



Conceptual Shoreline Design Report

Former Anaconda Wire & Cable Plant

1 River Street
Hastings-on-Hudson, New York

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Prepared for:

Village of Hastings-on-Hudson
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1. Introduction

On behalf of the Village of Hastings-on-Hudson (Village), Roux Associates, Inc. (Roux Associates) and Offshoots Inc. (Offshoots) have prepared the following report to document the development of a conceptual design for the shoreline along the Harbor at Hastings, located at 1 River Street, Hastings-On-Hudson, New York (Site; Figures 1 and 2). The Site is the former location of a wire and cable manufacturing plant operated by the Anaconda Wire & Cable Company, which used polychlorinated biphenyls (PCBs) in the manufacture of shipboard cable for the United States Navy during World War II.

The Site is a New York State Superfund site and is subject to a remedial action plan as approved by the New York State Department of Environmental Conservation (NYSDEC) (pursuant to a Record of Decision (“ROD”) and administrative Consent Order) and the 2003 Consent Decree. As described in Section 7.2 (f) of the 2015 Modification to the 2003 Consent Decree (2015 Final Modified Consent Decree) between Riverkeeper, Inc. (Riverkeeper), the Village and the Site owner, Atlantic Richfield Company (AR), a portion of the shoreline will be incorporated into a Village-owned park as follows:

- (i) *The Northwest Corner, including the “extension” thereof created pursuant to the OU-1 ROD Amendment (constituting approximately 2 acres);*
- (ii) *Approximately 2.5 acres consisting of a strip of land 30 feet in width on average and paralleling the Hudson River for the length of the Site and meeting the following criteria:*
 - a. *The 2.5-acre strip of land shall be located between the elevation Local Mean Sea Level (LMSL) +8 mark of the Sloped Shoreline and a line no further inland than 110 feet from the mean low water mark;*
 - b. *Some or all of the 2.5-acre strip of land may be located within the area designated as the Sloped Shoreline;*
 - c. *The designated 2.5 acres of Open Space shall be substantially flat and shall be suitable for, and intended for, the future construction of a walkway; and*
 - d. *The final location of the 2.5 acres of Open Space shall be identified in the Remedial Design, subject to the approval of the Village, not to be unreasonably withheld, and any permitting or approvals necessary from other governmental authorities.*
- (iii) *An additional 1.75 acres consistent with the location of Open Space on a development proposal for the Site formally submitted to the Village for its approval.*

AR may designate as Open Space and, once designated, allow public access to, up to an additional 8 acres, at such time as, and conditioned upon the agreement of AR and the Village on, a development plan for the Site. Any such Open Space that may be designated may be donated to a qualified land trust or other tax qualified recipient or to the Village. Such Open Space shall be identified and designated in accordance with future development and shall be subject to any further agreements reached between the Village and AR.

The shoreline area subject to this project (“sloped shoreline” as per the 2015 Modified Consent Decree) is defined as “an area to become sloped shoreline and/or stable transition (including estuarine plantings and other vegetation appropriate for habitat) extending in an easterly direction inland from the mean low tide water mark of the Site to the first Site finished redevelopment grade contour line at +11 feet above LMSL as determined in an approved Remedial Design and/or redevelopment plan, with such contour line estimated to be approximately 80 to 100 feet from the mean low tide water mark (but not to exceed 110 feet from the mean low water mark) (and approximately 60 to 70 feet from the mean low tide water mark along the Northern

Boat Slip and Southern Boat Slip), and running from the southern end of the Northwest Corner bulkhead to the southern property boundary. The planting plans for the Sloped Shoreline and vegetated buffer shall be included in the draft Remedial Design and final Remedial Design.” The proposed sloped shoreline and thus project work limits, as defined above, are illustrated in Figure 3.

While this project specifically focused on developing conceptual shoreline design elements for the Site (approximately 28 acres), the overall planning process also considered the future use of the shoreline on adjacent properties located to the south owned by Exxon Mobil (9.3 acres) and Uhlich Color Company (7.7 acres), respectively (Figure 3). All work was coordinated through and in collaboration with the members of the Shoreline Advisory Committee (SAC).

2. Site Background

The Site was created in the late 1800's and early 1900's from fill (large stone, gravel, ash, slag, broken concrete, brick and glass, and other debris) deposited in depths up to 40 feet along the eastern bank of the Hudson River. Early uses of the Site included sugar manufacturing and pavement manufacturing. From 1919 to 1977, the property was owned and operated by Anaconda and its predecessor, the Hastings Wire and Cable Company for the manufacturing of copper wire and cable, including a unique type of PCB insulated cable made for the United States Navy during the World War II era. Anaconda ceased operations in 1974. The legacy of the cable manufacturing operations is the presence of elevated levels of PCBs and metals in soil, groundwater, and sediment.

