

GIS Activity: The Lewis and Clark Expedition

Before you begin: Follow the directions on the handout called Introduction: The David Rumsey Historical Map Collection to navigate to the David Rumsey web page, select the Lewis and Clark Expedition map collection, and engage the GIS browser.

Introduction: Using the Browser Tools

1. Enable Auto Refresh

- From the File menu, select **Auto Refresh**
- Scroll to the bottom of the Table of Contents (TOC) and uncheck 200 Anniversary Mosaic
- Scroll back up the TOC list and check 1814 NW America by Lewis and Clark

2. You can change the appearance of the map by using tools on the zoom toolbar. These tools allow you to control the map image that you see. Take a few minutes to practice using them.



Zoom In

Zoom Out

Pan


Full Extent

Zoom to Extent of Active Layer

Zoom to Selected Features

Zoom to Location

Return to Previous Extent

3. You can use the Identify tool  to identify attributes of a feature on the map.
- Turn on the Lewis and Clark Campsites layer. If this layer is grayed out, you must zoom further into the image until the layer can be checked.
 - Make Lewis and Clark Campsites the active layer (click on the layer name and it looks raised) Select the Identify tool and click on one of the campsite symbols.
- ? What is the year, month, and day that that campsite was occupied by members of the expedition? Yr _____ Mo _____ Day _____

(Hint: You may need to “stretch” the Identify Results window by dragging its right edge farther to the right.)

? What is the latitude and longitude of that campsite?

Lat _____ Long _____

Note: In a GIS, west longitude and south latitude are expressed as negative numbers. Also, minutes and seconds are shown here as the decimal portion of one degree.

- Make Lewis and Clark Trail the active theme (see above). Click on the identify tool and then click on any part of the yellow line indicating the trail.

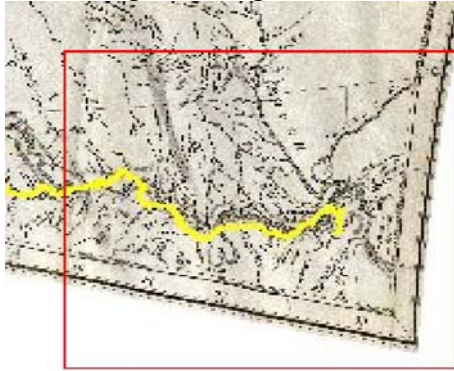
? What segment of the expedition did you click on?

? Was this segment part of the Eastbound journey, the Westbound journey or both? _____

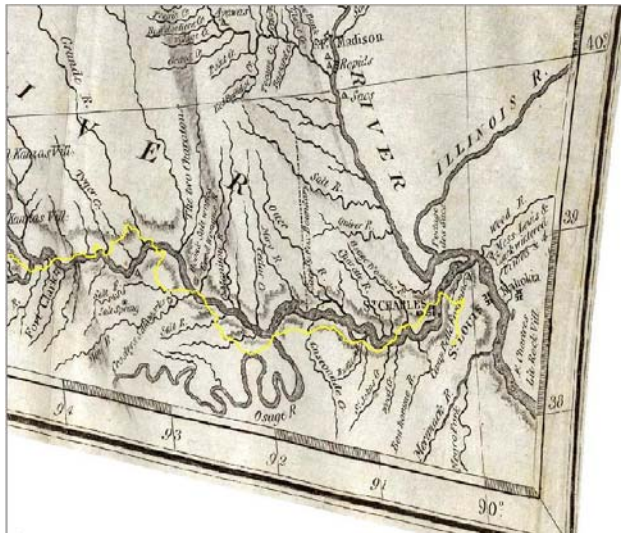
- With Lewis and Clark Campsites still the active layer; click the Zoom to Extent of Active Layer tool. Notice that the campsites do not display at this scale even though the layer is turned on.

Activity 1: Where are the key benchmarks along the Lewis and Clark Trail?

1. Make Lewis and Clark Trail the active layer. Click Zoom to Extent of Active Layer.
2. Use the Pan tool to locate St. Louis at the eastern end of the Lewis and Clark Trail and use the Zoom tool to drag a rectangle around this area.



Your map should now look approximately like the graphic below. The key is that you are zoomed in enough to be able to read map text.



3. From the Graphics menu, select Text Symbol. In the dialogue box that opens, change the font size to 24 and the color to red. Click OK and OK.

4. From the Graphics Toolbar select the Text tool.



Click on the eastern bank of the Mississippi where it says *Mess. Lewis and Clark wintered in 1803 & 4* and enter an upper case **A** in the Enter Text box. Click OK. This is the location of Camp Dubois. A red A now appears at that location on the map.

5. You will use the same procedure to label the locations where the expedition spent the winters of 1804-05 and 1805-06, and St. Louis, where the expedition terminated. The key for the locations is given below. Use the pan tool to follow the trail to each of these locations.

- B** Fort Mandan
- C** Fort Clatsop
- D** St. Louis

? In which segment of the expedition did Lewis and Clark travel the greatest distance? Circle one.

