ECO-PLATFORMS

JACKSONVILLE, FLORIDA

The effects of climate change are generating high economic and natural costs throughout the planet. Entire cities are seeing their critical infrastructures threatened, by floods, by high levels of solar radiation that cause waves of heat, devastating hurricanes, or even earthquakes. The extreme damage from these natural disasters is often directly related to how we have developed and designed our cities. Little by little, we have been depriving nature of the tools it needs to control the different forces and energies that make our planet work. We have created an imbalance in our ecosystems, and it costs us our flora, fauna, and our cities.

Jacksonville is no exception to this problem. The city has been the victim of numerous floods caused by tropical storms that intensify each year. In 2017, Jacksonville was hit by one of the worst floods in its history when Irma hit Florida. The hurricane caused the St. John River to overflow to levels never seen before and affected thousands of residents. It was evident how vulnerable the water edges were both in the river and on the coasts. The city of Jacksonville had neglected its natural defenses against storm surges and floods to make way for hard and impervious infrastructure. Development increased in the urban core, but little was done to incorporate green spaces. Large sections of the city were unable to prevent and deal with floods.

Today, although many areas should be adapted to help mitigate the flood problem, neighborhoods along the riverfront lack the space to implement ecological strategies. The natural environments along the shores of the St. Johns River that could buffer flooding and inundation have been hardened.

San Marco and Five Points are high-density residential areas affected by floods that have reached up to three feet in height. According to Flood Factor estimates, this equates to about 65 million gallons of water in the area. They are perfect examples of highly affected areas where a large amount of private property and density are problems for any designer or planner addressing flooding risks. Due to high costs or urban challenges, it is difficult to restore the natural barriers and ecosystems that make flood mitigation possible.

Eco-Platforms presents a solution designed for these specific situations in Jacksonville but can be incorporated into cities with similar characteristics. This prototype revitalizes riverfronts, restoring ecosystems where natural barriers have been eliminated.

The prototype consists of a system of floating platforms situated along the waterfront areas affected by flooding. These platforms may be permanently anchored as an additional layer of green protection or temporarily placed when needed during a temporary flood event or until another type of ecological strategy might be implemented in the future.

These systems will be composed of a series of individual floating ecosystems that will act as buffers, reducing storm surges' impact. Floating barriers will gradually decrease the force with which the waves approach the shore and decrease their land reach. A simple maritime structure technology will secure floating modules groupings to each other and anchored to land.

Environmentally, the implementation of these floating ecosystem platforms will help restore the flora and fauna that have been compromised in these areas. Each component will house a series of plants endemic to the region and the wetlands, which are highly beneficial for wildlife and reduce maintenance. These plants will help promote life both on the surface and under the water creating an independent and self-sufficient ecosystem. Their inherent flexibility allows them to adapt and change as the city evolves.

