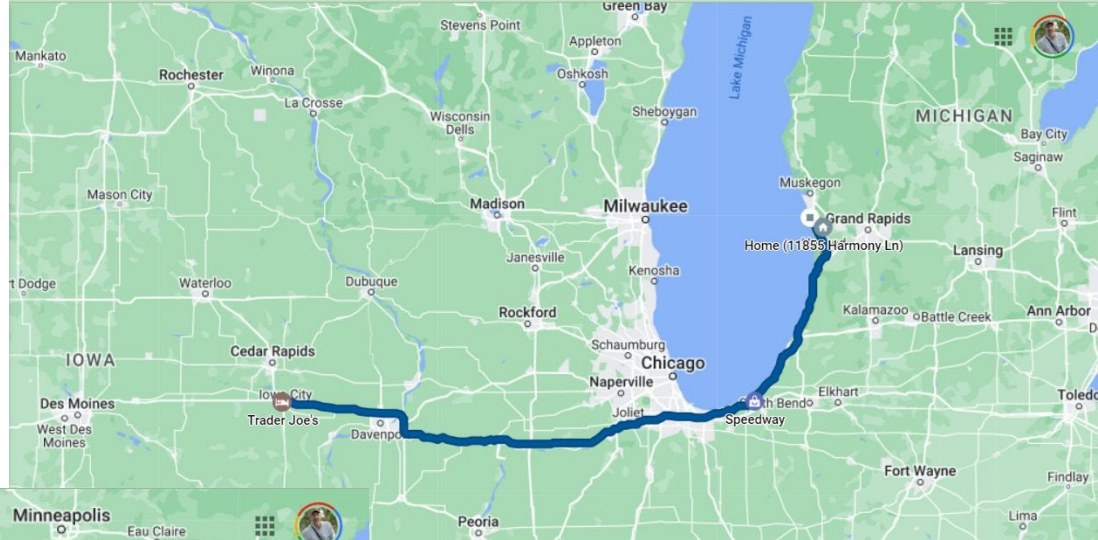
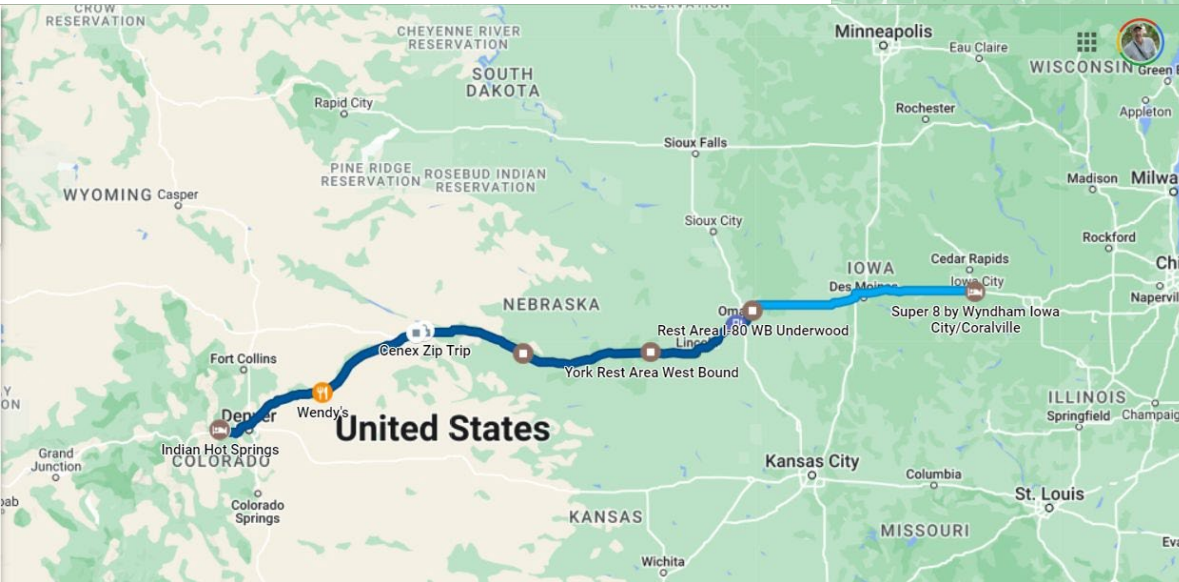
- Colorado - Rocky Mountains hiking, hot springs, and high places.
- Cedar City, Utah - Hiking the Narrows and other Box Canyons in Zion National Park, Glen Canyon kayaking, dam tour, exploring Lake Powell and Lake Mead.
- Flagstaff, AZ- Grand Canyon, USGS research centers, Sedona, AZ
- Santa Fe, NM - History and collaborative learning with middle school students, Taos, NM, Navajo Indian culture and water issues.



