

# A story of ice and fire

Montréal's future, through the lens of history

Numerous conflagrations have shaped the city as we know it - where uncontrolled fires displaced populations, forever changing the building materials and localization. Lesser known to Montrealers is its story of melting ice, the giant fluctuations in water level that have played a similar role to fires in shaping the city design. From the preferential positioning of buildings up the grade of the Old Port, to prestigious houses looking down the slopes of Mt Royal to the factories in the low-lands: The dynamics of the St Lawrence waterway have left an undeniable mark on our city.

The Craig Pump Station thus represents a bridge between the history and the future of our city. Technologically novel in its heyday, its Webber centrifugal pumps exerted industrial steam power onto the landscape that had continually constrained life on the island. Is that steampunk enough for you? In operation almost every year for over 100 years, the Craig Station helped stabilize the rising river. And, as we reminded of each year, water level is not uniquely a problem of the past, but one that will increasingly affect the generations to come.

Below the feet of the Cartier bridge, I propose a fountain that will pay homage to the technology of the Pump Station: either by re-using one or several of the surviving centrifugal pumps, or creating a transparent replica that demonstrates the inner working - how the impeller spins, displacing the water and causing a volumetric flux powerful enough to drain an entire neighbourhood.

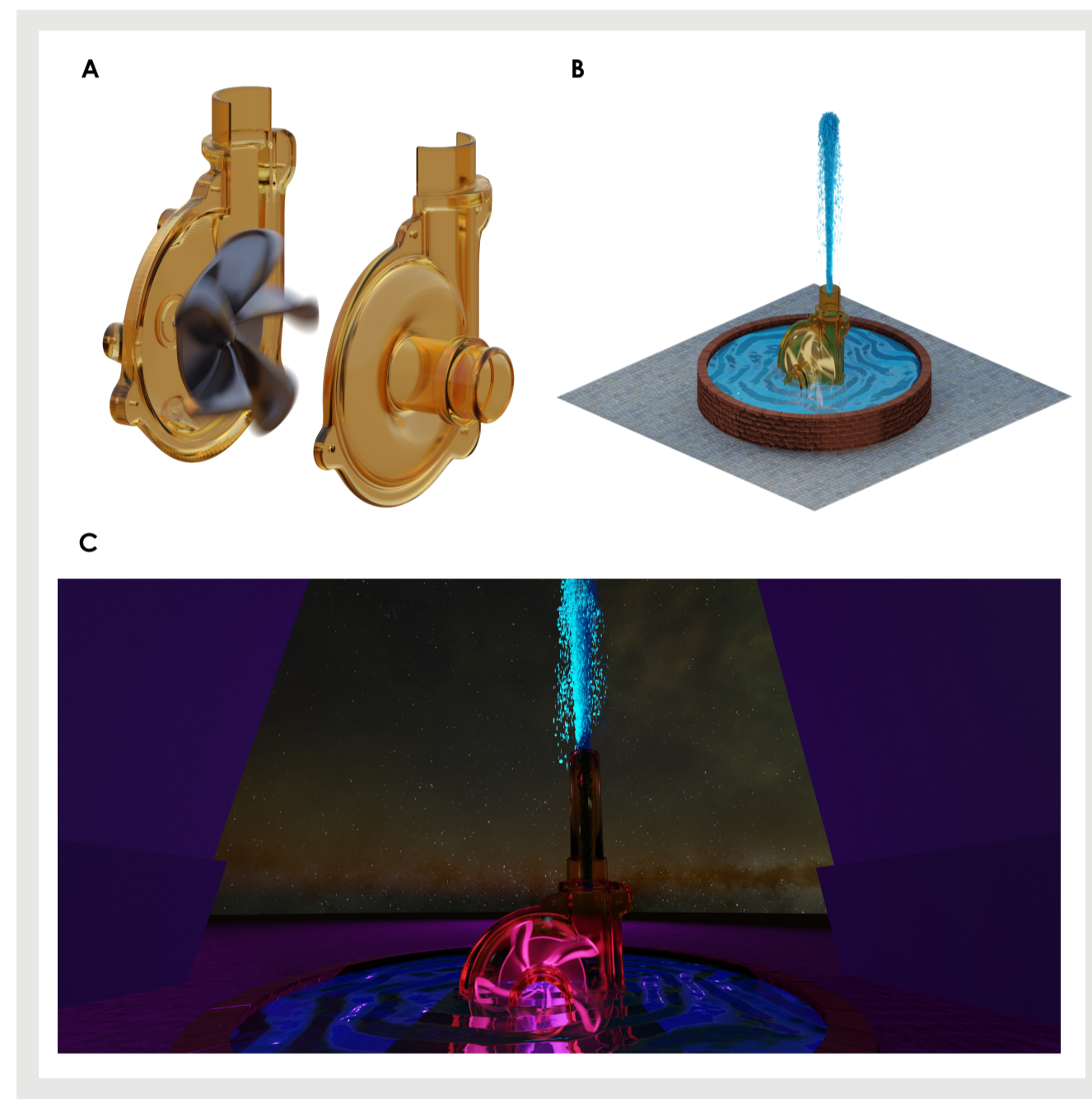
Inside the old station, I propose an exhibit to be a timeless examination of how the Island of Montreal is at the mercy of the St Lawrence River. Scaled dioramas of famous Montreal landmarks will be presented inside a sealed display case in a physical simulation exhibit. On a defined schedule or interactive switch, pumps will control the water level within in the dioramas, moving the users back and forward in time, and showing the effect of the changing water level on the contemporary model city. Starting as far back as 10,000 years before present, we will show the submerged archaeological Montréal (étape Rigaud). Only as the water level lowered by 8000 years ago did the island take on it's familiar shape, with seasonal variation and occasional flooding being the major changes we see (such as the 1886 flood to the height of Square Victoria).

