# **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: http://arcg.is/1OK3vQS**

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

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Visualize Your Water Challenge

This project was very eye- opening to those of us who took the time to perform research and dedicate ourselves to the challenge. Over the course of the project, our understandings and beliefs on much of the health of the environment were completely changed. Many of us could not have begun to comprehend how in danger the bay is even though we live so close to it. It became obvious that we like many others take this majestic body of water that is also the largest estuary in the United States for granted. Hopefully, even if our idea is not implemented, there will eventually be reform on the way we act upon and influence bay life and the rest of the environment.

When we first started this project, we knew that adding a visual could give a crucial effect to our thesis. We understood, that many don’t know about the epidemic state the bay is in, because they only hear the facts instead of seeing how they pertain to our actual health and what they really mean for our life. Facts like “The Bay has lost 98% of its oysters, about 80% of its grasses, and nearly 50% of forest buffers surrounding the Chesapeake Bay” (Chesapeake Bay Foundation). We used ArcGIS technologies to map out our data in the area, and eventually make a story map that detailed our findings in an organized manner. We selected our data sources by typing key words into various search engines, and following the trails given to us. Then, we turned to websites of major environmental organizations that are in line with helping the bay. As a last resource, we used some of the links and files given to us in the starting information guide.

At first, we did not know where to begin in our solution for limiting the vast dead zones of the bay. But after extensive research in one direction, we found that majority of the dead zones is due to excess nitrogen and phosphorous buildup from toxic spills, power plants, farms, and even transportation. Understanding that stopping the process of farms and preventing accidents by way of toxic spills is nearly out of our control, we decided to suffice with preventing air pollution, because scientists estimate that over one- third of the nitrogen polluting the bay comes from the air in the form of nitrogen oxide which is produced by the burning of fossil fuels.(Chesapeake Bay Program). We analyzed the data, by making multiple maps that graphed the data which allowed us to see the statistics we had gathered applied.

We are trying to detail that dead zones are major cause of entropy in the bay and kill off much of sea life. That nitrogen build- up and other air pollutants are the main cause of these egregious areas that destroy the equilibrium of the great estuary. That air pollution comes from power plants, smoke stacks, and tailpipes that donate 85 million pounds of nitrogen to the air each year. (Chesapeake Bay Foundation) That the main way to restore the stability of the bay is to prevent air pollution before it can take effect. Our story map tells the story of nitrogen pollution, by having a map that details air pollution’s effects or sources along with a brief description detailing the meaning of the map given. We used maps that have data plotted on them so the reader can see the data in effect real time. On these maps we used symbols and colored dots to represent areas or intensity of a dead zone or nitrogen build-up.

There are 17 million people living in the Chesapeake Bay watershed, which is the greatest number recorded in history, and with an estimated 157,000 people moving here each year, there is more energy demands and nitrogen pollution through the burning of fossil fuels. (Chesapeake Bay Foundation) The nitrogen is produced when the fossil fuels are burned, be it by car engine or power plants and returns to the Earth as dry deposition or is washed into the bay through precipitation on the paved surfaces that allow the water to continue to travel long after the rain stops. In either form, they cause algal blooms that absorb oxygen as they decompose creating vast expanses of water where nothing can live for a sustained period of time. (Chesapeake Bay Program) Air pollution, specifically from power plants is the main source mercury that contaminates fish in the bay making the consumption of fish potentially harmful. Another, less known side effect of nutrient pollution is the formation of life-threatening bacteria called Vibrio that cause skin and blood infections, and intestinal illnesses. (Green Harvest Group)

We are trying to reach all factory owners, and those who are in charge of these power plants that are the main producers of air pollution. We are also trying to encourage those who drive and use energy in any form to make a conscientious effort to use less fossil fuels by burning less gas. A national day in which all factories and cars are not used would help to promote and create widespread recognition of the serious issue at hand. As conscientious bay residential citizens, we ultimately hope we reach and touch the lives of all who effect the Chesapeake Bay. Change starts with one step, but the first is always the hardest.