Day One and Two



Indian Hot Springs

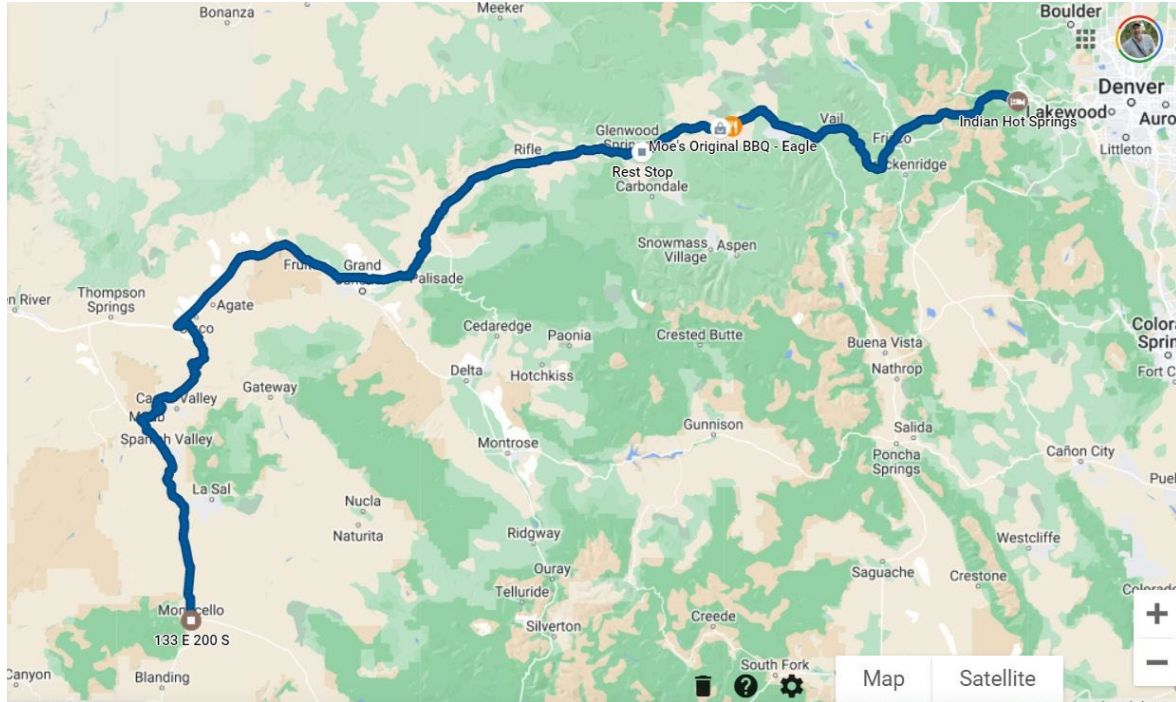


Iowa City Fossils



Days 3-5

- Moab, headwaters of the Colorado R.,
Western slope of the Rocky Mountains



Monticello, UT



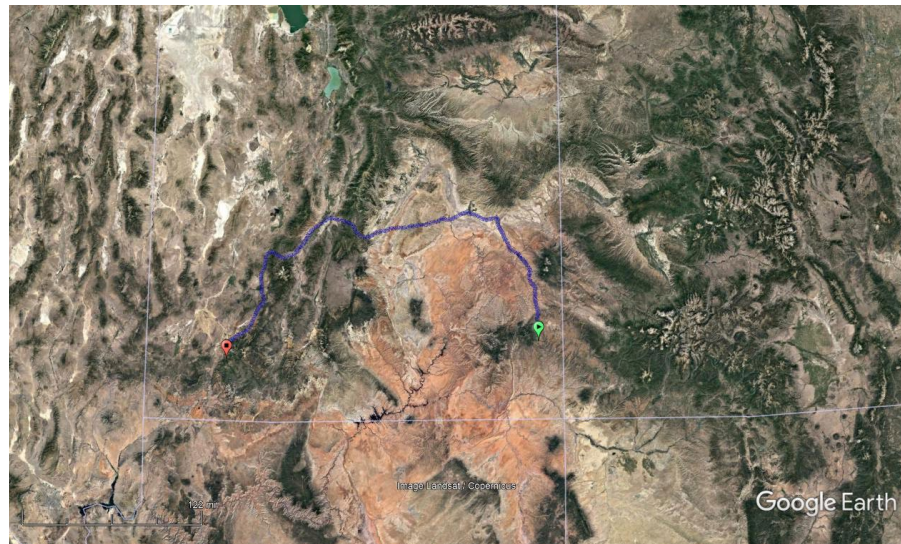
