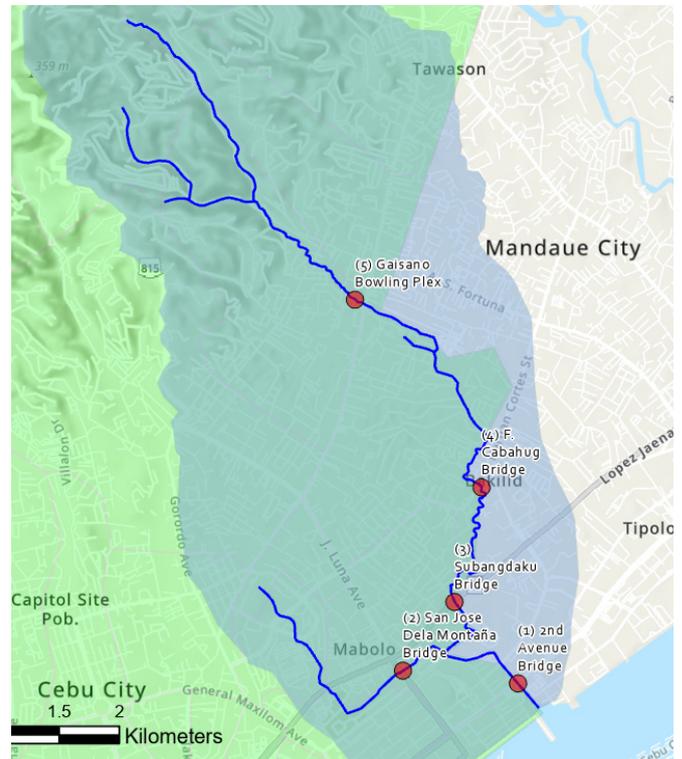


MIDSTREAM OF MAHIGA RIVER FACTSHEET



THE RIVER

Mahiga river is a prominent urban river with an upstream located at the Banilad mountains, down to Subangdako as its midstream and downstream at Mabolo Reclamation Area. The river has a total length of 9.1 km which traverses six barangays from Cebu City to Mandaue City namely, Apas, Banilad both in Cebu and Mandaue City area, Kasambagan, Mabolo and Subangdako and this waterway ends up at the Mactan Channel. The river used to be a source of water for bathing and laundry of the local residents in the area. Due to the discharge of domestic wastewater and solid wastes, the river has become heavily polluted over the years. In 2018, the Mahiga River was considered to be **biologically dead**. A **comprehensive rehabilitation program** was implemented by the Department of Environmental and Natural Resources (DENR) in 2020 where a one-year memorandum of agreement was signed between the local government units of Mandaue City, Cebu City, 28 private companies, and six barangays where the river traverses to reduce the pollution in the Mahiga River and its tributaries under the **Adopt-an-Estero/Water body Program**. The local government units of Cebu City and Mandaue City continue to implement river rehabilitation activities to this day to clean up the Mahiga River.



ISSUES AND CHALLENGES



WATER QUALITY



SOLID WASTE



FLOODING



INFORMAL SETTLEMENTS

WATER QUALITY

Mahiga river which has been considered biologically dead last 2018 has Class C and D classification. Class C classification means that the water is only suitable for recreational activities such as boating or similar activities and for agricultural, irrigation and livestock watering while class D rivers are just navigable rivers, this is according to DENR-DAO 34 and Environmental Protection Agency standards. A recent monitoring was done by DENR-Cebu last 2020 which focused on biochemical oxygen demand (BOD), dissolved oxygen (DO), Total suspended solids (TSS) and fecal coliform of Mahiga River. Results show that the dissolved oxygen of the river failed the standard limit of 5ppm for dissolved oxygen, this standard is according to DENR-DA 34, 1990. The river failed both the standard for biological oxygen demand and fecal coliform content.

