# **Visualize Your Water Challenge**

# Submission Form

\*Students must have a teacher sponsor their submission. Home school students may have a guardian sponsor their submission

#Not applicable for home school students

**Link to visualization:** Click here to enter text.

**Project description** (no longer than 5 pages, Times New Roman, size 12, single spaced. See Getting Started Guide for further guidance)**:**

The map was created using 2 types of ArcGis software. First, data from the agricultural census was spatially joined to counties in the Chesapeake Bay watershed on ArcMap. This gave the base of the map to show the causation of eutrophication in the Chesapeake bay. The data used from the agricultural census was acres per county fertilized and acres per country using manure. Fertilizer and manure are 2 of the main causes of introduction of excess nitrogen and phosphorus into the Chesapeake bay.

A fishnet was also created in Arcmap to map a point file of dissolved oxygen made by IMAP. The dissolved oxygen is part of the aftermath of eutrophication and can be used to visualize where it took/takes place.  That file had too many points for use on GIS online so it was spatially joined to the fishnet and the average minimum oxygen field was created for each sector of the fishnet. Then to show how the excess nutrients from fertilizer and manure ultimately got introduced into the day, the trace downstream tool was used. This visually showed when nutrients are introduced into waterways through run off, they still will flow into the Chesapeake bay even if they started hundreds of miles away. Finally esri's erodability factor data file was used to show how the farms surrounding the Chesapeake are very susceptible to erosion while being heavily fertilized. This combination provides excellent condition for topsoil runoff into the bay.

All of these pollutants and tracks the pollutants can take are shown in an attempt to raise awareness. This is hoping to show people the actual problems and the unlivable conditions we are causing for the animals in the Chesapeake bay. Simply educating people about what we, as the people in the Chesapeake bay watershed are doing to the bay can cause widespread change. How to fix it is a second step but first people need to be educated and be aware of the problem.

**Works Cited**

[**http://www.agcensus.usda.gov/**](http://www.agcensus.usda.gov/): Fertilized Acres Per County , Manure Acres Per County

[**http://data.imap.maryland.gov/datasets/f8a7df56e7e64400bceb53f2252bcd42\_0**](http://data.imap.maryland.gov/datasets/f8a7df56e7e64400bceb53f2252bcd42_0): Minimum Oxygen level in the Chesapeake bay

[**https://www.census.gov/support/USACdataDownloads.html**](https://www.census.gov/support/USACdataDownloads.html)**:** United States counties

[**http://landscape5.arcgis.com/arcgis/rest/services/USA\_Soils\_Erodibility\_Factor/ImageServer:**  Esri erodability Factor image](http://landscape5.arcgis.com/arcgis/rest/services/USA_Soils_Erodibility_Factor/ImageServer)

<http://planetark.org/images/wefull/54272.jpg>: hands in algae photo

<https://vimeo.com/39072975>: Video on eutrophication

<http://cahnrs.wsu.edu/wp-content/uploads/2011/03/Lettuce2.jpg> : farm Photo