Most of the Site is now covered by pavement or concrete building slabs. All buildings have been demolished, including Building 52. The ground surface at the Site is relatively flat with ground surface predominantly ranging from approximately El. 3 to El. 11 feet (ft) above mean sea level (amsl). Groundwater is approximately 2 to 8 ft below ground surface in the fill material, and is influenced by tidal variation.

The shoreline currently consists of areas of loosely-placed rip rap and concrete rubble in the north and decaying wooden bulkheads, docks, and piers in the central area. Two former boat slips are present along the waterfront, both of which have filled in to a shallow depth with naturally-deposited sediment. The shoreline south of the South Boat Slip consists of modern steel sheeting.

Adjacent and to the west of the Site, the Hudson River is approximately 4,800 feet wide with a maximum depth of about 50 feet at midstream. Based on historical studies, the currents vary from about 2.2 feet per second (fps) on the flood tide (flowing upstream) to about 2.9 fps on the ebb tide (flowing downstream). Depending on wind direction and velocity, wave heights of 3 ft to 5 ft and wakes of passing vessels of 2.5 ft have been observed. During the winter, ice floes may accumulate along the eastern shore of the Hudson River when there is a strong west wind.

The shoreline shows signs of historical erosion due to storm events and wave action. Low-lying parts of the Site are flooded during large storm events, most recently in 2012 during Super Storm Sandy which saw flooding across the entire Site.

2.1 Site Visits

The SAC led a tour on October 5, 2016 of nearby waterfront parks consisting of MacEachron Park in Hastings on Hudson, Beczack and JFK Marina and Park in Yonkers, Waterfront Park in Dobbs Ferry and Scenic Hudson Park in Irvington.

A Site visit was conducted by Paul Johnson of AR on December 8, 2016.

3. Design Objectives

The overall goal of the project was to develop a conceptual shoreline design that would provide access to the waterfront and the river for residents and visitors, protect the Hudson River and stabilize its shoreline, and provide protections from projected sea level rise, within the confines of the remedial plan. Redesign of the shoreline post remedial action from a bulkhead to a sloping vegetated shoreline as required by the 2015 Modified Consent Decree creates opportunities to meet these objectives by creating a vegetated riverfront greenway corridor along the river.

The desired outcome of the project is for AR to take into consideration the conceptual design elements and incorporate the concepts into their final remedial design for the Site and shoreline. Incorporation of the project's conceptual design will guide AR to include foundations for a road and/or walking paths for residents and visitors to reach the waterfront during the years prior to redevelopment of the Site. While this project is focused on the shoreline and is not intended to include a complete park plan or plan for future redevelopment, the project outlines potential element placement and builds upon the infrastructure needs outlined in the 2015 Waterfront Infrastructure Committee (WIC) Report, thus aiding future planning for the adjacent upland areas.

3.1 Water-related Uses and Walkway

The first primary goal of the project is to promote public uses and shoreline access along the waterfront. As per the 2015 Modified Consent Decree, a minimum of 6.25 acres and possibly an additional 8 acres of the Site will become Village-owned parkland, most of which is anticipated to be adjacent to the river and above the mean high water (MHW = 2.2 ft amsl).

Between 2012 and 2015, various water-related uses were identified via a recreational uses survey carried out by the WIC on behalf of the Village. Popular uses included a kayak launch, fishing pier, esplanade or boardwalk, ferry dock, floating docks for commercial or transient boats, boathouse and café, and possibly a beach for swimming. In addition to these water dependent uses, a walkway along the river is desired to create a continuous, public riverfront greenway corridor that connects the range of uses for enjoyment of the waterfront. Open space surrounding the walkway may also offer locations for passive recreational uses such as nature trails, picnic areas, and playgrounds.

3.2 Shoreline Stabilization

The Site sits adjacent to the Hudson River and is subject to erosional forces due to storm events, tidal fluctuations, wave and wake action and ice scour. The Site is currently supported by various deteriorating bulkheads located along the western edge of the property. While the majority of these bulkheads will be removed as part of remedial activities, in the northwest corner of the Site a new sheet pile bulkhead will be constructed surrounding new fill that is intended to encapsulate PCB contamination that cannot feasibly be removed. As per the 2015 Modified Consent Decree, the remaining shoreline will be regraded into a sloped shoreline with a width of between 60 and 110 ft from MLW to elevation +11 ft amsl.

NYSDEC has strongly recommended that much of the shoreline be reconstructed using an “ecologically-enhanced, engineered” shoreline treatment that resists erosion, enhances the intended use of the Site by the public and improves the habitat value for fish and wildlife species of the Hudson River Estuary. A variety of remedies are available to minimize the susceptibility of shorelines to erosion. Shoreline protection generally consists of restoring and protecting banks against scour and erosion by using vegetative plantings,

soil bioengineering, and structural systems. In the development of the conceptual design, preference has been given to those methods that restore and support the ecological functions and values of the shoreline.

