LESSON 1 Watersheds and Water Flow in Neighborhoods	Student Handout

PROBLEM

How does flooding occur?

Visit the following website to explore further
https://www.nationalgeographic.com/environment/natural-disasters/floods/

How might floods impact specific neighborhoods differently?

Let's explore the following map
https://pns.maps.arcgis.com/apps/View/index.html?appid=32d34feded3a4447a89aef932e5064be

1. Zoom into a view of the two schools designated by the flag star symbol.

2. Click on each school to explore and move through the tabs to learn information about the school, likelihood of the census block (neighborhood) for flooding, and the median income of the census block within which the school is located

3. Now look up the address of the school located in the first tab on google maps and try to identify the locations of all the residences and businesses that might be affected should the census block of your school flood (refer back to the income census block on the ArcGIS map to make sure the areas on google maps you are examining are within the census block of the school)

4. Next, pick a neighborhood adjacent to the school (refer back to the income census block on the ArcGIS map to make sure the street you have selected is within the census block of the school) and explore a few streets in this neighborhood using google street view. Look out for neighborhood features such as on-street drainage, the level of greenspace compared to built up space, the style and construction material of the houses etc. You are looking out for features that might make this neighborhood either more or less flooded should there be an extreme weather event involving a lot of water.

5. Finally discuss the differences between the two neighborhoods based on the findings of steps 3 and 4

FACTS & QUESTIONS (Synthesize content; generate ideas and explanations)

How would you briefly describe the watershed for the region?

Refer to the following links for help with the above question:
https://rb.gy/yrspsn

https://rb.gy/51cwyz

LEARNING ISSUES (listing information needed to solve the problem)

What are the current flood conditions in this watershed?

Refer to the following link for help with the above question: https://cutt.ly/uo0jvm

(Specifically examine data for rivers, streams, and creeks in the three counties in western most corner of Northwest Florida)

What have the historic flood conditions in this watershed been like?

Explore the following links for help with the above question:

Hurricane Nate 2017: https://cutt.ly/ro0kfC

Hurricane Nate did not flood inland of the watershed but the coastal gauges (see map-you may have to align the map on the Pensacola Bay and zoom in) saw peak floods.

April 2014 floods: https://cutt.ly/Uo0kBZ

If climate change is a driver of both historic and current flood conditions, what does the historic and current precipitation data for Escambia County (the county within which the watershed is located) look like?

Refer to the following link for help with the above question
https://crt-climate-explorer.nemac.org/ (Search for Escambia County, FL and explore precipitation data)

PURSUIT (Researching to acquire new information about the problem)

What was the impact of the 2014 flood like in the neighborhoods of the two schools?

Refer to the following map for help with the above question https://cutt.ly/1oDmca

(NB: that the map data might take a few minutes to populate)

What might future flood risk in the watershed look like under a scenario of rising sea levels?

Refer to the following link for help with the above question https://cutt.ly/IoDUg1
(type in Pensacola, FL as the location and begin exploring)

Explore the extent of projected sea-level rise for the coastal portion of the watershed in general, then zoom into the neighborhoods in the school to see if sea-level rise could possibly affect any of those neighborhoods within the projection scenario? **Why or why not?**

INTEGRATION & SHARING (Applying and sharing learned information with classmates)

Share with your classmates what you have learned about the watershed in general and the neighborhoods in particular