

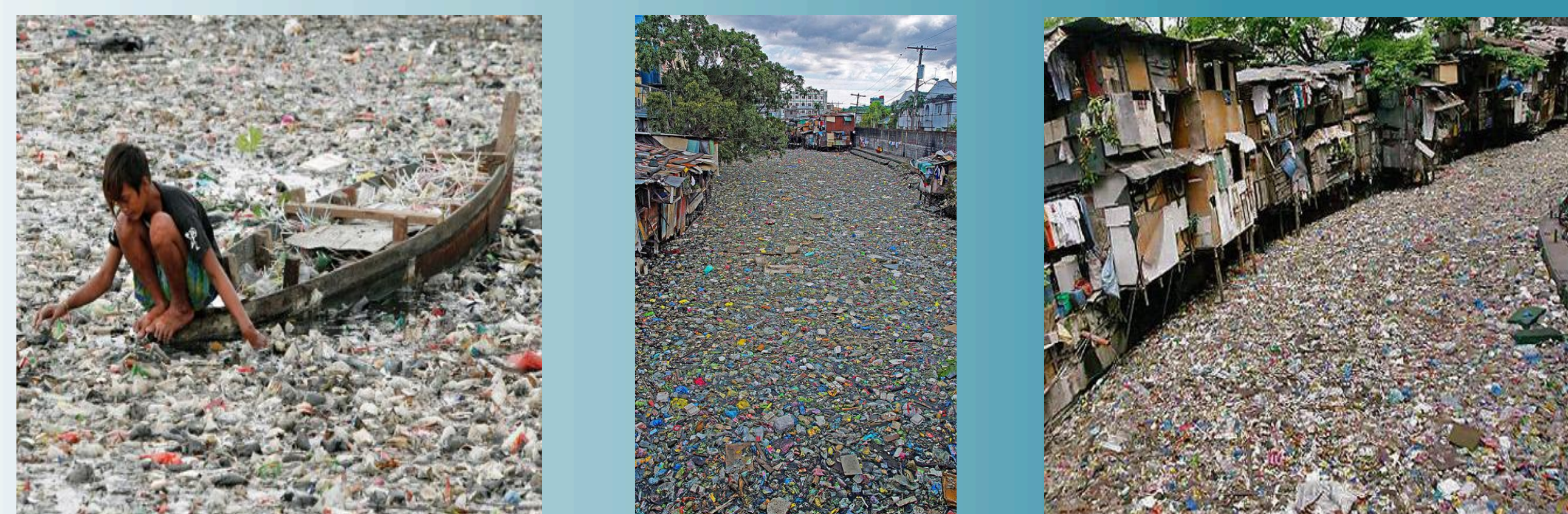
Citarum River Landfill

Connor King, Meghan Lutz, Amy Misera, Mike Owens

Faculty Advisors: Professor Derren Rosbach and Professor Sharon Wulf

Abstract

The Citarum River is failing to support the millions of Indonesians who live along the river basin because of how polluted it is. The water is full of trash, detergents, human waste as well as hazardous chemicals that are affecting the health and lives of these people. In the Village of Sukaharja the people live under extremely impoverished conditions and do not have an effective waste management solution. Therefore, all of the trash and waste of the people who live along the river basin ends up in the water. This is making the already polluted river even more contaminated. If nothing is done to prevent the waste from entering the water, the Citarum River will continue being one of the worlds most polluted rivers and will not be able to support the millions of Indonesians who depend on the river for survival.



Background

- Citarum River is located in West Java, Indonesia
- The Citarum River supplies 80% of the water for Jakarta's 14 million people
- The Citarum River is the only water source for the Village of Sukaharja.
- In the Village of Sukaharja, people are extremely poor and lack a filtration system, meaning water from the river is directly pumped to the village for use.
- Consumption of the water is causing several health problems for the people of the village.
- The locals do not have a waste management system so trash is dumped into the river



The Landfill

- Build a Sanitary Landfill with a clay natural liner to prevent chemicals or any other harmful substance from permeating the earth under the landfill.
- The sanitary landfill will be 20 meters deep, 285 meters long and 90 meters wide.
- A total volume of 513,000 meters³

The “Garbage Barge”

