

NWA Water Health Environmental Geology Mr. Lowrey



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Introduction

- The health of our local streams are important to the entire community. Many of the creeks throughout NWA are tributaries that at some point connect with Beaver Lake or the White River (a tributary to Beaver Lake), which is the main source of drinking water for the NWA community.
- Our goal is to produce and make available to the public a map of local streams that have been polluted or contaminated in the past.

Project Overview

The project overview is to make people aware of where certain lakes or streams may be polluted or that have been in the past in hopes that we can prevent future contamination. From the help of a useful EPA website we were able to see some streams and location that are either polluted or have been. We traveled to these areas to gather information and visually see the contamination of sediment or other pollutants compared to other sections of the same streams.



Community

- Our project will benefit the NWA community that receives city regulated water usage, the homes and properties bordering streams, and the recreational community (fishers, swimmers, hikers, etc).
- Our map will show these communities where and how pollution occurs to make them aware of the effects of their actions. Pollution and water health affect the safety, cleanliness, and value of homes and properties bordering streams. Children, animals, and property can be damaged or become sick from contaminants or litter in the water.

Curriculum

- To describe the geologic factors affecting the use, supply, contamination and treatment of surface and groundwater resources.
- To make the public aware of what they maybe did or didn't do in the past to help mitigate the pollution and possible erosion.



Technology

- Computers to access information on locations of local waterways and map making websites
- Usage of mapline website and ArcGIS website
- A phone camera to document photographic actual evidence of pollution



Methodology

- Jordan researched different local streams and ponds and compiled a list of potentially polluted ones by 11/21.
- Sarae researched different map making websites and information on how to make maps by 12/3.
- Sarae took this list and added them all to a map. We took this map and decided which creeks and which parts of the creek we would go to to get a wide range view of pollution in the area by 12/5.
- All group members traveled to different points along streams, and took photos of visible pollution throughout November and December.
- Katie took the photos and created the ArcGIS map by 12/8.
- Jordan revised the final presentation by 12/10.

Project Results

https://app.mapline.com/map/map_53669fab

<https://arcg.is/rv5a8>

- Achieve proficiency and experience in ArcGIS and mapline
- Greater knowledge of our local environment's level of health
- Finding ways to articulate the types of pollution in our waterways

Project Results

We found that Osage Creek is polluted with bacteria and other microbes. Nitrogen and phosphorus have been found as well. There are no current cleanup plans in effect, and discharges are regulated by permits in the area. Spring creek was also polluted with Nitrogen and Phosphorus as well as bacteria. Lake Fayetteville was polluted back in 2008 due to bacteria and microbes and a cleanup plan was set in place back in 2009. Polluted runoff control project also exist for lake fayetteville.



Content Knowledge

- We learned about the poor state of many of our local streams and ponds. We found that all of the following waterways had a visibly measurable amounts of (natural and manmade (ex. Dead organisms, animal droppings, tree branches v. plastic, trash)) pollution and soil erosion that not only affects animal life (quality of life, possibly killing some as they ingest plastic or chemicals or become entangled plastic or other waste), but also public infrastructure such as the Greenway bike trails and bridges. Especially along 71B!
- Local polluted water sources include: Spanker creek (Bella Vista and Bentonville), Town branch (Bentonville), Little osage creek (Rogers), Spring creek (Springdale), Clear creek (Johnson), ad Lake fayetteville (Fayetteville)

Content Knowledge

We learned so many things that were unknown to us that we have hopefully passed on to our audience. Dispose of household chemicals and grease properly. We know where to take a quick dip in the water and where not to. Sediments can cause the water to erode away at the land so be careful of what you're dumping. If you find yourself in a position to build something near nice clean water think about the sediments the construction will be doing to the water quality.



Short Videos

Sediment Pollution

<https://youtu.be/JSp07nK1Bak>

Fats, Grease, Oils

<https://youtu.be/NbkfnGkLIJo>

References

- ArcGIS and mapline websites
- Google slides
- <https://watersgeo.epa.gov/mywaterway/>
- <https://www.epa.gov/waterdata/surf-your-watershed>
- <https://www.uaex.edu/counties/washington/washington-county-water-quality.aspx>