**Sustainability, Nuclear Waste, and the Hanford Site**

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### Part 1: Location and Bioregional Context of the Hanford Site

Note: For this activity, students will use Google Earth, and thus will need computers with Google Earth installed. The activity can be completed individually, but perhaps best in pairs.

**Procedure:**

1. Open Google Earth.
2. Locate the state of Washington and zoom in so that you can see the whole state. In order to orient yourself, locate Seattle, the Cascades, Puget Sound, and any other major geographic features you choose. Visually trace out the path of the Columbia River, beginning with its entry point in the Northeast quadrant of the state at the Canadian border, through the central part of the state, and its final stretches along the Washington - Oregon border to the Pacific.
3. Notice that at the bottom of the window you will see some important information, including latitude/longitude, elevation, and "eye altitude." Eye altitude is approximates what altitude you would have to be at to see what you are seeing. This changes with the zoom level.
4. You will need to change the lat/lon units. To do this, go to the tools menu, select Options, and change the units from "degrees, minutes, seconds" to "degrees, decimal minutes."
5. Zoom to and center the southeastern quadrant of the state (to an eye elevation of about 125 miles).
6. You will now create a polygon in order to draw a border. To do this, click the polygon button at the top of the window (next to the yellow pushpin icon).
7. For each of the lat/lon pairs below find the location on the map and click. Be certain to go in order, and, while exact precision is sometimes impossible, BE AS PRECISE AS YOU CAN.

A. 46 deg., 48.091 min.; 119 deg. 26.231 min.

B. 46 deg., 48.091 min.; 119 deg. 32.394 min.

C. 46 deg., 39.153 min.; 119 deg. 47.168 min.

D. 46 deg., 27.089 min.; 119 deg. 47.440 min.

E. 46 deg., 20.651 min.; 119 deg. 30.672 min.

F. 46 deg., 23.089 min.; 119 deg. 26.321 min.

G. 46 deg., 21.213 min.; 119 deg. 16.261 min.

H. 46 deg., 31.902 min.; 119 deg. 16.714 min.

8. When you have completed your polygon, you will have constructed a generalized outline of the border of the Hanford site. From within the polygon options box, choose a bright line color, and decrease the opacity so you can easily see the terrain (40-50% works well).

9. Insert a placemark (yellow pushpin) at the center of the polygon and label it. Save your map my selecting File, Save and "Save Place As." This will create a .kmz file. Save it to a secure location. You may also print a copy of the map from the file menu. Color copies are most readable, and selecting the landscape orientation provides you with a larger map.

**Analysis:**

1. Conduct a comparative analysis of the Hanford and surrounding areas. What type of climate does Hanford experience, based on vegetation? Are there any potentially sensitive natural resources associated with the site? Are there any population centers?

2. Move the pointer over the Hanford site while observing the elevation. Find the approximate highest and lowest elevation on the site. What is the range of elevations on the site?

3. The largest population centers in Washington are the Everett - Seattle - Tacoma - Olympia metropolitan corridor and the Spokane metropolitan area. Approximately how far is Hanford from these centers?

4. Write a paragraph describing the bioregional context of the Hanford site based on your answers to the above questions, adding any additional information you wish.