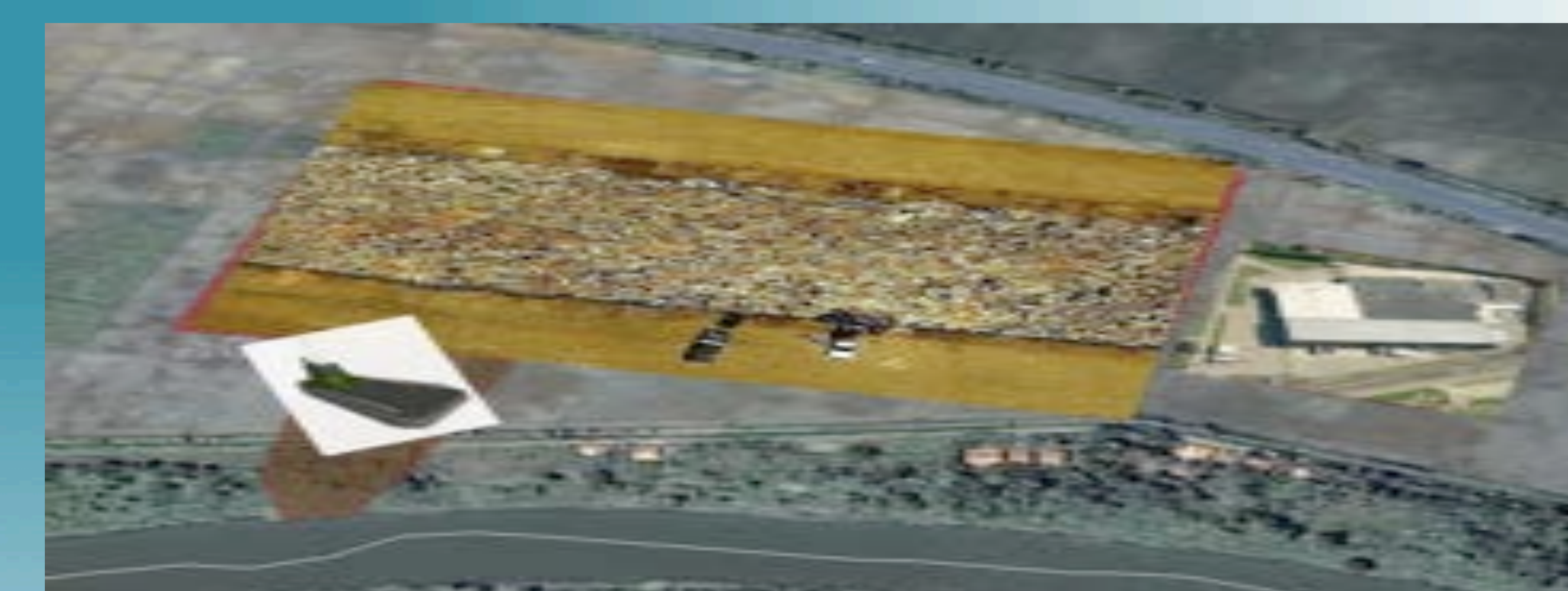
- Starting at the Citarum Landfill there are two routes
- The barge will float down the river collecting trash
- There will be designated docks along the bank for people who do not live directly on the river.
- Once a week the barge will travel down each of the two routes
- The North Route is 13.5 km (6.75 either direction)
- The East Route is 13 km (6.5 either direction)
- With both routes the total impact area is 15.66 square kilometers

Project/ Goals

The Citarum River has been in desperate need of an effective solution to its pollution problem. By implementing a barge - landfill system it is possible to create a developed trash disposal service. It starts with a barge that travels up and down the river, for locals to discard their trash. To promote efficiency, a garbage compactor will be integrated into the barge, and there will be two routes, each with a specific pick up day per week. The collected waste will be transported to a newly built landfill in the village of Sukaharja. The landfill is the meeting point of the two routes, and located 150 meters from the river and 100 meters from a main road.

Conclusion/ Recommendations

- In order to prevent the people from disposing their waste into the river and to improve the health and lives of millions of Indonesians, a sustainable waste management system must be implemented for the people living along the river. By doing so, it would create a more useable water source with better water quality, as well as a safer and healthier environment for future generations.
- The most effective and cost efficient waste management system is for a garbage barge to collect the waste of the people, compact it and transport it to a sanitary landfill.
- The garbage barge is not another expensive reactive solution to clean up the already dirty river. It is a proactive long-term solution to prevent the river from becoming worse.



References

-Gelling, Peter. (2008, December 8). Trying to Stop Pollution from Killing a Lifeline. *New York Times*.
 -Victoria, Lily. (2012). Indonesia: Living with Dirty Water. *The Jakarta Post*.
 -Coren, Anna. (2010). Finding a Cure for Indonesia's Sick River. *CNN Tech*. Retrieved November 11, 2012, from <http://www.cnn.com/2010/TECH/03/18/eco.citarum.indonesia/index.html>.