3.3 Flood Protection and Sea Level Rise

Climate change and sea level rise is one of the greatest challenges facing riverfront communities today. Current FEMA Flood Insurance Risk Maps (Map Number 36119C0307F; 2007) refer to a base flood elevation of +7 ft amsl and +8 ft amsl for the 500-year event. FEMA's Preliminary & Pending National Flood Hazard mapping for the Site indicate a revised base flood elevation of between 9 and 10 ft amsl for the Site (FEMA, 2014a) and stillwater elevation for the 500-year event of 11.6 ft amsl (FEMA, 2014b).

By the end of this century, the current 100-year flood is estimated to occur once every 10 years and the 500-year flood may occur as often as every 100 years (NPCC, 2009). In addition, projected increases in storm frequency and volatility will likely result in 100-year flood elevation designations rising faster than sea levels (Scenic Hudson, 2010). All of which will add considerable new risks to shorelines and thus was a design assumption incorporated into the development of the conceptual shoreline design.

3.4 Remedial and Regulatory Requirements

Remedial activities are planned along much of the existing shoreline and adjacent upland areas of the Site. As noted above, a new sheet pile bulkhead will be constructed surrounding new fill in the Northwest Extension Area (NEA) which is intended to encapsulate PCB contamination that cannot feasibly be removed. Excavated shoreline areas will be restored to a sloped shoreline with a cover system comprised of various layers including an erosion protection layer and a habitat/surface substrate layer. Both the erosion protection and the habitat/surface substrate layers can be designed to restore aquatic, intertidal and stream bank habitats while also incorporating subsurface structural support against erosive forces. Therefore, the final objective of the project is to ensure the conceptual shoreline design will protect the integrity of the site remedy set forth in the ROD and the Consent Decree.

It is important to note that in order for riparian restoration to be sustainable and successful, the design must take into consideration potential runoff from adjacent properties and up-gradient sources. Therefore, potential erosive forces generated from up-gradient and adjacent sources (e.g., redevelopment) were evaluated in order to properly develop solutions for a sustainable shoreline.

4. Public Outreach

Opportunities for public input were a critical step in the development of the conceptual design for the shoreline. Through community outreach the project can identify desirable shoreline uses including water-dependent uses and habitat restoration, but also identify desired locations for these uses. On January 18, 2017, Roux Associates, Offshoots, and the Village held a public meeting (attended by approximately 58 people) to outline the project goals, present various approaches to meet the goals and gather input from the community.

4.1 Precedents

The public meeting began with a presentation of precedents to inspire the community with examples of program elements and functioning shoreline environments (Appendix A). The presentation also included a summary of the previous work completed by WIC and discussed how the project would continue to further define the uses and elements proposed within the WIC report.

4.2 Public Input

Following the presentation of precedents, the team facilitated interactive sessions to engage the community and solicit feedback and placement of shoreline elements needs and wants. Photographs of the interactive exercises are provided in Appendix B.

4.2.1 Banner Exercise

The first interactive session included the use of four large banners placed on the community center walls. Each banner represented a different season: Spring, Summer, Fall, Winter. Two additional banners were also included to capture community identity as well as other elements not captured by other banners, titled Parking Lot. Participants were given markers and were asked to write activities which would be desired along the shoreline for each banner. If an element was previously captured and listed, participants were requested to add a check mark next to that element to capture concurrence.

To further prioritize the desired program elements, participants were given four stickers: three green and one red. Participants were asked to add a green sticker next to the most important elements they would like to be included along their shoreline. Participants were also asked to add a red sticker next to element they would not like included in the design plan. Results of the banner exercise are summarized in Tables 1 and 2. Photographs of the completed banners are included in Appendix C.

4.2.1 Mapping Exercise

The second exercise focused on the placement of design elements along the existing shoreline. Participants were broken out into six working groups. Each group was placed at an aerial photograph of the Site. Each group were given to-scale stickers of various programs (kayak launch, fishing pier, beach, event space, restrooms, boat house, marina, ferry terminal, and cafe) and asked to discuss within the group the ideal location along the existing shoreline for each program element. Following placement of each program element, each group was requested to draw on the aerial key connecting features to their conceptual shoreline (i.e., walkways, trails, bike paths or roads). Each group then presented their map to the larger group and discussed the justification and placement of varying elements within their shoreline plan. Photographs of the exercise and completed banners are included in Appendix C.

4.3 Compilation of Needs and Wants

The results of the input helped to define the preferred shoreline types (natural and engineered) that are compatible with uses desired by the community as well as areas that are needed to maintain natural resources. A summary of the preferred shoreline elements is provided in the Table 3 below.