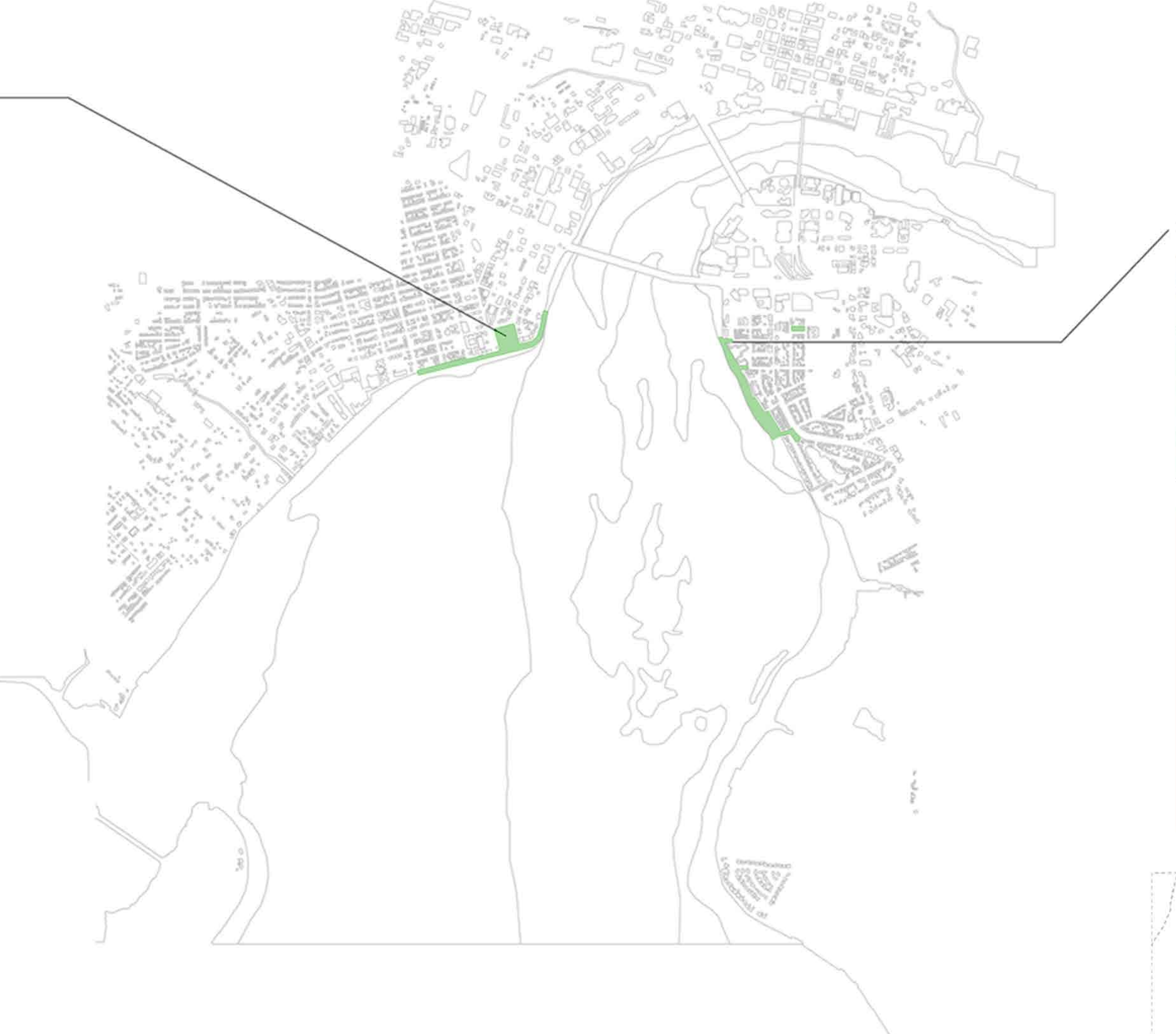
Architecturally, each platform will have a boardwalk system, allowing the public to experience the habitats. Definition of these accessible areas would vary depending on the function of each prototype. In some, there will be recreation and learning areas, and in others, access would be limited to maximize the use of floating ecosystems.

The Eco-Platform system allows cities like Jacksonville to incorporate new protective green infrastructures in areas that might otherwise be able to utilize landscape strategies and leveraging the mitigation infrastructure to benefit communities. In the prototype for Jacksonville, a floating ferry terminal will allow residents of the neighborhood to take advantage of maritime transportation on the St. John River. In this way, vehicular traffic would be reduced and consequently the need for parking in the city.

Eco-Platforms promotes new flexible ways of redesigning our waterfront cities from an ecological perspective.

