

### 1:100 Year Instantaneous Water Level Analysis

The criteria for the design of flood protection along Riverside Drive and the Ganatchio Trail is based primarily on the 1:100-year instantaneous water level on Lake St. Clair.

When the existing diking system was originally established in the 1980s, the 1:100-year instantaneous water level was calculated to be at an elevation of 176.4m based on a statistical analysis of the historical water levels recorded on Lake St. Clair.

Since more than 30 years have passed since the completion of the original study, Landmark retained the climate and environmental consulting firm RWDI to re-evaluate the 1:100-year instantaneous water level, based on the expanded data set. RWDI also reviewed the available climate change projections for the Great Lakes Region and their effect on the 1:100-year instantaneous water level elevations for the years 2030 and 2050.

A copy of the RWDI report is available for review upon request.

#### RWDI's Findings for the 1:100-Year Instantaneous Water Level Elevations:

<u>Timeline</u>	<u>Elevation</u>	<u>Difference</u>
Original Dike Design (1986)	176.4m	---
Current Conditions (2019)	176.5m	0.1m (4")
2030 (Projected based on Climate Change model)	176.6m	0.2m (8")
2050 (Projected based on Climate Change model)	176.8m	0.4m (16")

Based on the updated water level elevations determined by RWDI, the projected future 1:100-year instantaneous water levels will be up to 0.4m (approx. 16") higher than the currently used elevation of 176.4m.

#### Existing Dike Conditions

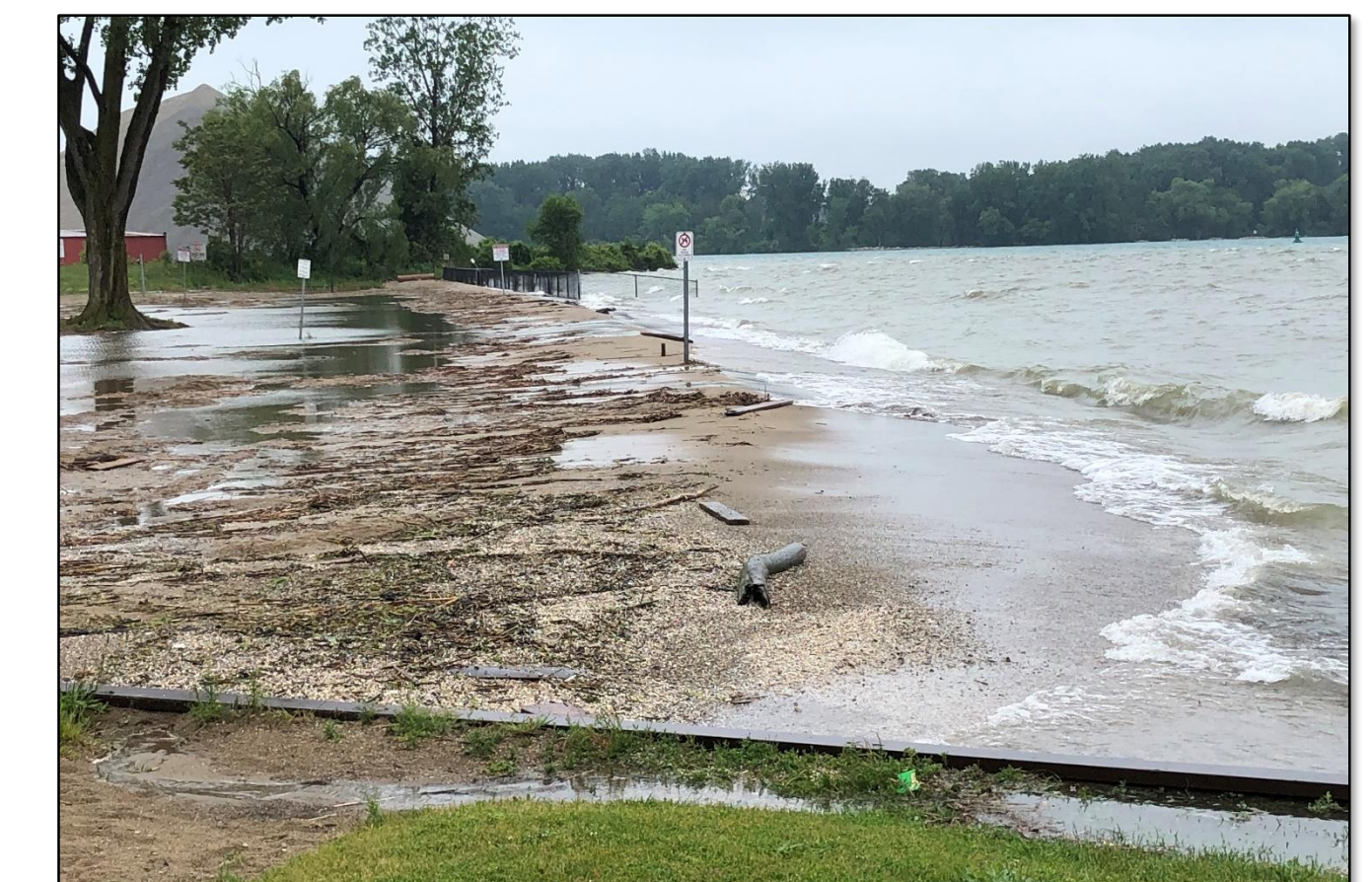
Landmark Engineers has surveyed and assessed the top elevation / condition of the existing dike system along Riverside Drive and the Ganatchio Trail. Our findings are presented in the Table below:

<u>Design Criteria</u>	<u>Designated Elevations</u>	<u>Percentage of Existing Dike System Above Designated Elevation</u>	
		West of Little River	East of Little River
Original Dike Design (1986)	176.4m (Flood Level)	39.2%	99.1%
	176.7m (Flood Level plus 0.3m freeboard)	15.4%	52.5%
Current Conditions (2019)	176.5m (Flood Level)	31.9%	98.6%
	176.8m (Flood Level plus 0.3m freeboard)	12.7%	37.1%
Projected Future Conditions (2050)	176.8m (Flood Level)	12.7%	37.1%
	177.1m (Flood Level plus 0.3m freeboard)	0.8%	3.4%

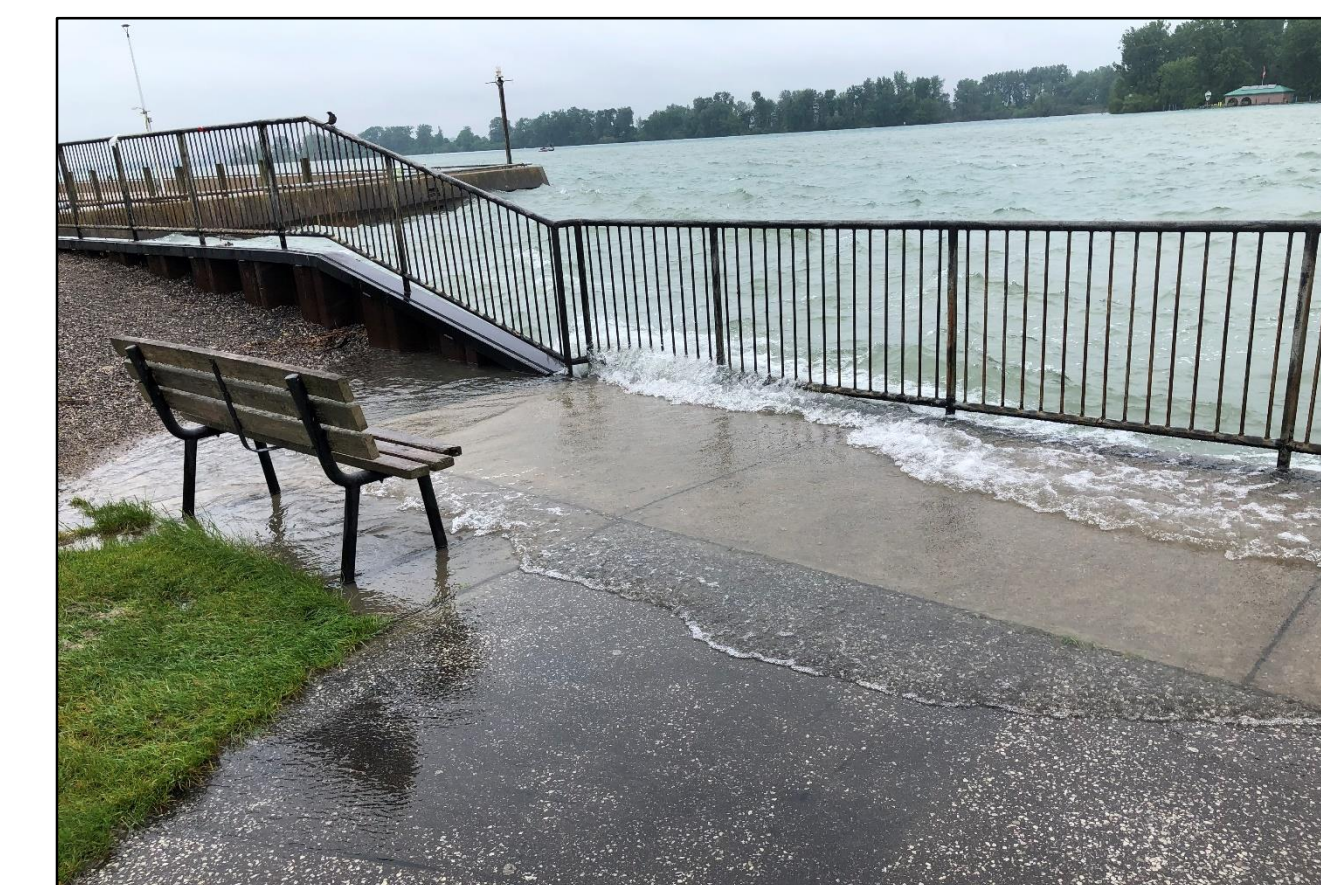
Based on the above, it is clear that significant upgrades to the existing dike system are needed.



LAKEVIEW MARINA (20 JUNE 2019)



SAND POINT BEACH (16 JUNE 2019)



SHANFIELD SHORES PARK (16 JUNE 2019)



# EXISTING CONDITIONS – WEST OF LITTLE RIVER