Table 3. Summary of preferred shoreline elements from Public Meeting

Park Plaza	<input type="checkbox"/> Ferry Terminal <input type="checkbox"/> Café/Restrooms <input type="checkbox"/> Optional Small Marina
Passive Recreation	<input type="checkbox"/> Walk/Bike Trails <input type="checkbox"/> Access to Natural Areas
Programmatic Elements	<input type="checkbox"/> Boathouse/ Kayaking <input type="checkbox"/> Playground <input type="checkbox"/> Flexible Lawn
Natural Elements	<input type="checkbox"/> Stormwater Retention Pond <input type="checkbox"/> Stream Daylighting
South Off-Site Programming	<input type="checkbox"/> Beach <input type="checkbox"/> Fishing Pier/ Utilize Dolphins <input type="checkbox"/> Natural areas + Enhanced Ecology

5. Conceptual Design Development

Based upon the results of the field reconnaissance, background data review and input from the public meeting, Roux Associates and Offshoots identified various layout options for Site. Using the input of the public meeting as well as the recommendations of the WIC final report, each design solution provides diverse recreational opportunities and promotes a self-sustaining, structurally balanced, and healthy ecosystem that would be resilient in a flood-prone landscape.

Roux Associates and Offshoots developed three alternative conceptual layouts for the shoreline. The approach to the layout of the park and landscape within each option was centered on creating flexible programming, using elements with multi-use functionality and ecologically performative features to engage both active and passive users. The concepts considered potential attractions, structures, views, and needs expressed by the community. Sustainable design approaches, including sea level rise mitigation, slope stabilization, stormwater reduction and natural resource enhancement and protection, were considered concurrent to the development and siting of recreational programming elements.

It is important to note that as part of the remedial action, NYSDEC will require compensatory mitigation for the placement of fill within the Hudson River associated with the PCB encapsulation in the NEA portion of the Site, creating an additional approximately 0.8 acres of upland area (the final area of which is still to be determined via the final remedial plan). Mitigation could occur on-site and thus result in additional shoreline modifications to meet habitat replacement requirements. The conceptual design options all include possible mitigation scenarios focused in and around the North Cove.

Table 4. Summary of major design elements and location by conceptual design option

	Option A (Figure 4)	Option B (Figure 5)	Option C (Figure 6)
Northwest Corner	<ul style="list-style-type: none"> □ Topographic Mound over capped PCBs □ Park plaza with ferry terminal, restrooms, café, and docks for transient boaters □ Great lawn, water tower and get-down steps to water 	<ul style="list-style-type: none"> □ Topographic Mound over capped PCBs □ Fishing pier off bulkhead □ Great lawn around water tower 	<ul style="list-style-type: none"> □ Great lawn over capped PCBs □ Active Plaza with ferry terminal, restrooms, café, and docks for transient boaters □ Playground and green space around water tower
North Cove	<ul style="list-style-type: none"> □ Wetland and stream daylighting in upland □ Salt marsh creation 	<ul style="list-style-type: none"> □ Stream daylighting in upland □ Kayak/boathouse □ Café and restrooms 	<ul style="list-style-type: none"> □ Stream daylighting in upland □ Beach creation
Shoreline	<ul style="list-style-type: none"> □ Boardwalk and trails through vegetated shoreline and woody vegetated uplands 	<ul style="list-style-type: none"> □ Great lawn with get-down steps to water 	<ul style="list-style-type: none"> □ Boardwalk and trails through vegetated shoreline

Table 4. Summary of major design elements and location by conceptual design option

	Option A (Figure 4)	Option B (Figure 5)	Option C (Figure 6)
South Cove	<input type="checkbox"/> Salt marsh creation <input type="checkbox"/> Boardwalk over cove	<input type="checkbox"/> Salt marsh creation <input type="checkbox"/> Boardwalk over cove	<input type="checkbox"/> Kayak cove and boathouse <input type="checkbox"/> Boardwalk over cove
Offsite	<input type="checkbox"/> Boardwalk to dolphins plus fishing pier <input type="checkbox"/> Salt marsh creation between boardwalk and shoreline <input type="checkbox"/> Kayak launch/boathouse/restrooms and café <input type="checkbox"/> Beach	<input type="checkbox"/> Park plaza with ferry terminal at dolphins, restrooms, café, and marina <input type="checkbox"/> Mounded park with natural playground <input type="checkbox"/> Beach	<input type="checkbox"/> Boardwalk to dolphins plus fishing pier <input type="checkbox"/> Stormwater detention <input type="checkbox"/> Trails through vegetated shoreline <input type="checkbox"/> Café and restrooms <input type="checkbox"/> Beach

Each conceptual option was presented to the SAC for discussion and selection of a preferred option. The preferred option combines ideal features from each optional layout.

The preferred option focuses active uses via the Park Plaza in the northwest corner of the Site. This option maximizes the reuse of the area to be backfilled, capped and bulkheaded as part of remedial action. The new bulkhead would permit the incorporation of floating docks for a Ferry Terminal. As per the 2015 Final Modified Consent Decree, the bulkhead shall be installed such that a future dock or pier of suitable design and construction could be constructed by a developer, owner, or other party out to water depths greater than 15 feet off the northwest corner and connected through a gangway, floating walkway, or other similar structure.

