

How long can the earth sustain human growth and development? Urbanization, industrialization, and population growth are three key ingredients to environmental degradation in the world today. Many citizens of the United States are aware that there is a growing threat to the environment, but it is hard to admit that we, as the human race are the problem. It is obvious that urban and city centers have altered what natural landscape had existed before; however, is there a change of heart if the problem lay in one's own backyard? The Clinton River Watershed is an area of lower southeastern Michigan that is under the attack of human influences and population growth. As a citizen of that watershed, I am a contributing factor to this ongoing problem of landscape alteration and unnatural change. A major area of concern in this particular watershed is the area of The Clinton River Spillway, which runs from Mt. Clemens, Michigan to Lake St. Clair. This man made spillway was created with the intentions to control flooding in the watershed; however, the planning behind this project failed to recognize the environmental harm that it would cause in the future, and now our generation and the environment are paying the ultimate price!

The early settlement of the Clinton River Basin area began in 1817 near Pontiac and Rochester, which lay within 20 miles of the present day spillway (Schmidt and Summers 6). This area was settled so quickly due to the access of the Clinton River and Lake St. Clair. This was an area forested with ash, oak and hickory and became a center for wagon and carriage manufacturing (Schmidt and Summers 6). During the 1880's this area was largely agricultural and was one of the greatest wheat producing areas in the United States with more than 80,000 acres planted to wheat. The area of the spillway was no exception and was home to farmers and agricultural projects. As time passed however, the area became more populated, and by 1900,

one could see the shift from a rural agricultural area change to an urban industrialized area (Schmidt and Summers 7). This infringement of urban sprawl from the metropolitan areas of Detroit was the beginning of the transformation of the Clinton River Watershed Basin many know today. With this population growth came residential areas, shopping centers, and many other forms of industry. As this shift from rural to urban character took place, flooding of the basin became a problem for many residents of the area (Johnson and Anderson 2). This problem of extreme flooding gave birth to the idea of the Clinton River Spillway.

Built in 1952 by the U.S. Army Corps of Engineers, this Spillway was constructed to reduce flood damage in the Mt. Clemens area (State of Michigan Department of Natural Resources 5). This mile long spillway was dredged through open grasslands and fields which had no residential population at the time. Unlike a natural river or stream, this canal was a straight shot from the city of Mt. Clemens to Lake St. Clair with no meandering or natural features (Interview with Amanda Oparka). Since the development of the spillway, the problem of intense flooding has been diminished, and this was the goal of the spillway. After the installation of the spillway, many residents were content with its success; however, with the growing population of the basin, especially in the Mt. Clemens area, many problems began to come to the surface and many people began to notice the changing environmental landscape around the spillway and its effect on the grasslands bordering it.

When one looks at the spillway, it almost seems like a deserted storm drain coming and going from unknown sources (Online Picture/CRWC.com). There are no homes along the spillway like there are on natural rivers or streams due to the intense pollution imbedded in the spillway (Interview with Amanda Oparka). This problem of pollution is the first of many

environmental problems associated with the spillway. With the high intensity of surrounding residential and industrial areas, the issue of run-off is a huge catalyst for pollution in the spillway. Fertilizer, animal waste, and other unnatural substances find their way into the spillway after storms, and this untreated area of water hosts many pollutants which make the canal unfit for swimming and recreational use (CRW Preliminary Feasibility Report 22). As many have witnessed from the area, the stench can be carried hundreds of yards. This type of human caused pollution makes it very difficult for fish to survive here, along with the fact that this canal was man made. A connection can be made to a class lecture when talking of Rome during the height of the medieval empire and the problems with polluted water on the population. The pollution of the spillway is having the same effect. People do not want to live by this canal due to the pollution and what is associated with it.

When the spillway was dug, the U.S. Army Corps of Engineers were faced to dig through hard clay and sand which are common to be found in areas carved out by glacier retreats. Due to the unnatural state of the canal, the bottom of the canal was made up of sand and clay (Interview with Amanda Oparka). This is problematic because normal river bottoms are littered with rocks, pebbles and other natural elements exposed by current flow which help keep the water clean and help provide areas where fish can breed and lay their eggs. Besides pollution, many fish species face this unnatural type of river bottom as a problem to their reproduction. This is devastating to the aquatic life in the canal because without fish, many mammals and bird species do not hunt there due to the lack of food which usually is provided by the fish. This lack in natural species of the area leads to the spread of invasive species, such as zebra mussels, which are very

problematic. Besides the lack of native species in the canal, this problem of clay and sand at the bottom of the river causes huge problems with sediment displacement.