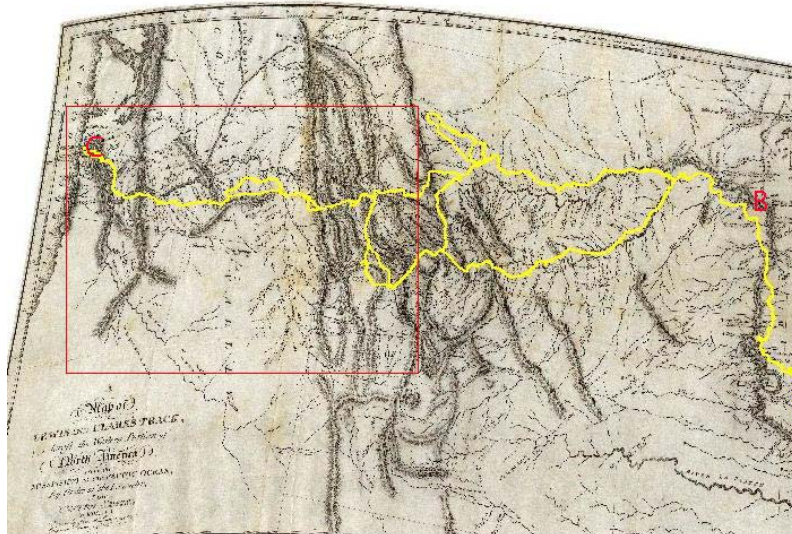
A – B B – C C - D

? List some possible reasons why this segment of the expedition might have gone so much faster?

- _____
- _____
- _____

Activity 2: How much did the Lewis and Clark Expedition contribute to geographic knowledge of the far west?

1. Use your Zoom tools to zoom your map to the part of the Lewis and Clark Trail that extends from Fort Clatsop (C) to a point in the mountains about midway between points B and C. (See below).



2. From the Image Viewer menu select **Swipe**. Leave the Top Image set to *1814 NW America by Lewis and Clark*. Change the Bottom Image to *1802/1811 N America by Arrowsmith*. Click OK.

3. Use the slider bars on the left and bottom of the image to cover the bottom image (what was known about this region prior to the expedition) with the maps produced by Lewis and Clark after their return. You can use the Zoom and Pan tools in this window as well.

? Do you think the Lewis and Clark Expedition accomplished its goal of expanding geographic knowledge by exploring, surveying, and mapping the path of the Missouri River to its source and from there down the Columbia River to the Pacific Ocean? Explain your answer briefly.

? List three examples of changes in geographic knowledge about Northwest North America that resulted from the Lewis and Clark Expedition.

- _____
- _____
- _____

Close the MapImager window when you have finished your analysis.

Activity 3: Did Lewis and Clark find a direct and practical water route across North America?

1. Use the Zoom tools to create a map view that extends from point B (Fort Mandan) to point C (Fort Clatsop). This span represents the area that was totally unknown to white America when Lewis and Clark began their expedition. The only information about this area came from Indian accounts.

2. From the Image Viewer menu select **Blend**. Set the Top Image set to *1802/1811 N America by Arrowsmith*. Change the Bottom Image to *USGS Color Shaded Relief*. Click OK.

3. Use the slider bar on the bottom of the view to change the opacity of the top image.

? Refer to the Arrowsmith map to describe misconceptions about the North American landscape that led Jefferson and others of his era to believe that there was a good possibility of a water route linking the Missouri River and the Columbia Rivers. (Remember, you can use the Zoom and Pan tools in the MapImage view.)

- _____
- _____
- _____

? Refer to the USGS Color shaded relief image in answering the following question. Why isn't it possible for such a water route to exist in North America?

Close the MapImager window when you have finished your analysis.

Activity 4: What Native American tribes did Lewis and Clark encounter on their expedition?

1. Another objective of the Lewis and Clark Expedition was to meet and establish good relations with Native American tribes along the expedition route. In the Table of Contents turn off the 1814 Lewis and Clark map and turn on the National Atlas Native American populations map.

2. Make National Atlas Native American populations the active layer and Zoom to the extent of the active layer. In the lower right corner of the map you will see a legend. Use the Zoom in tool to enlarge the legend so you can read it.

? Note the difference between the way Minor tribes and Major Tribes are indicated. Explain that difference in the space below.

3. Zoom to the expedition segment between points A (Camp Dubois) and B (Fort Mandan).

? Identify three major tribes that Lewis and Clark encountered in this segment.

- _____
- _____
- _____

4. One of the most difficult parts of the expedition was crossing the Rocky Mountains. Lewis and Clark needed the help and advice of local Indians to get through the mountains and to find the Columbia River. Turn on the 1814 Lewis and Clark map again and zoom to that part of the expedition route.

? Toggle between the 1814 map and the Native American map (by turning the 1814 layer on and off) to identify the Native American tribes from whom the explorers sought assistance in finding their way out of the mountains.

- _____
- _____
- _____

Conclusion: Observations and reflections

? List three more questions about the Lewis and Clark expedition that you could explore using the maps in the David Rumsey Historical Map Collection. Which maps would help you explore the questions?

Question	Maps to Use

? Describe something that you have learned about the Lewis and Clark Expedition from this activity that you did not know before you began.