Table 5. Summary of major design elements and location to be further developed in the preferred conceptual design

Preferred Option (Figure 7)	
Northwest Corner	<input type="checkbox"/> Topographic Mound over capped PCBs <input type="checkbox"/> Park Plaza with ferry terminal, restrooms, café, and docks for transient boaters <input type="checkbox"/> Amphitheater <input type="checkbox"/> Great lawn, water tower and get down steps to water
North Cove	<input type="checkbox"/> Wetland and stream daylighting in upland <input type="checkbox"/> Beach

Table 5. Summary of major design elements and location to be further developed in the preferred conceptual design

Preferred Option (Figure 7)	
Shoreline	<input type="checkbox"/> Natural Playground <input type="checkbox"/> Boardwalk and trails through vegetated shoreline and woody vegetated uplands
South Cove	<input type="checkbox"/> Kayak cove and boathouse <input type="checkbox"/> Boardwalk over cove
Offsite	<input type="checkbox"/> Boardwalk to dolphins plus fishing pier and boat slips <input type="checkbox"/> Stormwater detention <input type="checkbox"/> Trails through vegetated shoreline and woody vegetated uplands <input type="checkbox"/> Natural playground <input type="checkbox"/> Beach

Northwest Corner (NEA)

Additional fill can be brought in to create a mound over the cap and further raise the topography to gain prime views across the Site and permit planting of woody vegetation species. The Park Plaza would function year-round as a direct extension of downtown and include lively, flexible mixed-use programming, and pedestrian-friendly destinations (e.g., farmers market, ice skating, movie night).

North Cove

As noted above, NYSDEC will require compensatory mitigation for the placement of fill within the Hudson River associated with the PCB encapsulation in the Northwest Corner of the Site. As a potential mitigation solution, the North Cove could be designed as an extension of the Newington-Cropsey foundation property pond, located east of the Site, by daylighting the pond drainage outfall via an open stream through the upland areas of the Site. The stream could be designed to manage stormwater runoff from the downtown impervious surfaces, thereby reducing flooding events, minimizing erosion, creating habitat, and ensuring resiliency against future extreme storm events and climate change. The North Cove can be modified into additional intertidal habitat with public access to the water.

Shoreline

The shoreline between the North and South Coves will be sufficiently sloped to promote the establishment of intertidal wetland species below the mean high water and woody species above the mean high water. As per the 2015 Final Modified Consent Decree, the Sloped Shoreline shall be designed to include appropriate grading and/or stable transition (including estuarine plantings and other vegetation appropriate for habitat) and allow for the potential future installation of an additional vegetative buffer along the up-gradient portion of the sloped shoreline. A pedestrian path and trail system will meander through the vegetated shoreline,

with path spurs leading directly to the water to create places for peaceful contemplation and views of the Palisades.

South Cove

The South Cove would be transformed into a kayak cove for launching kayaks/shells within a protected area away from river currents and wave action. A boathouse would be located at the eastern terminus of the cove to facilitate boat storage and contain restrooms. The shoreline pedestrian path would continue as an elevated walkway over the cove, providing additional unobstructed views.

Off-Site

In the adjacent offsite shorelines, Uhlich/ExxonMobil properties, the shoreline will be enhanced with vegetation and continuation of the pedestrian path and trail system meandering through the vegetated shoreline. Shallow narrow stormwater detention basins will be strategically located within the upland areas adjacent to the shoreline to reduce the impact of the up-gradient adjacent future development. A pier will be constructed to the existing mooring dolphins (the man made marine structures which extend above the water level formerly used as ship mooring points) to facilitate fishing in deeper water and provide unobstructed views of both the city, the river, and the Palisades. Due to the long (0.7 mile) length of the entire shoreline, an additional natural playground and restroom facility are proposed within the southwestern corner of the shoreline. Finally, enhancement of the existing sandy beach is proposed within the cove adjacent to the railroad.

Following agreement with the SAC on the preferred option sketch (Figure 7) , additional detail was drafted to further develop the conceptual design (Figure 8). Additional details include the addition of an esplanade in the Northwest Corner alongside the new bulkhead, the creation of a continuous intertidal habitat starting at the North Cove and extending south to the property boundary, and the incorporation of a mooring field off the southern end of the Uhlich/ExxonMobil properties. The piling remnants from the existing bulkhead which run the length the Site could remain and function as wave break and energy dissipaters to protect the shoreline habitat.

6. Stakeholder Meetings

The conceptual design process for the shoreline required involvement of many stakeholders including the Village, the property owner AR, and NYSDEC-Remediation, Fish and Wildlife and Department of Health. Riverkeeper and Scenic Hudson will be engaged by the SAR after the completion of this report. Various meetings took place with these stakeholders throughout the development of the conceptual design to solicit input on the proposed shoreline elements.