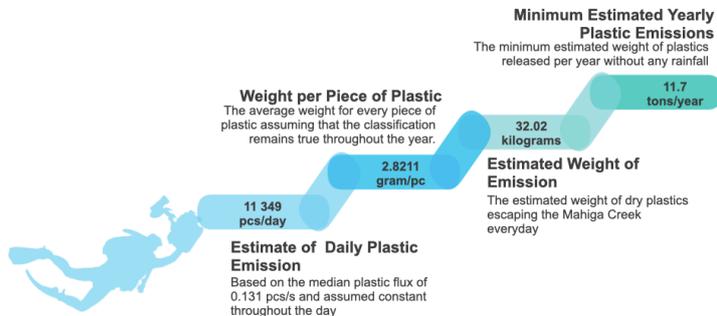
MAHIGA RIVER WATER QUALITY IN 2020

PARAMETERS	AVERAGE	CRITERIA FOR GOOD WATER QUALITY	REMARKS
Dissolved Oxygen	3.438 (mg/L)	> 2 mg/L	PASSED
Biochemical Oxygen Demand	311 (mg/L)	< 15 mg/L	FAILED
Total Suspended Solids	34.8 (mg/L)	< 110 mg/L	PASSED
Fecal Coliform	18,780,367 (MPN/100mL)	< 400 MPN/100mL	FAILED

SOLID WASTE

The river experiences plastic pollution because of the dumping of garbage in the river which come from nonpoint sources. A study conducted in 2019 revealed that a minimum of 11.7 tons of macroplastics are released per year from the Mahiga Creek estuary.

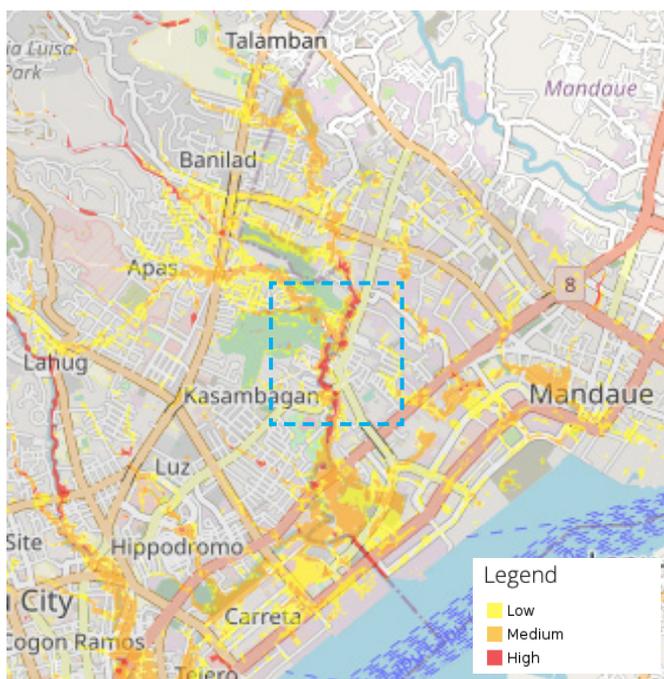
Results Minimum Estimates



Data retrieved from Bardenas et al., (2019).

FLOODING

As a result of plastic and other pollutants present in the river, flooding is very common not only in the nearby area but also on the neighboring barangays and even in the center of Cebu and Mandaue City. Aside from that, silts and debris have accumulated in the river over time and this increases the risk of flooding, affecting the people living nearby the river. Last January 2011, floodwaters entered 1,000 families in Subangdako and trapped residents in some barangays of Mandaue City. The flood lasted for 90 minutes which also resulted in traffic and a lot of people were stranded.

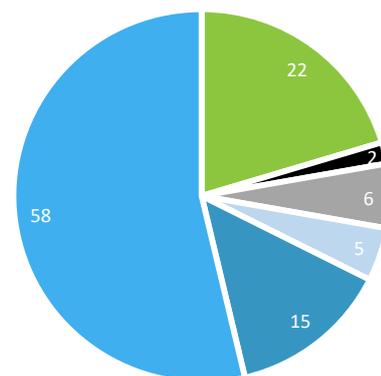


Mahiga 5 Year Flood Hazard Map. Retrieved from LiPAD, (2017). The map shows a medium to high risk at the midstream of the Mahiga River.

INFORMAL SETTLEMENTS

For the year 2020, two informal settlement communities are present in the midstream of the Mahiga River that is under the government of Mandaue City. Due to the pandemic, more people have stayed at home and it attributed to **increase in domestic wastewater**. The domestic wastewater is directly discharged to the water body since no there is no sewage system anywhere in the island of Cebu. This disposal of domestic wastewater from illegal settlers have contributed to the degrading water quality, particularly in the increase of the total coliforms in Mahiga River. Aside from illegal settlers, commercial establishments, with or without discharge permits from the DENR, have been disposing its wastewater to the waterbody. The offices concerned are encouraging the establishments to reuse their wastewater instead of directly discharging their effluent to the water body in observance of the **Philippine Clean Water Act of 2004**.