- 30 years
  50% chance
  122 acres
  2 ft deep
  79,507,644 gallons
  800 houses
- 15 years
  50% chance
  97 acres
  2 ft deep
  63,215,094 gallons
  500 houses
- 2021
  20% chance
  128 acres
  1.5 ft deep
  62,563,392 gallons
  800 houses

Five Points - West Bank



San Marco Area - East Bank

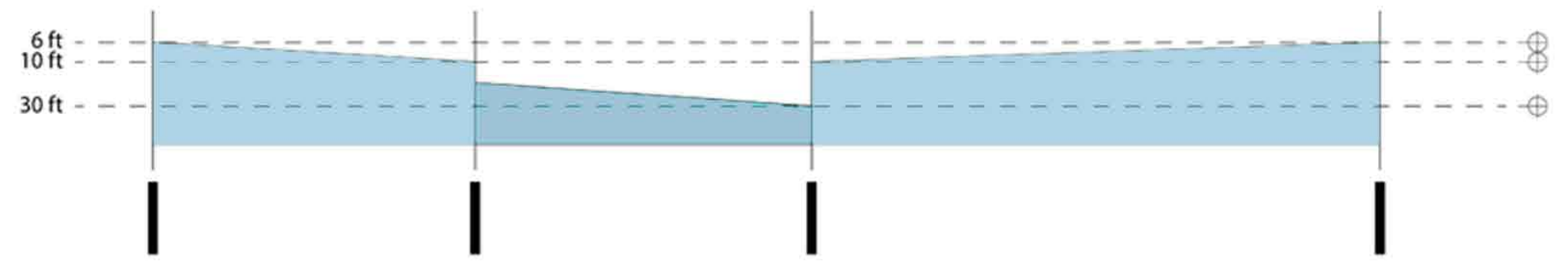
News4JAX
@wjxt4

NEW VIDEO | This was sent to us from River Road in San Marco. #Flooding #Irma

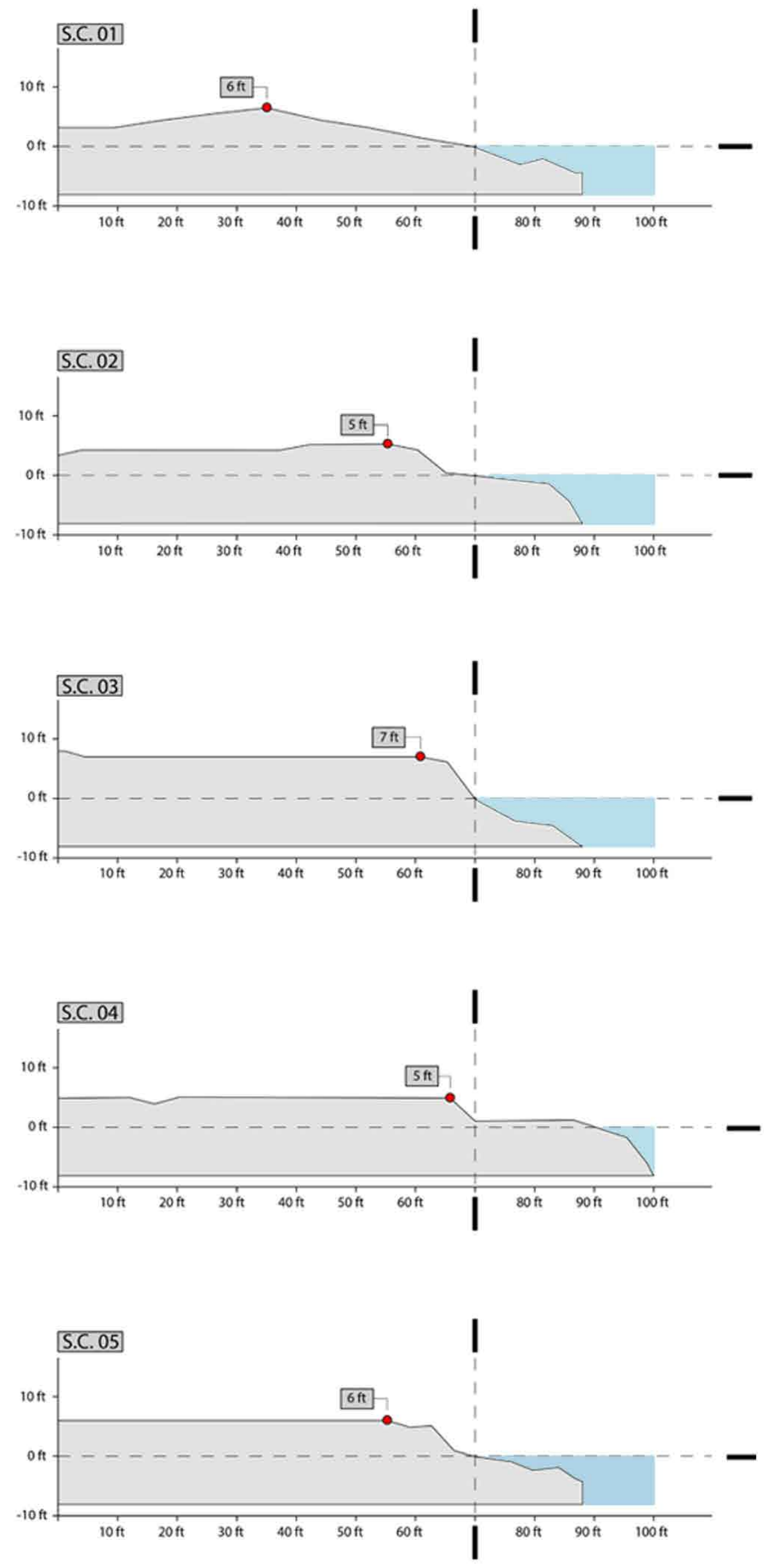
3:10 PM - Sep 11, 2017

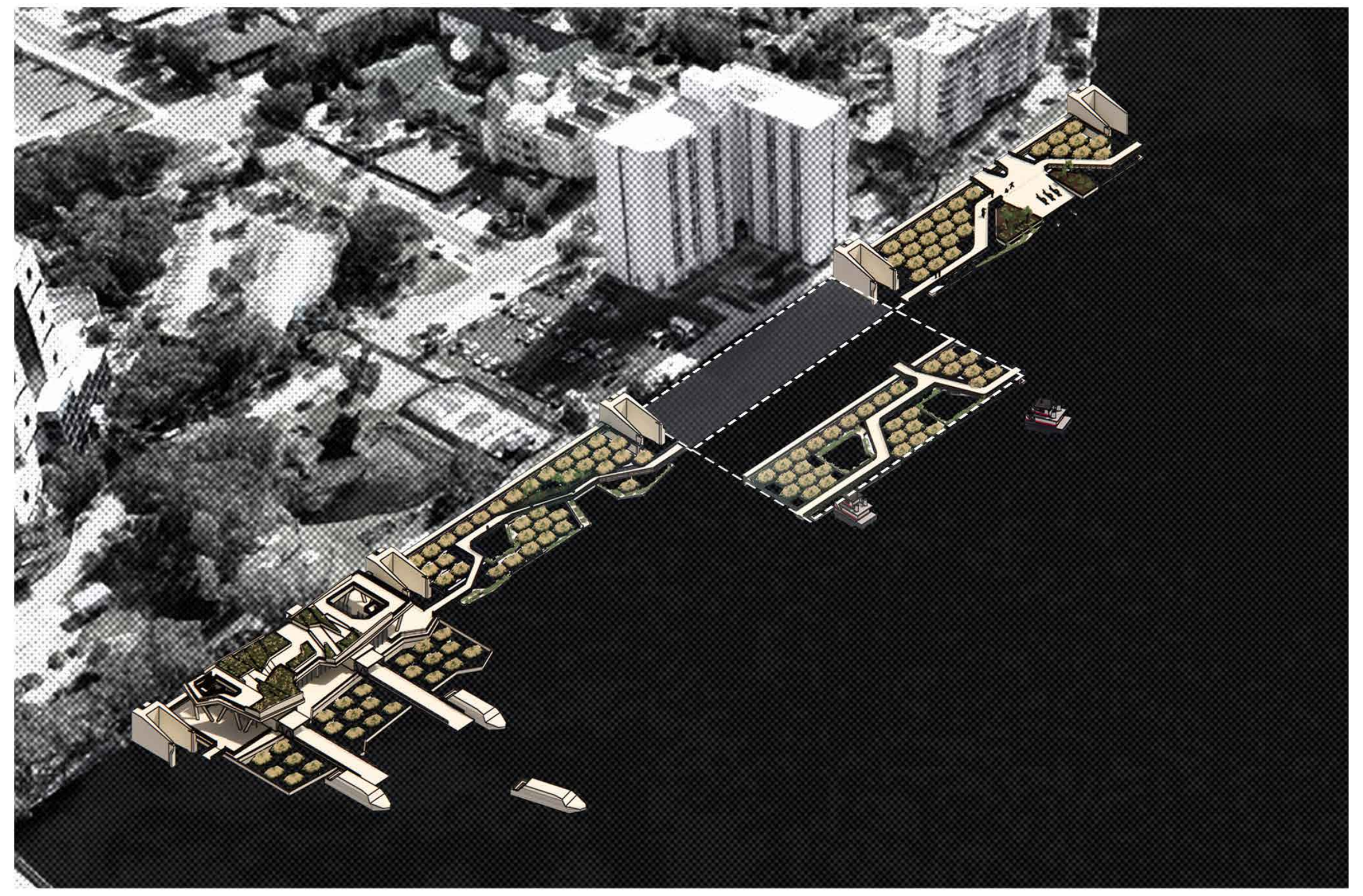
2021-2051
50% chance
57 acres
2ft deep
37,179,599 gallons
200 houses