On March 13, 2017, Roux Associates, Offshoots, and 2 members of the SAC, as well as Village Trustee Dan Lemmons, presented the draft conceptual design to NYSDEC and NYSDOH (Appendix C). The goal of the meeting was to solicit feedback from NYSDEC on the regulatory feasibility of the proposed plan as well as gain an understanding from the NYSDEC on the AR remedial design status. A summary of comments received are provided in Table 6 below.

Table 6. Summary of Feedback Received by NYSDEC Regarding Draft Conceptual Shoreline Design	
<i>Northwest Corner</i>	Recovery wells and a pump house will potentially be located around the perimeter of the Northwest Corner. These areas may be restricted from public access. Long term, non-public, access will be required to the structural components of the final remediation.
<i>Ferry Terminal</i>	The ferry terminal and floating docks would not be considered under the remediation design; these structures would require separate Tidal Wetland Permits from the NYSDEC (based on Article 25, Section 661 requirements within adjacent areas 300' from tidal wetland). The docking facility cannot exceed 40,000 square feet without a Docks and Mooring permit. These permits could be obtained later by the Village and/or a developer. The permit would have to show a need for this docking facility.
<i>Mitigation Requirements</i>	<p>Mitigation requirements for the filling that will be needed in the Northwest corner of the property are not yet known and will be determined upon NYSDEC review of the Remedial Design. Requirements will likely include the creation of intertidal marsh and the ratio could be as high as 4:1 or 5:1.</p> <p>NYSDEC would prefer that mitigation via intertidal marsh creation take place within the North and South Coves. NYSDEC also suggested that mitigation may be possible within the existing upland (in the areas shown for stream daylighting) co-located within areas of proposed deep remedial excavation.</p>

Table 6. Summary of Feedback Received by NYSDEC Regarding Draft Conceptual Shoreline Design	
<i>Shoreline</i>	<p>NYSDEC recommended reducing the extent of hard steps to the water surrounding the Great Lawn and the steps would also need to be set back so that filling within the Hudson River would not be required.</p> <p>NYSDEC will not allow an unnecessary filling of the Hudson River; rather they would encourage design elements to pull back from the River. In addition, no direct contact will be allowed with the historical fill material; a 2-foot cap, buffer or equivalent would be needed along the shoreline. Such a buffer at the shoreline should be permeable, but prevent fines from flowing into river.</p> <p>Dredging will be required along 2,000 linear feet of the shoreline at a distance of 60 to 80 feet from the shoreline to a depth of approximately 6 feet in areas where depths are 15 feet. This will remove the bulkhead remnants and thus eliminate their reuse as a potential wave break. However, backfill of the dredged shoreline could incorporate wave breaks into the design.</p>
<i>South Cove</i>	<p>NYSDEC would prefer the South Cove be preserved for the creation of intertidal habitat as part of mitigation obligations. The boathouse and related elements would require permit approval. All permanent structures will need to be set back 50 feet from the shoreline, including any proposed boat storage areas and restrooms. A separate permit for boat storage would be needed. A floating dock would need to be less than 200 square feet to meet Tidal Wetland compatibility requirements and it would need to be located off the mudline during low tide.</p> <p>A kayak launch would be acceptable but it would need to be smaller and be respectful to the mitigation. The kayak launch could be part of remediation permit.</p>
<i>Off-Site</i>	<p>Fish consumption is not allowed along the Hudson River. Public advisory postings will be required along the walkways and piers to discourage fish consumption and to discourage the public from walking barefoot.</p>

The Conceptual Design was revised based upon the comments and suggestions received by NYSDEC (Figures 9 and 10) as follows:

- ☐ Additional intertidal habitat was incorporated coinciding with areas of proposed excavation areas;
- ☐ Stone sill added to replace bulkhead remnants as wave break along shoreline;
- ☐ Steps surrounding the Great Lawn were reduced in extent;
- ☐ The Boathouse was reduced in size and relocated to the eastern edge of the South Cove; and
- ☐ The bridge/walkway over the South Cove was removed.

On July 25, 2017, Roux Associates and the SAC and Village Trustee met a second time with NYSDEC to present revisions to the draft conceptual design and solicit feedback (Appendix D). NYSDEC recommended the floating docks located in the Northwest Corner be constructed over riprap stabilized shoreline instead of

being connected to steel bulkhead. NYSDEC also recommended reducing the extent of the stone sill and breaking up the linear shoreline with small protected indentations strategically located along the shoreline.

7. Final Conceptual Design

One primary goal of the project is to improve public access to the waterfront. The Site is currently supported by various deteriorating bulkheads located along the western edge of the property. While the majority of these bulkheads will be removed as part of remedial activities, in the Northwest Corner of the Site a new sheet pile bulkhead will be constructed. As per the 2015 Final Modified Consent Decree, the remaining shoreline will be regraded into a sloped shoreline with a width of between 60 and 110 ft from MLW to elevation +11 ft amsl. A minimum of 6.25 acres of the shoreline will become Village-owned parkland, most of which is anticipated to be adjacent to the river and above the mean high water (MHW = 2.2 ft amsl) thereby creating a riverfront greenway corridor along their entire shoreline. The corridor will provide a continuous, open space along the riverfront that would provide public access, recreation, and habitat protection.