Natural rivers normally do not have large problems with sediment or sediment contamination; however, since the canal is manmade, the bottom of the canal is made up of sand and clay which is constantly moving up and down the current of the canal and eventually into Lake St. Clair. As stated by Ian Statham, soil is a zone of very complex interaction. The most important part of this system is the infiltration accompanying vegetation colonization combined with all of the processes of vegetation decay and plant regeneration. This was stated in relation to natural rivers and the importance of vegetation in filtering sediment flow. The Clinton River Spillway canal does not have the natural vegetation that natural rivers and streams have, so the sediment flow is a huge problem. Not only does a large amount of sediment exist in the canal, but it is also contaminated with fine particles and deposits in part to the pollution that the canal experiences (Interview with Amanda Oparka). Prior to the spillway canal being built, the Clinton River and this area did not have nearly the amount of sediment problems the spillway does, and this excessive amount of contaminated sediment is now entering Lake St. Clair through the spillway. The currents that move up and down the spillway that is responsible for this sediment displacement at unnatural rates can be caused in part by the weir, which was established upstream from the canal to control the water level and flow in the canal (Michigan Department of Natural Resources). This is similar to a dam, and has many of the same effects that dams have. One can make connections to class lectures in discussing dams in Egypt and can make references to how potentially harmful this type of human technology can be to the environment (Class Lecture Professor Fremion).

One can see how the area around the canal has changed over time, but what is alarming is the rate of the change. All of these environmental problems stated above due to the canal occurred within the last 60 years. These problems are increasing at an alarming rate. To go from farm land and wheat fields to a vacant open field with a huge storm drain running through it was not what nature had intended for this area. As history shows us, humans and the environment have a reciprocal relationship; however, if humans do not take care of their environment, it is impossible for the environment to return the favor. After researching this area and seeing how untouched it was at one point in time, many people ask the question “What now”?

Even though this spillway canal is only about a mile long, it has its share of problems. Pollution, destruction of habitat, increased invasive species; sediment displacement, contamination, and incapability to host fish for breeding are huge environmental problems that did not exist in the area pre- 1952. This small section of land around the spillway has paid a huge price in order to make human life more convenient. Even though the goal of diminishing flooding was met, the engineers behind this project failed to effectively see how this manmade canal would affect the environment in such a negative way. As Maitland and Morgan state “Because of the wide scale of habitat loss in the past, there is considerable scope in many countries for successful restoration of important habitats and there are at present a number of schemes with the specific objective of habitat restoration” (Maitland and Morgan 163). So how does this quote relate to the area around the Clinton River Spillway Canal? In 2011, Senator Sander Levin granted the amount of \$300,000 to the area of the Spillway in order to begin research on how to improve the quality of the land around the spillway and make it useful again as it was in the past(U.S.gov/Levin.com). This grant will be responsible for researching ways to

reconstruct the canal to meander, as a natural river does, and also will allow the incorporation of natural rocks, pebbles and boulders to the bottom of the canal so fish can eventually breed there. By making this canal more like a natural river, many of the above problems will decrease.

This grant not only will help the environment and its species, but it will also incorporate the ability to allow the public to enjoy recreational activities around the area as well. A walking and bike path will be constructed, along with many small boat launches for canoes and kayaks. There will also be community based parks build along the canal to ensure that the canal will not just stick out like a sore thumb in the middle of what seems like nowhere presently ([www.CRWC.com](http://www.CRWC.com)). This will allow the public to enjoy the area of the canal once again, while building and improving the quality of the environmental conditions for many animal and plant species (Interview with Amanda Oparka).

This case study demonstrates full circle how this small area of land has transformed over the last 200 years. When the area was first settled, the intentions of the people were to live off the land and form a sustainable way of life by farming. As times changed however, the demand for human convenience won the battle over the environment and natural landscape and many damaging things were done at the environments expense. Fortunately, there are people out there who really do learn from history and are trying to once again return this land to what it once was. By helping the environment and by allowing the public to enjoy this great environmental resource, the relationship that humans have with this particular piece of land has the promise to be a good one!