Water, especially fresh water is a very valuable natural resource supporting human life, animals, ecological systems and the environment. In global water cycle, rainwater is from the product of vaporization process driven by solar energy and wind, a natural and sustainable purification process. However, because of pollutions on the ground, such as parking lots, roads, agricultural/landscape fields and industrial areas, the runoff rainfall are contaminated by oils, heavy metals, fertilizers, pesticides, herbicides, sediments and other anthropogenic chemicals. It carries these pollutants from roadways or chemically treated fields or grasses to the receiving water bodies and spreads the pollution. As a result, it is highly important to treat the contaminated runoff before it goes to natural water bodies, such as rivers, lakes and groundwater. This is how a rain garden can help.

This project will focus on cleaning up the rain water that ends up carrying away harmful chemicals and sediments to the rivers, lakes and groundwater. A rain garden happens to be a very effective and cost appropriate solution to this problem. A rain garden is a garden that is made specifically to collect rain water runoff from places such as parking lots, roofs, and any location where there has been contaminated by anthropogenic chemicals. After collecting the rain water, collection plants and engineered materials are used to draw out some of the chemicals in the runoff water to “clean” it. Many different plants are used to target the different chemicals that may get into the runoff of that particular water shed. For example, certain plants are used to take away runoff that may have road salt from a parking lot that are different than plants used in a grassy area that may be treated with fertilizers. After the water enters the rain garden, engineered materials can retain certain pollutants, which are pulled out by the plants afterwards. As the water infiltrates into the soil, it is filtered on its path to an aquifer or some fresh water location. This ultimately cleans the storm water and provides cleaner water for not only humans that are affected by the water downstream, but also provides a better source of water for fish and other wildlife that depend on that water to survive.