Case study: *South Platte River, Denver, Colorado, USA*

River condition before project:

The river was a dumping site for the Denver sewer system as well as local industrial plants. This was due to the rapid urbanization of the city as a central railroad hub.

Steps taken to rehabilitate river:

A volunteer group called the Platte River Development Committee (PRDC) was created and began with vision tours around the river to gain interest from the public. The group decided on a "section approach" which split the river into four separate sections which four different volunteer groups worked on. They then established a group called the Greenway Foundation that took donations and put them toward maintaining the river and improving the areas around it.

Approximate Costs: *1.9 Million US Dollars*

Highlights of river now:

Currently the river thrives both economically and ecologically. The South Platte Corridor has multiple parks and recreational areas, biking and hiking trails and white water rafting boat launches. Confluence Park is one of the parks that contain a variety of storefronts, pedestrian entertainment and kayaking opportunities.

Lessons Learned from Restoration:

One of the major concerns brought up by the public was safety around the river and along the pathway. This was addressed with the addition of footpaths and multi-use trails.

Case study: **Bronx River, New York City, New York, USA**

The Bronx River runs from one of the poorest counties in the United States to one of the wealthiest before flowing into the Long Island Sound. The river was used as a sewer system and was abused for years. Storm water was also a problem due to the highways and high industrial and residential areas.

Steps taken to rehabilitate river:

Restoration began in 1974 with the Bronx River Restoration Project (BRRP) but no real changes occurred until 1997 when the Bronx River Alliance, or BRA, was formed. This group consists of many public-private partnerships that help in the restoration of the river.

Approximate Costs: **N/A**

Highlights of river now:

Even though the river itself is not thoroughly clean, many additions to the Bronx River Corridor have been added. There has been an increase in storm water management to ensure overflows do not occur and everything does not flow into the river. There was also a lot of restoration for vegetation. Planting trees and other vegetation has helped in bringing back the ecology of the area. Other highlights have been adding pathways, biking, and paddling trails for pedestrians to enjoy. All of these additions to the corridor help to raise awareness of the environment and are helping to improve the areas along the river.

Lessons Learned from Restoration:

The major source of pollution for this river is the Combined Sewer Overflow, or CSO. These are holding tanks that contain both sewage and storm water. When the river reaches a certain level it causes the CSO to overflow and dump the sewage and the storm water into the river. Currently BRA is working with the City of New York to remove the CSOs, though this will be a long and a large process, taking until at least the year 2022.

Case study: **Charles River, Boston, Massachusetts, USA**

River condition before project:

         The Charles River is known through songs such as "Dirty Water" describing the nature of the river.

Steps taken to rehabilitate river:

         The Charles River Watershed Association, or CWRA, was created a guide called the "Blue Cities Restoration". This plan contains information regarding the cities future and how it is going to be done. It states: analyse the sub watershed and its impact on the surrounding areas, understand the context for the planning and implementation of any Blue Cities goal, develop the specific goals (particularly with respect to fostering higher efficiencies in both hydrology and infrastructure), turn the goals into an actionable plan based on the constraints of the given area and then merely implement and evaluate the plan.

Approximate Costs: **N/A**

Highlights of river now:

         One major change the Charles River has is that people can now swim in the water. This is an activity that many people from the city enjoy. There are also other water-based activities as well as land-based activities that were not present before when the river was polluted.

Lessons Learned from Restoration:

         The CWRA has advice for people who are attempting a similar project: use strong visual aids in all presentations, be flexible and ready to adjust the project's plan if anything comes up, build a diverse team and involve other groups from the region to help understand all of the various interests of the local people.

Case study: ***Penobscot River, Bangor, Maine, USA***

River condition before project:

This river is different than the other ones that were researched. The Penobscot River never went through any intense rehabilitation since the river has always been in a clean state. Though the river itself did not go through any changes, the areas around this long river have been changed.

Steps taken to rehabilitate river:

Since the river was not rehabilitated, there are no steps for this.

Approximate Costs: ***N/A***

Highlights of river now:

Though the river has been kept clean, a lot of additions have been made in the recent years to add to the attraction. One change was adding hydroelectric power to many different parts of the river. This addition has cut down on the electrical costs while bringing green energy into the cities. Another addition is the concert stage. This provides an area to have community events, county fairs and concerts. Attractions like these bring awareness to the river and as well as the environment.

Lessons Learned from Restoration:

Since the river was not restored, there is no information for this section.

Case study: *Cuyahoga River, Ohio, USA*

River condition before project:

Before the river was cleaned up, it was nationally known for its pollution. It is most famous for the event on June 22, 1969 when the river caught on fire. This was not the only time since between 1968 and 1969 the river caught on fire over a dozen times. This shows that the river was terribly polluted and the US Government started to enact laws regarding pollution control. The combination of raw sewage, toxic chemicals and industrial pollution being dumped into the river caused the Cuyahoga River to become devalued.

Steps taken to rehabilitate river:

N/A

Approximate Costs: *N/A*

Highlights of river now:

One notable accomplishment was the creation of the Cuyahoga Valley National Park. This park was nationalised in the year 2000 and has become a major attraction. Once home to many industrial parks, steel mills, oil refineries and chemical plants now sports running paths, trees and fields. There is also a Cuyahoga Valley Scenic Railroad that one can take which shows the beauty and development of the river.

Lessons Learned from Restoration:

The main lesson is that any river can be restored as long as you have people willing to help out and a plan. With the Cuyahoga River it was nationally known for being so polluted which helped when the problem was discovered.

Case study: *Nairobi River, Kenya, Africa*

River condition before project:

     This river was full of raw sewage and lost all ecology throughout the corridor. The Nairobi runs through many shanty towns which is the dumping grounds for these areas.

Steps taken to rehabilitate river:

     Rehabilitation began with planting trees around the river. Over 70,000 trees and plants were put along the river in which 1500 of those were part of the Global Peace Service Alliance, or GPSA. This group was part of a greater group which ties communities together known as the Global Peace Festival. In 2008 there was a Global Peace Festival which was a worldwide restoration effort to plant trees along rivers.

Approximate Costs: *N/A*

Highlights of river now:

     Due to a strong legislation and government efforts the river is a lot cleaner now. A lot of the raw sewage has been removed which has resulted in a restoration of animal life. Wild ducks, mudfish and herons are some of the species that have started to re-join the river. More efforts include building a dam to help remove the invasive plants and continue to restore the river.

Lessons Learned from Restoration:

     The efforts from the Nairobi River started with planting trees and bringing the community together.

Case study: *Anacostia River, Washington D.C., USA*

River condition before project:

This river is known as the "forgotten river" for the Washington D.C. area. Some items that have been known to be found in the river include a phone booth, parts of cement trucks, barrels, and even a washing machine. Due to this amount of pollution, the restoration efforts were very slow to start.

Steps taken to rehabilitate river:

A document called the Anacostia Waterfront Initiative Plan was created by the city to start restoration of the river. The plan was to break up the river into three sections. The first part of the plan includes a boardwalk, pools and open areas for recreation or picnics. The second part is designated for storm water drainage and treatment plants. The last step will be adding an amphitheatre, irrigation and an end plaza. There are still plans for building a baseball stadium, a theatre and housing.

Approximate Costs: *5 Million US Dollars*

Highlights of river now:

Washington Canal Park is a work in progress but plans are to further develop the city and make the river the "main attraction". The steps for this process are stated above.

Lessons Learned from Restoration:

N/A