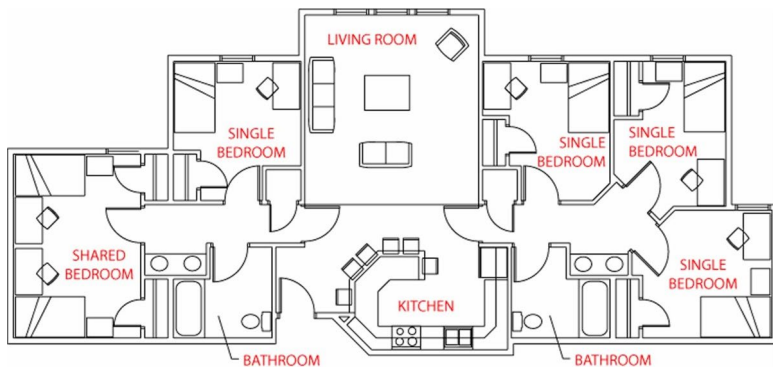
Days 6-8 - Monticello, UT

- Arches National Park
- Natural Bridges National Monument
- Leprechaun Canyon
- Canyonlands National Park



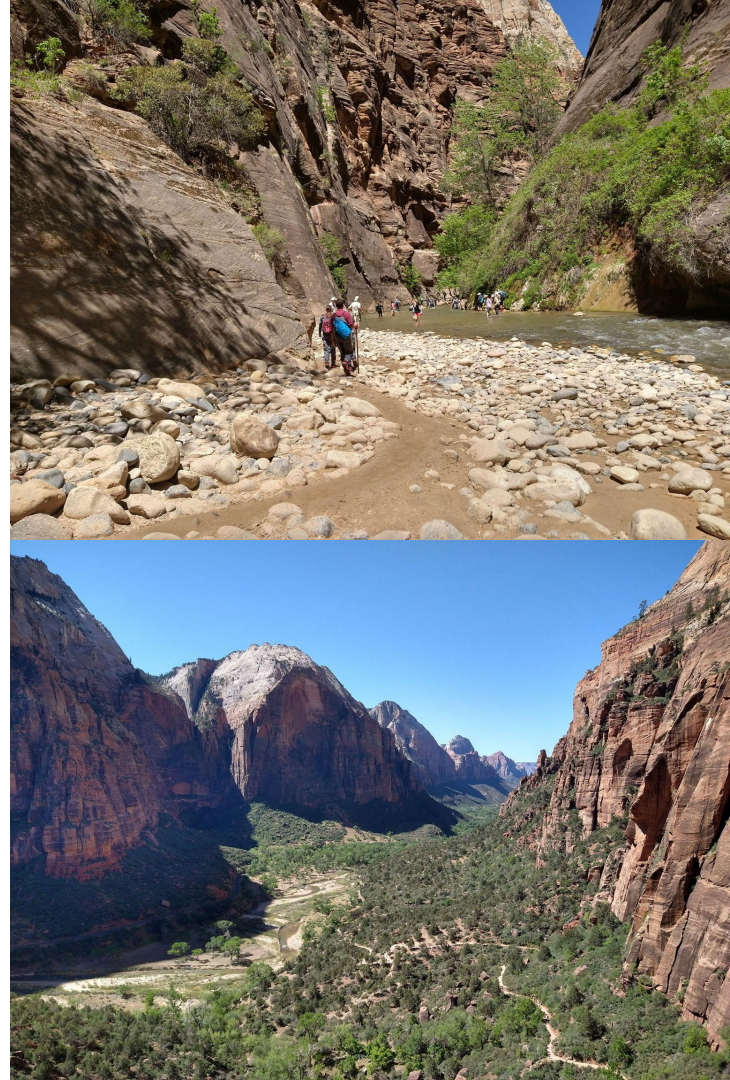
Basecamp #1 (Day 9-14) Southern Utah University, Cedar City, UT