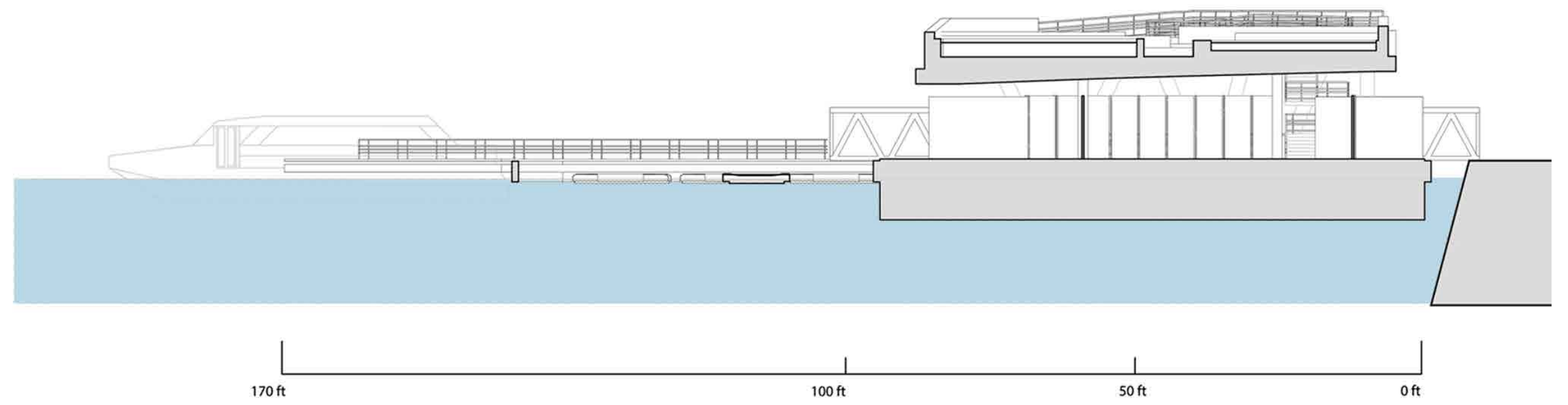
MAIN CIRCULATION ROUTE

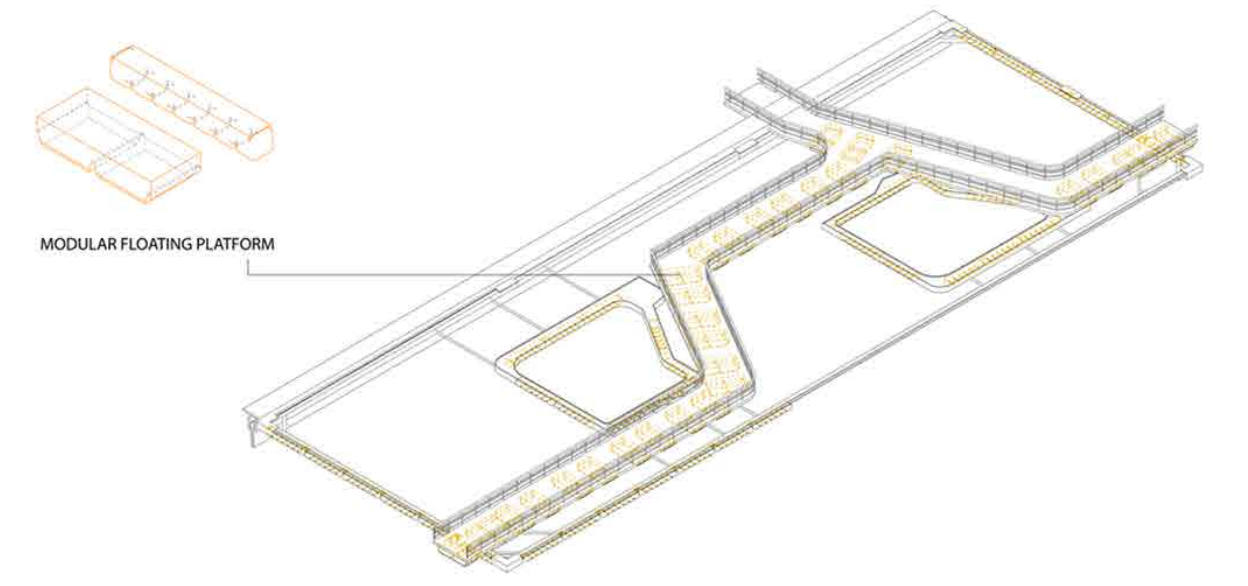