The proposed conceptual design is provided as plan and profile views in Figures 11 and 12, as well as artistic renderings in Figure 13, 14 and 15.

7.1 Water-related Uses

The final conceptual shoreline design focuses active uses in the Northwest Corner of the Site. The Northwest Corner shall be capped with both impervious surfaces including the Park Plaza, Ferry Terminal, Esplanade as well as soft landscaped surfaces such as the Great Lawn and Overlook Mound. This layout maximizes the reuse of the area to be backfilled, capped and bulkheaded as part of remedial action. Additional fill can be brought in to create a mound over the cap and further raise the topography to permit planting of trees and create prime views. The Park Plaza would function year-round as direct extension of downtown and include lively, flexible mixed-use programming, pedestrian-friendly destinations (e.g., farmers market, ice skating, movie night).

The South Cove would be transformed into a Kayak Cove for launching kayaks/shells within a protected area away from river currents and wave action. A Boathouse would be located at the eastern terminus of the cove to facilitate boat storage and contain restrooms.

7.2 Habitat Creation

As previously discussed, NYSDEC will require compensatory mitigation for the placement of fill within the Hudson River associated with the PCB encapsulation in the Northwest Corner of the Site. As a potential mitigation solution, the proposed conceptual design maximizes reuse of the excavation areas to create intertidal marsh behind the existing shoreline. Co-locating the created marsh within the excavation areas will set the marsh behind the shoreline, thus protecting the habitat from the erosive forces of the river. The conceptual design includes a boardwalk and viewing platform over the created marsh providing opportunities for educational outreach and public interaction with the river ecosystem.

7.3 Shoreline Stabilization

While the 2015 Final Modified Consent Decree allows for the use of a steel sheet pile bulkhead or rip rap along the remaining shoreline area, the proposed design focuses on maximizing a vegetated natural shoreline to both create habitat and provide resiliency. Shoreline stabilization via various construction techniques can affect water quality; wildlife, fish, and benthic habitat; impact public safety; and incur high maintenance cost. Conventional river-shoreline stabilization, such as bulkheads and riprap, rely upon

materials and techniques that harden the riverbank, reduce wildlife habitat, and degrade scenic character. These hard engineering practices also result in excessive scouring of adjacent stream sections, thereby leading to continual maintenance and repair.

Due to the waterfront location and the consideration of climate change and rising sea levels, a conscious effort was made to design a shoreline capable of withstanding the impact of storms and major floods. Instead of a hardened slope, the remaining shoreline will be minimally sloped (8:1) to promote the establishment of intertidal wetland species below the mean high water and woody species above the mean high water. Shorelines with shallow slopes dissipate wave energy, facilitate plant and animal migration between the river and land, and protect the capacity for shallow water and intertidal areas to migrate inland in response to rising sea levels (Scenic Hudson, 2010). However even with the shallow slopes, additional engineering solutions will be required to both protect the intertidal habitat and stabilize the slope. A sustainable approach to the shoreline stabilization is through the use of bioengineering solutions which combine manmade materials to build both structural support (e.g., articulated concrete block, cellular confinement systems) with vegetation to provide resiliency, resulting in riverbank structures that control erosion, absorb floodwaters, and are aesthetically appealing.

7.4 Pedestrian Path

A 10-ft wide pedestrian path and soft trail system will meander through the vegetated shoreline, with smaller pathways directly to the River, creating both places for peaceful contemplation and panoramic views of the Palisades. The paths systems will connect the active destinations found within the Northwest Corner and the Boathouse with passive recreation such as walking, fishing, picnicking, and river enjoyment and observation. The paths can be further supported by attractive signage, landscape furniture, and sufficient lighting.

7.5 Area Breakdown

The following Table 7 provides a breakdown of acreage along the shoreline comparing existing conditions to proposed layout in the conceptual design. Under existing conditions, the area between the MLW (-2.0 ft amsl) and MHW (+2.2 ft amsl) is 1.71 acres. Under the proposed conceptual shoreline conditions, the area between the MLW and MHW will increase to 3.15 acres due to the creation of new wetland resources and the shallow slope (8:1) required to successfully establish intertidal habitat along the river.

The area above MHW to the limits of the sloped shoreline, the proposed conceptual design decreases from 6.18 to 5.89 acres due to the creation of the new wetland resources for mitigation purposes. Mitigation extends beyond the sloped shoreline limits and thus the total area represented in the proposed conceptual design increases from 8.64 acres under existing conditions to 9.80 acres.

