

# GRADE 7

GSI

Geo Scene Investigation!

PRE-VISIT • SUPPORT MATERIALS

**Lake Mead Geologic WebQuest**

## Student Worksheet: LAKE MEAD GEOLOGIC WEBQUEST

### *TASK*

You are part of a team of specialists investigating the geology of landforms at Lake Mead National Recreation Area. Before you go to your study site aboard Forever Earth, you'll need to prepare yourself to identify some of the geologic features you will see and understand how they came about. You and your team must cooperate as you gather answers to the following questions:

- What are the names, descriptions, and locations of the major landforms (mountains, islands, etc.) in and around Lake Mead?
- What are these landforms made of? What are the different types rocks that can be seen on the land surrounding Lake Mead?
- How did these landforms get there? What are the history and events that led to the development of the unique topography of the lands?
- How old are these landforms?

### *PROCESS*

Each team member is a specialist. You must decide together who will play which role! Specialists gather information needed to answer the question stated on his or her job sheet. Take some time to discuss what each person will be doing before splitting up, so that if one member comes across something that is useful to the other, he or she can share it. As you find information, be sure to evaluate its quality. Once everyone has got their information, members teach each other what they've found and work together to prepare a presentation that puts it all together. You can prepare a story, a poster, a PowerPoint show, or other type of presentation.

### *TIPS FOR GATHERING INFORMATION*

- Use the Internet, your text book, and other resources to complete your job. There is a list of Internet resources on each job sheet. You will have to look through several resources and find the most appropriate information in each.
- Save information you find by taking notes, printing web pages, and by copying and pasting information from Internet sites into a word document. Be sure to keep references for each piece of information that you collect.

## *EVALUATION*

Remember, you will be working as a team, and your final grade will be a team grade. You will be evaluated on the following during this activity:

- Cooperation with your team
- Quality of the information you gather
- Ability to adapt the information from the sources for your audience (not just copying information from the websites or other resources, word for word)
- Including graphics or visuals
- Technical quality of your final presentation (grammar, spelling, etc.)
- Organization of your final presentation
- Quality of your group oral presentation (Rehearse! Speak clearly and loud enough for everyone to hear.)

## *JOB SHEET 1*

*JOB TITLE:* Cartographer

*DUTIES:* Cartographers are map makers. You will examine existing maps of Lake Mead and create a new map showing just the major features in the Boulder Basin region of Lake Mead. Draw a general outline of the basin, and include the following on your map: Castle Cove, Swallow Cove, Sandy Cove, Callville Bay, Government Wash, Black Island, Las Vegas Wash, and Hoover Dam. Also include locations and names of surrounding mountains. And remember, a good cartographer wouldn't forget to add a scale bar and north arrow to his or her map.

*QUESTION:* What are the names, descriptions, and locations of the major landforms in and around Lake Mead?

*RESOURCES:* **Map of Lake Mead NRA:**  
[www.nps.gov/lame/planyourvisit/upload/map\\_LAME\\_colorbrochure\\_inside.pdf](http://www.nps.gov/lame/planyourvisit/upload/map_LAME_colorbrochure_inside.pdf)

**Map of Boulder Basin (Lake Mead NRA):**  
[www.nps.gov/lame/bbasin.pdf](http://www.nps.gov/lame/bbasin.pdf)

## *JOB SHEET 2*

*JOB TITLE:* Geologist

*DUTIES:* A geologist studies the minerals and rocks that make up the Earth. Research the major types of rocks found in Lake Mead National Recreation Area and how those rocks formed. Gather samples or photographs of these types of rocks from your neighborhood, from a classroom rock collection, or from the Internet. Include examples of the types of metamorphic, sedimentary, and igneous rocks that might be found around Lake Mead. **IMPORTANT: ONLY COLLECT ROCKS FROM SITES WHERE IT IS LEGAL TO DO SO.** People are not allowed to collect rocks from any state or national park lands.

*QUESTION:* What are landforms made of? What are the different types of rocks found on the land surrounding Lake Mead?

*RESOURCES:* **Descriptions of the three basic rock types and examples:**  
<http://jersey.uoregon.edu/~mstrick/AskGeoMan/geoQuery13.html>

**Description of rock types and the rock cycle:**  
<http://www.minsocam.org/MSA/K12/rkcycle/rkcycleindex.html>

**Information about land forms, geological age, and composition of rocks at Lake Mead:**  
[http://3dparks.wr.usgs.gov/2005/lakemead/html/lame\\_history.htm](http://3dparks.wr.usgs.gov/2005/lakemead/html/lame_history.htm)

**Photographs of the geology of Lake Mead and surrounding areas:**  
<http://3dparks.wr.usgs.gov/2005/lakemead/index.html>

## *JOB SHEET 3*

*JOB TITLE:* Geomorphologist

*DUTIES:* A geomorphologist is a geologist who studies Earth's landforms and the geologic and climatic processes and human activities which form them. Research how major land features of Lake Mead National Recreation Area formed, and what those land forms look like. Investigate physical and biological weathering, including erosion due to wind, water, and plants. Include the following features, many of which you will see during your Forever Earth field trip: lava flows, tilting, cross-bedding, and wave-cut terraces.