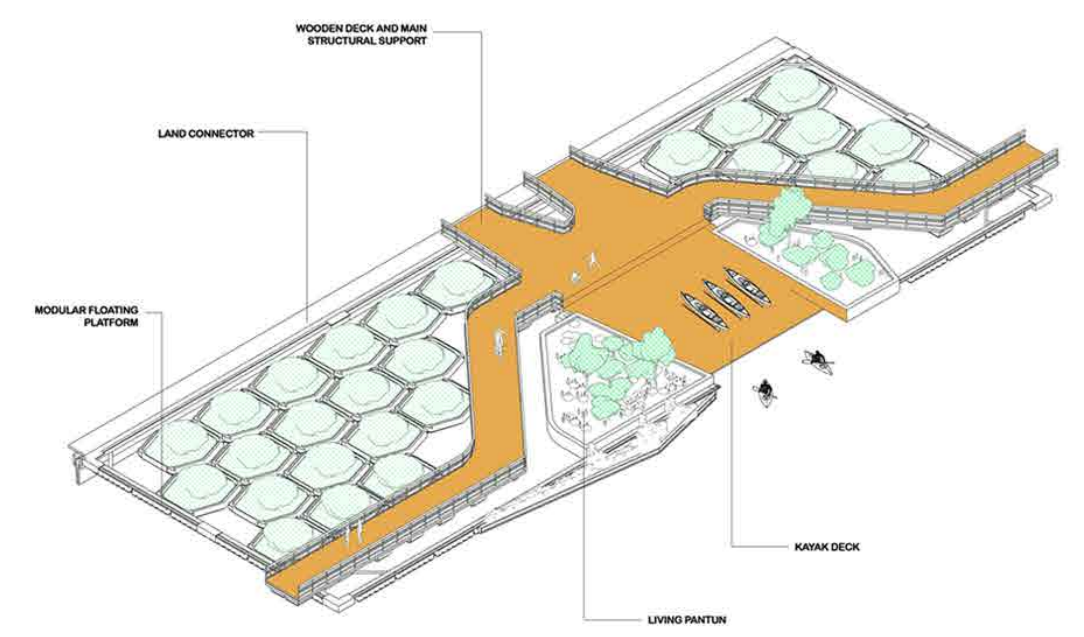
- ▢ 1ft - 5ft
- ▢ 6ft - 10ft
- ▢ 11ft - 30ft
- ▢ 31ft - 80ft
- SECTION CUT