- 10-person suites with kitchens and separate rooms, wifi, etc.



Basecamp #1

- Zion National Park
 - Hiking the Narrows
 - Angels Landing Hike
 - Water Management in the Park
- Capitol Reef National Park
- Bryce Canyon National Park
- Navajo Lake and Cascade Falls
 - Recent volcanic eruptions and their impact on rivers and streams
- Coral Pink Sand Dunes Park
- Dinosaur Tracks



Basecamp #2 (days 15-20) Northern Arizona University, Flagstaff, AZ

- Grand Canyon
- Kayaking the Colorado River
- Lake Powell and Sedona, AZ water slides :).
- Fires and Forest Water Management
- Toilet to Tap Water use
- Springs, streams, and groundwater in arid areas
- USGS Grand Canyon Research and Planetary Research Center
- Indigenous water use and culture



Basecamp #3 (Days 21-25)

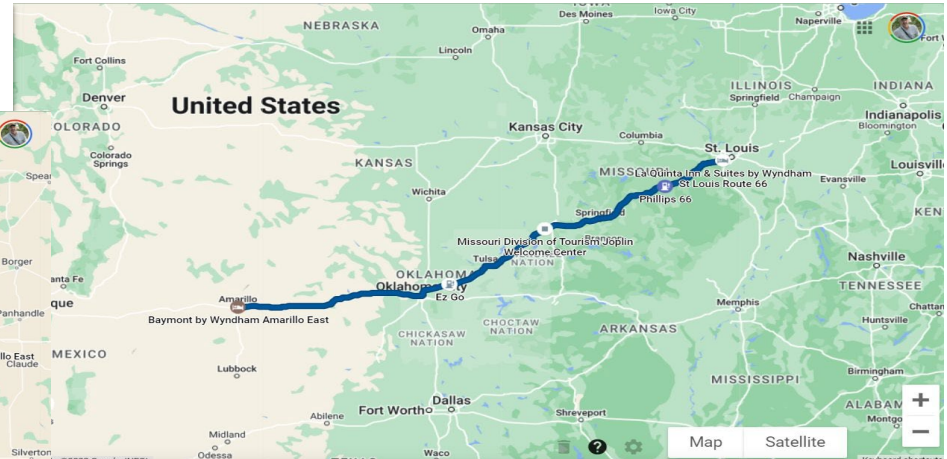
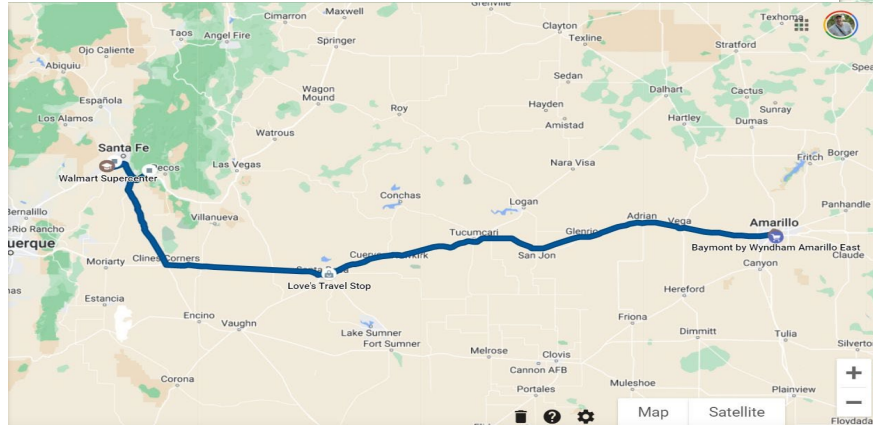
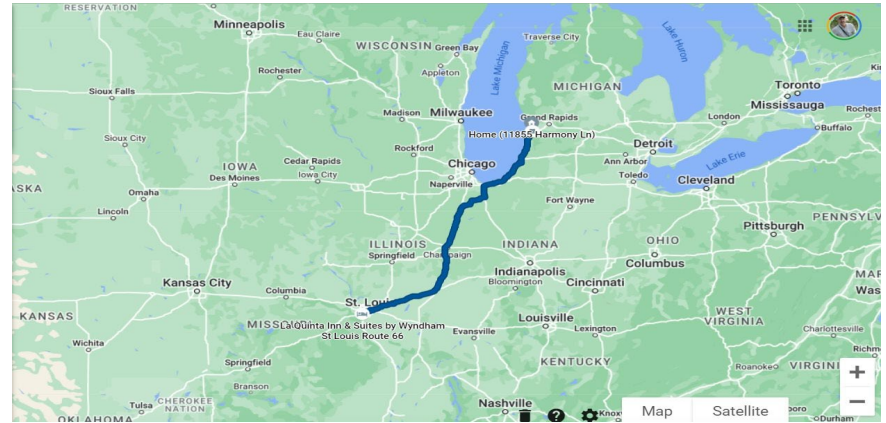
TBD, Santa Fe, NM

- Flash flooding and arroyos
- Erosion in arid environments
- Fire impacts on flash flooding and erosion
- Indigenous water use and culture
- Historic water



Days 26-28 - Return to Michigan via Oklahoma, etc.

Heading for the “barn”



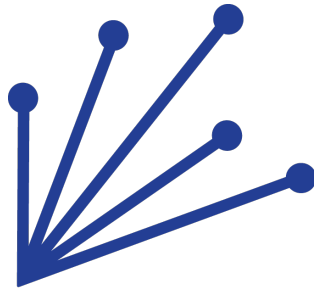
Next Steps

- ❑ Sign up on the sheet being circulated indicating your are planning to apply for the program.
- ❑ Fill out the online application form and submit it
- ❑ Completed applications will be reviewed and evaluated based on these criteria (weighted roughly equally):
 - a. Order in which the complete application was submitted
 - b. Thoroughness and thoughtfulness of responses
 - c. Major/Minor applicability to major area of study
 - d. Travel and environmental advocacy experience.
- ❑ Reach out to with any remaining questions
wamplerp@gvsu.edu or riemersp@gvsu.edu



Conclusion

- This course supports GVSU's "Reach Higher" objectives as we will be visiting locations at elevations significantly higher than in the Midwest.



REACH HIGHER
2025

A scenic photograph of a sunset over a deep canyon. The sun is a bright, glowing orb on the horizon, casting a long, horizontal lens flare across the sky. The sky transitions from a pale yellow near the horizon to a clear, light blue at the top. The canyon walls are dark and silhouetted against the bright light. In the lower foreground, the silhouettes of several people standing on a viewing platform or bridge are visible, looking out over the landscape.

Questions?

[Apply now!](#)

wamplerp@gvsu.edu or riemersp@gvsu.edu