Establishments along Mahiga River



- With valid DP
- With expired DP
- With no DP
- Interconnected
- With Application
- Unverified

Data retrieved from DENR-EMB, (2020). It can be observed from the data that more than 50% of the establishments have unverified permits for discharge.

PHILIPPINE CLEAN WATER ACT OF 2004

SECTION 14. Discharge Permits.

The Department shall require owners or operators of facilities that discharge regulated effluents pursuant to this Act to secure a **permit to discharge**. The discharge permit shall be the legal authorization granted by the Department to **discharge wastewater**: Provided, That the discharge permit shall specify among others, the quantity and quality of effluent that said facilities are allowed to discharge into a particular water body, compliance schedule and monitoring requirement.

ENVIRONMENTAL POLICIES

P.D. 1586

Philippine Environmental Impact Statement System

Attain and maintain a rational and orderly balance between socio-economic growth and environmental protection.

R.A. 6969

Toxic Substances and Hazardous Waste Control Act of 1990

Regulate, restrict and prohibit the importation, manufacture, processing, sale, distribution, use and disposal of chemical substances and mixtures that present unreasonable risk and/or injury to health or the environment.

R.A. 8749

Clean Air Act of 1999

The State shall pursue a policy of balancing development and environmental protection. To achieve this end, the frame work for sustainable development shall be pursued.

R.A. 9512

Environmental Awareness and Education Act of 2008

To protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature.

R.A. 9003

Ecological Solid Waste Management Act of 2000

Adopt a systematic, comprehensive and ecological solid waste management program.

SECTION 48: 1. Littering, throwing, dumping of waste matters in public places, such as roads, sidewalks, CANALS, ESTEROS, or parks, and establishments, or causing or permitting the same.

R.A. 9275

Philippine Clean Water Act of 2004

The State shall pursue a policy of economic growth in a manner consistent with the protection, preservation and revival of the quality of our fresh, brackish and marine waters.

SECTION 5: Water Quality Management Area

SECTION 6: Non Attainment Areas

SECTION 7: Septage and Sewerage Management

SECTION 8: Domestic Waste Management

SECTION 13: Waste Water Charge System

GOVERNMENT PROGRAMS AND INITIATIVES

Adopt-an-Estero/Water Body Program



Adopt-an-Estero Program is an agreement between the local government units of Cebu City and Mandaue City, 28 private companies, and 6 barangays along the Mahiga River which aims to involve the active participation of the different stakeholders and estero communities in a comprehensive clean-up activities.

Distribution of Trash Bins



In line with the Adopt-an-Estero program, 229 units of 200L-capacity trash bins were distributed in 6 barangays that are traversed by the Mahiga river in an effort to reduce littering and at the same time raise awareness on the importance of solid waste management.

River Trash Catcher Project



River trip traps were promoted by DENR-EMB which is made of plastic bottles that serve as floaters and fish nets that trap litter before it reaches downstream of the river. Six river trip traps were installed along the Mahiga River: 2 in Brgy. Banilad, 1 in Brgy. Kasambagan, and 3 in Brgy. Subangdaku.

Anti-Littering Campaign



DENR-EMB, Solid Waste Enforcers and Educators Team/ Environmental Management Officers, and Barangay Environmental Officers worked together for a joint enforcement of Anti-littering campaign– an effort to prevent illegal dumping of solid waste in the waterbody.

Dredging Activities



Debris and silt were removed through dredging activities which can restore the river to its original depth and reduce the risk of flooding during the rainy season. A Php 20-million dredging project was done in Mahiga River in 2014 and recent dredging activity in Brgy. Mabolo in November 2020 removed 80 cubic meters of silt.

Information, Education, and Communication (EIC) Campaign



The EIC Campaign is led by the DENR and local government units to deepen the understanding of communities on the importance of taking care of the river bodies and create a relationship with the residents, at the same time soliciting their participation, cooperation, and support for the program.

River Clean-up Drives



As part of the Adopt-an-Estero Program, intensive clean-up drives are conducted from time to time in the Mahiga River. Volunteers from the city government, civic groups, and local residents participate in clean-up activities to help rehabilitate the water body.

Green Corridor



The green corridor will replace the illegal structures that encroach the Mahiga River. Linear park establishment, viewing deck project, and installation of eco-fence are part of the Green Corridor where trees will be planted and the area will be converted into a nature park for children and families.

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