Following the pumping and canalization, far more stability was brought to the water level. But we're now re-entering a period of high variability of water level, increasingly common flooding, and reports of melting glaciers. Looking into the future, the exhibit will also show the projected water level increases over the next decades and centuries. This will give visitors the unique ability to imagine their city's future through the lens of its past.

Concours d'idéation pour la relève en aménagement  
Requalifions l'ancienne station de pompage Craig

Organisé par le comité de la relève d'Héritage Montréal  
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## Centrifugal pump fountain



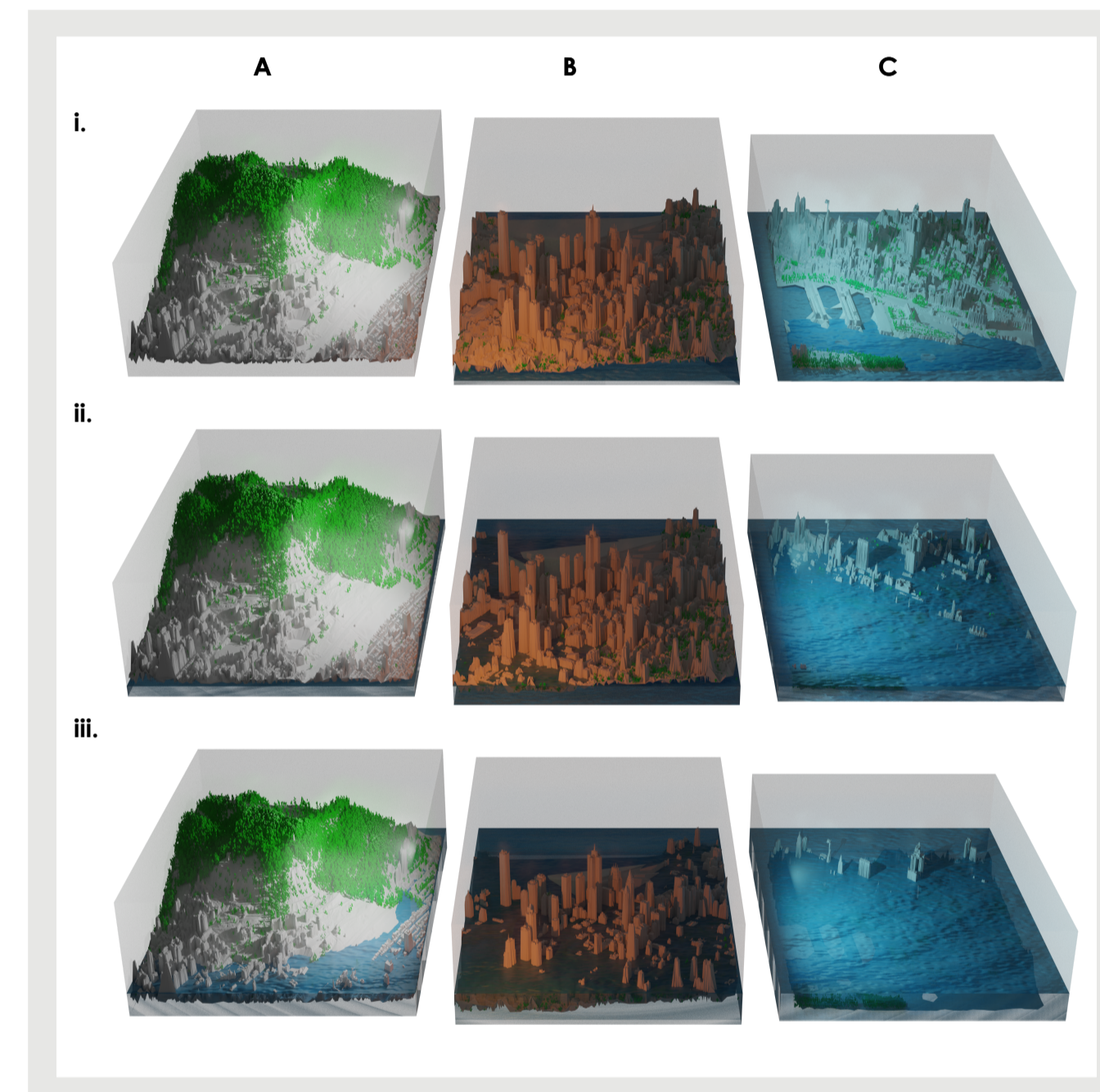
**Figure 1.**

- A)** 'Exploded' model of centrifugal pump
- B)** Isometric render of fountain installation.
- C)** Perspective render of fountain installation between columns of the Cartier bridge

A fountain positioned adjacent to the pump station will showcase a replica of the Webber centrifugal pumps that were used. The pump housing should be a translucent material, such that the spinning of the impeller and it's effect on displacing water should be visible to the public. The basin could re-use tunnel bricks.

While the original pumps were capable of displacing > 10,500 gallons per minute, this rate would be implausible (and unsafe) to reproduce, however the flow rate of the fountain could be adjusted to be a defined fraction of the actual pump's power (i.e. 1/250th)

## Water level diorama



**Figure 2.**

### Columns (Landmarks):

- A)** Southern slope of Mt Royal
- B)** Downtown, Place Ville-Marie
- C)** The Old Port

### Rows (historical time-point)

- i.** Present day water level
- ii.** Approx. Level during flood of 1886
- iii.** Approx. level during 'Rigaud' stage, ~ 9,800 BP

Matrix of model renders of three example landmark dioramas (**A-C**) at three historical time-points (**i-iii**). LiDAR numerical surface- and canopy-generated models will be 3D-printed at a consistent scale, where the height of each diorama will reflect the elevation of that landmark. A system of pumps, basin and pipes connecting the multiple dioramas will allow the water level to be adjusted for all dioramas simultaneously. The water heights can be programmed to run on a schedule, or in response to on-site user interaction (i.e. button).

While historical water levels are shown (approx.), the actual diorama could add future water level predictions from the scientific literature.