*QUESTION:* How did these landforms get there? What are the history and events that led to the development of the unique topography of the lands?

*RESOURCES:* **A short video showing the formation of wave-cut terraces:**

<http://emvc.geol.ucsb.edu/download/wavecut.php>

**Pictures and descriptions of cross-bedding:**

<http://www.uoregon.edu/~millerm/crossbeds.html>

**Explanation of wave-cut terraces:**

[http://www.uwec.edu/jolhm/Past\\_Classes/1999/RENO/oct08/geography.htm](http://www.uwec.edu/jolhm/Past_Classes/1999/RENO/oct08/geography.htm)

**Pictures of cross-bedding:**

<http://www.earthscienceworld.org/images/search/results.html?Keyword=Cross%20Bedding>

**Pictures of landforms:**

<http://geoimages.berkeley.edu/GeoImages/Johnson/Landforms/Landforms.html>

**Information about land forms, geological age, and composition of rocks at Lake Mead:**

[http://3dparks.wr.usgs.gov/2005/lakemead/html/lame\\_history.htm](http://3dparks.wr.usgs.gov/2005/lakemead/html/lame_history.htm)

**Photographs of the geology of Lake Mead and surrounding areas:**

<http://3dparks.wr.usgs.gov/2005/lakemead/index.html>

## *JOB SHEET 4*

*JOB TITLE:* Historical Geologist

*DUTIES:* A historical geologist is a geologist who uses of the principles of geology to reconstruct and understand the history of the Earth. Construct a geologic time line for the Lake Mead area. Include at least one major “land-changing” event that occurred in this area during each of the following eras: Precambrian, Paleozoic, Mesozoic, and Cenozoic.

*QUESTION:* How old are these landforms?

*RESOURCES:* **A geological time scale of the Eastern Mojave Desert:**  
<http://www2.nature.nps.gov/geology/USGSNPS/mojave/mojatime.pdf>

**Information on the geologic history of the Lake Mead National Recreation Area – click on virtual field trip and explore the different ages on each page:**  
<http://wrgis.wr.usgs.gov/parks/lmnra/index.html>

**Information about land forms, geological age, and composition of rocks at Lake Mead:**  
[http://3dparks.wr.usgs.gov/2005/lakemead/html/lame\\_history.htm](http://3dparks.wr.usgs.gov/2005/lakemead/html/lame_history.htm)

**Teacher Reference:  
LAKE MEAD GEOLOGIC WEBQUEST RUBRIC**

|                                 | <b>Novice<br/>(4 pts.)</b>   | <b>Intermediate<br/>(7 pts.)</b>  | <b>Expert<br/>(10 pts.)</b>   | <b>Self<br/>Evaluation<br/>and<br/>comments</b> | <b>Total Points<br/>(50 possible,<br/>teacher<br/>score)</b> |
|---------------------------------|--|---|---|---|--|
| TOPIC CONTENT                   | Includes some essential information, but many facts are missing  | Includes essential information; demonstrates a satisfactory understanding of the required topics  | Covers the required elements completely and in depth; a thorough understanding of the required topics is evidenced  |   |  |
| GRAMMATICAL MECHANICS           | Five or more grammatical errors, misspelled words, or other errors   | One to four grammatical errors, misspelled words, or other errors   | Project is free of grammatical errors, misspelled words, or other errors  |   |  |
| TECHNICAL COMPONENTS OF PROJECT | Includes at least 3 sources of information; information is directly lifted from resources  | Includes information and graphics from resources; between 3 and 5 different resources were used and referenced; work was paraphrased and summarized, not cut directly from resources            | Includes information and graphics from resources; more than 5 different resources were used; technical presentation is detailed and very creative; advanced presentation skills are evidenced |   |  |
| COOPERATION WITH GROUP          | Group worked well, but only with repeated intervention from teacher; group had difficulty with sharing responsibilities and helping each other learn   | Group worked well together with very limited teacher intervention; students shared responsibility   | Group worked very well together; members assumed roles and successfully completed project; repeated encouragement and motivation was evidenced among group members                            |   |  |
| ORAL PRESENTATION               | Difficult, halting presentation; unable to address questions asked by students and teacher; presentation was not organized well, nor was it rehearsed; one student does most of the presentation | Presentation was satisfactory; each student in group participated; some hesitation or lack of voice projection, but adequate preparation and rehearsal is obvious; audience is somewhat engaged | Excellent presentation done with enthusiasm and expertise; all students participate fully in presentation knowledge of the topics is apparent; speaking is clear, loud, and precise           |   |  |
| TOTAL POINTS                    |  |   |   |   |  |