

The Floodings

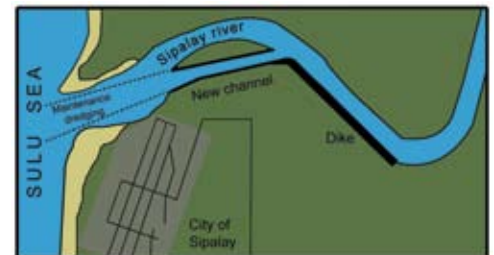
Flood control project in the city of Sipalay, Philippines



The rainy season with its typhoons were causing severe yearly flooding in the city of Sipalay, located in the province of Negros Occidental, Philippines. The floodings were disturbing and endangering the lives of the 60 000 people of the city and they were also affecting the tourism in the area. The houses and buildings faced serious damage, when the city was filled with water year after year. This was the case until 2003, when the city chose to face the problem and do something about it.



The site before (above) and after the project (below)



Four serious typhoon/ flooding events; Nov.1990, Aug.1994, Oct.1998 and Nov.2001 resulted in disruption of the overall socio-economic environment, namely:

- Fatality or death due to drowning, extreme injuries
- Disease and infection cases from wounds and illness related to flood water exposure
- Indirect effect on environmental health from contamination of water sources and exposure to polluted waters
- Damage to housing and personal properties, and consequent dislocation of families

Plan

First the dynamics of the flooding were studied carefully and based on the studies a plan was made of how to control the water levels in the river.

The primary cause of flooding was the siltation of the last few kilometres of the river, where water flow capacity had reduced considerably. During the rainy season the water level started to rise on the east side of the city until it went over the river banks and flooded through the city centre to the sea.

To stop the flooding a three phase plan was made. First river banks should be made higher and stronger on the east side to the city. Secondly new and deeper

river channel should be opened up for the last ½ kilometre before the sea. Thirdly the new river channel should continue as a deeper flow channel through the bay area all the way to the sea.

Machinery

The city had enough land-based equipment to construct river banks and dikes and to assist in the construction of the new river channel. Only the floating equipment to open up the new 400 m long river channel and to dredge the bay area was missing. Ideally the floating unit should be capable of both backhoe work and pumping work. The very shallow and narrow waters brought an extra



View from the Watermaster cabin

Watermaster suction dredging in the rivermouth

challenge to the floating equipment.

First investments in several new machines were considered: conventional suction dredgers, pontoons with excavators and tug boats. This solution would have been quite expensive in terms of investment costs and operational costs.

During the investment considerations the city specialists were also informed about Watermaster dredgers operated by the Department of Public Works and Highways (DPWH) in the government of the Philippines. These Finnish-made machines are capable of suction dredging and backhoe dredging as well as pile driving. Watermasters are also capable of moving in and out of water without crane assistance and cruising in the water independently without tugboats.

The city studied the results achieved with the three DPWH's Watermasters, and decided to purchase one Watermaster to implement this project. The new Watermaster must do all the works in this project where floating equipment is needed.

Project implementation

In May of 2003 the Watermaster was delivered to the city of Sipalay. A Watermaster service engineer trained the new Watermaster pilots at the site and the project was launched.

Dikes on the west side of the river were built with bulldozers and excavators as planned. Watermaster started to dredge the bay area at the river mouth and it moved slowly upstream. Dredged

material was pumped on the shore to reclaim and elevate the land. Watermaster executes suction dredging without using winches and wires. This was very much appreciated by the local fishermen who had to pass the dredging site with their fishing boats many times daily.

After the bay area Watermaster started to open up the new 400m long river channel towards upstream. In this work Watermaster was mainly working in backhoe mode by lifting material from the channel centre to the sides. Excavators on the sides assisted in finishing the new channel banks. During the work the channel had 0-1 m water depth all the time, but this did not cause any problem to the Watermaster.

The capital part of the project was completed in one year time. Watermaster made 4000 working hours and dredged a vast amount of silt and sand. Today the Watermaster is still operated by the city in the yearly maintenance dredging at the bay area and the river mouth.

Results

The impact of the project has fulfilled all expectations; since 2004 there has been no severe flooding through the city of Sipalay. Water stays in the river path even throughout the rainy season, when the water levels are at the maximum. People, properties and tourism are spared from the effects of the flooding.

Continuous maintenance dredging at the river mouth ensures that the benefits of this project stay there also in the future.



The city has been spared from the perennial flooding and devastation to the relief and security of the general populace since 2004

The widening and continuous dredging on the mouth of the river have provided easy access to the small fishermen going in and out from the mooring place making it easier for them to sell their catch

The widened and longer shore line brought about by the continuous dredging reclamation induces private entrepreneurs to set up shops for dining and entertainment during night time which boosted local tourism