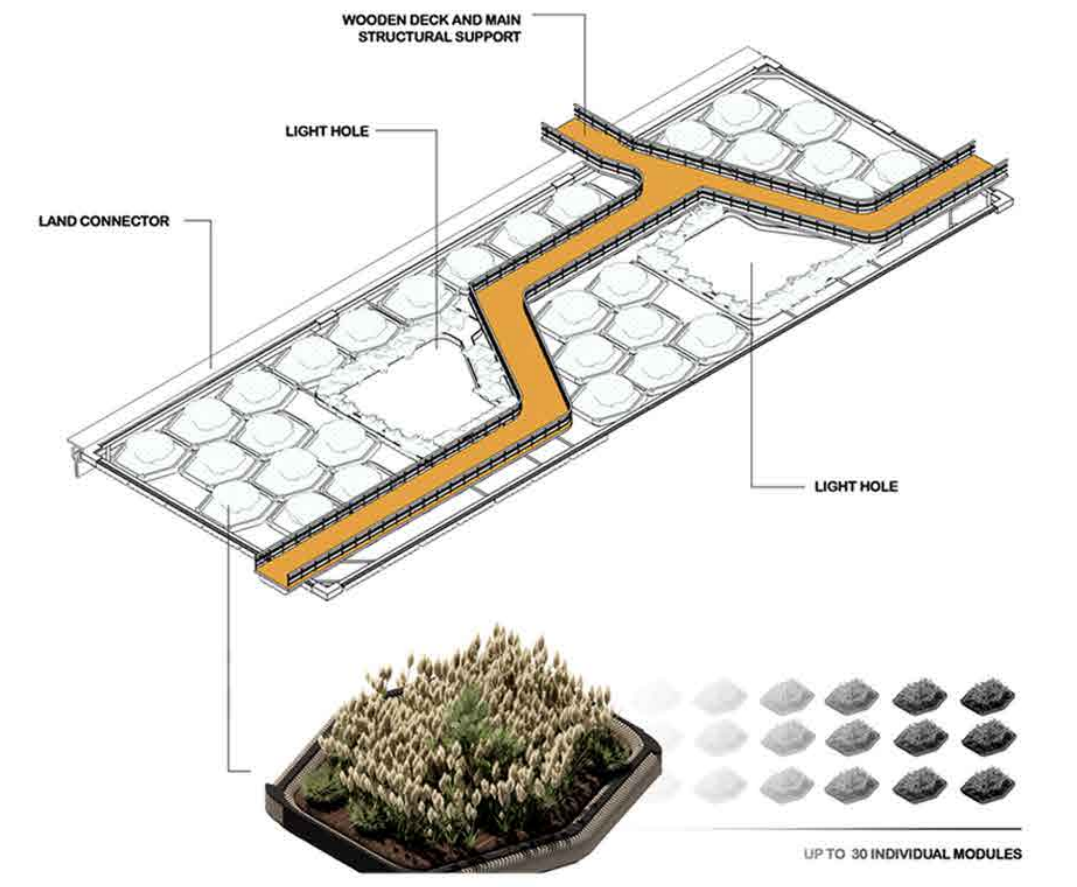


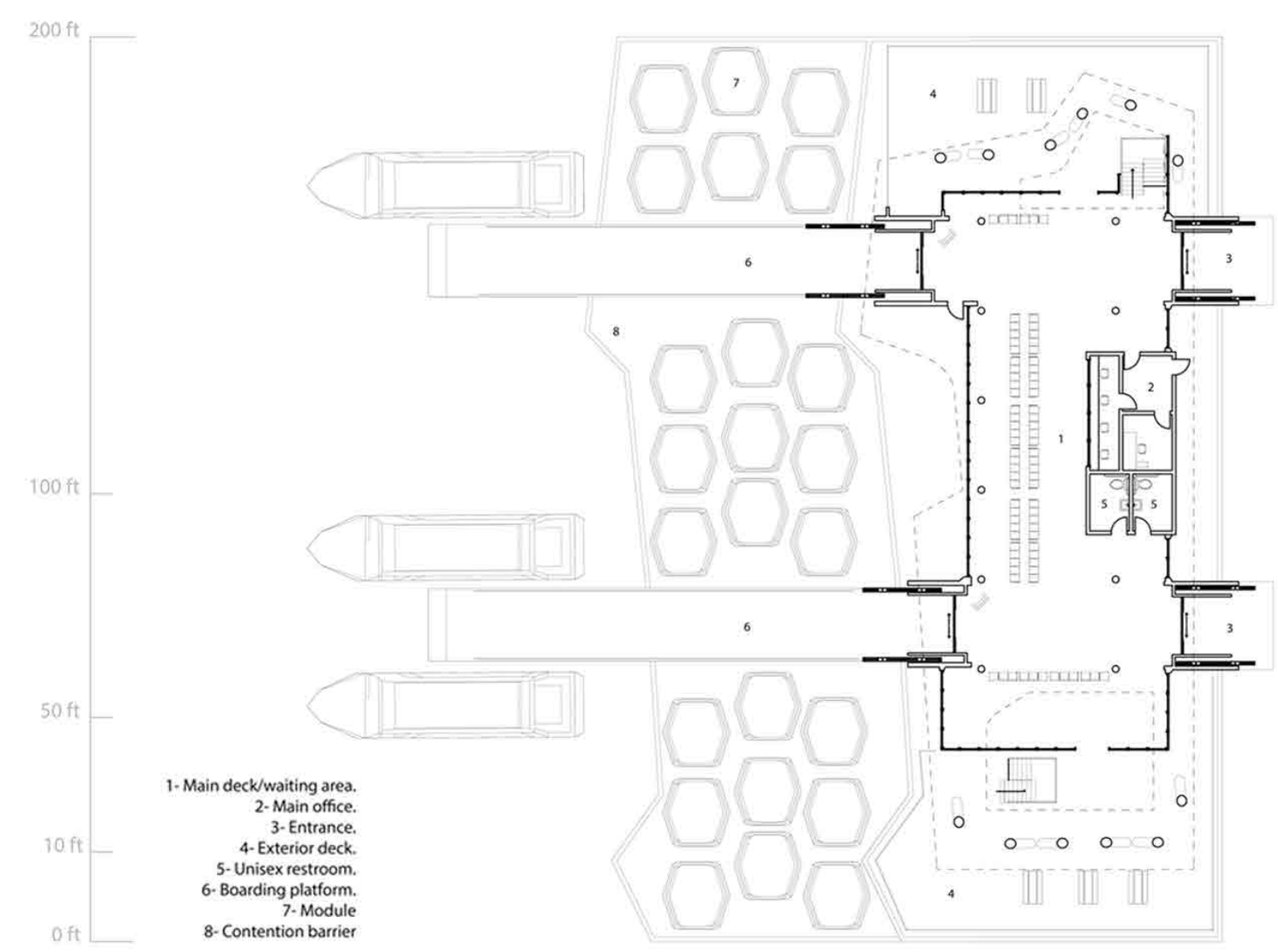












1- Main deck/waiting area.
2- Main office.
3- Entrance.
4- Exterior deck.
5- Unisex restroom.
6- Boarding platform.
7- Module
8- Contention barrier