Table 7. Breakdown of defined shoreline area for existing Site conditions versus proposed conditions based upon the proposed conceptual shoreline design

	<u>Existing</u>	<u>Proposed</u>
	Acres	
MLW to MHW	1.71	3.15
MHW to Shoreline Project Limits	6.18	5.89
Area to be Filled (MLW to Bulkhead)	0.76	0.76
Total	8.64	9.80

MLW ≈ -2 ft amsl

MHW ≈ +2.2 ft amsl

Shoreline Project Limits established based upon 2016 Final Modified Consent Decree definition of "Sloped Shoreline".

The proposed conceptual design maximizes habitat creation through the addition of 3.0 acres of intertidal habitat that does not currently exist on-Site, while minimizing low habitat value rip rap shoreline. A breakdown of water resource classification is provided in Table 8.

Table 8. Breakdown of water resource classifications for existing Site conditions versus proposed conditions based upon the conceptual shoreline design

	<u>Existing</u>	<u>Proposed</u>
	Acres	
Littoral Zone (i.e., Rip Rap)	1.71	0.15
Intertidal Mudflat	--	0.76
Intertidal Marsh	--	2.24
Total	1.71	3.15

Littoral Zone ≈ -2 ft to +2.2 ft amsl

Intertidal Mudflat ≈ -2 ft to 0 ft amsl

Intertidal Marsh ≈ 0 ft to +2.2 ft amsl

Rip rap revetments have been minimized in the conceptual design, coinciding with the existing rip rap shoreline along the northern property boundary and under the proposed floating docks in the Northwest Corner and the Boathouse.

In accordance with the 2015 Final Modified Consent Decree (Section 7.2 (f)) a portion of the shoreline will be incorporated into a Village-owned park as follows:

- (iv) *The Northwest Corner, including the “extension” thereof created pursuant to the OU-1 ROD Amendment (constituting approximately 2 acres);*
- (v) *Approximately 2.5 acres consisting of a strip of land 30 feet in width on average and paralleling the Hudson River for the length of the Site and meeting the following criteria:*
 - a. *The 2.5-acre strip of land shall be located between the elevation Local Mean Sea Level (LMSL) +8 mark of the Sloped Shoreline and a line no further inland than 110 feet from the mean low water mark;*
 - b. *Some or all of the 2.5-acre strip of land may be located within the area designated as the Sloped Shoreline;*
 - c. *The designated 2.5 acres of Open Space shall be substantially flat and shall be suitable for, and intended for, the future construction of a walkway; and*
 - d. *The final location of the 2.5 acres of Open Space shall be identified in the Remedial Design, subject to the approval of the Village, not to be unreasonably withheld, and any permitting or approvals necessary from other governmental authorities.*
- (vi) *An additional 1.75 acres consistent with the location of Open Space on a development proposal for the Site formally submitted to the Village for its approval.*

A breakdown of the “Village-owned park” areas as proposed within the Conceptual Shoreline Design is summarized in the following Table 9 and shown in Figure 16. It is important to note, the additional acreage in exceedance of the 2015 Final Modified Consent Decree allotment is due to the incorporation of created wetlands (to meet mitigation requirements) plus the associated required setbacks.

Table 9. Breakdown of parkland preservation in proposed conceptual design compared to 2015 Final Modified Consent Decree

	<u>Proposed</u> <u>“Village-Owned Park”</u>	<u>2015 Final Modified</u> <u>Consent Decree</u>
	Acres	
Northwest Extension Area (NEA)	1.91	2.00
Shoreline A	0.19	2.50
Shoreline B	0.85	
Shoreline C	1.55	
Shoreline D (surrounding mitigation area)	0.36	0.00
Total	4.86	4.50

8. References

- FEMA, 2014a. FEMA's Preliminary & Pending National Flood Hazard Layer Mapping. <https://fema.maps.arcgis.com/home/webmap/viewer.html>
- FEMA, 2014b. Preliminary Flood Insurance Study: Westchester County, New York. Study Number 36119CV001B. December 8, 2014.
- Haley and Aldrich, 2015. Pre-design Investigation Data Summary Report, Former anaconda Wire and Cable Plant Site. Hastings-on-Hudson, New York, NYSDEC Site #360-022. File No. 28612. August 10, 2015.
- New York City Panel on Climate Change, 2009. Climate Risk Information. New York City Panel on Climate Change, Science Planning Team, and Mayor's Office of Long-Term Planning and Sustainability. February 17, 2009.
- Scenic Hudson, Inc. 2010. Revitalizing Hudson Riverfronts: Illustrated Conservation and Development Strategies for Creating Healthy, Prosperous Communities. Scenic Hudson, Poughkeepsie, NY.
- Waterfront Infrastructure Committee, 2015. Final Report. Hastings-on-Hudson, New York. April 1, 2015.
- United States District Court for the Southern District of New York, 2015. 2015 Modification to the 2003 Consent Decree. Hudson Riverkeeper Fund, Inc. and Village of Hastings-on-Hudson v. Atlantic Richfield Company. Civil Action No. 94-2741.

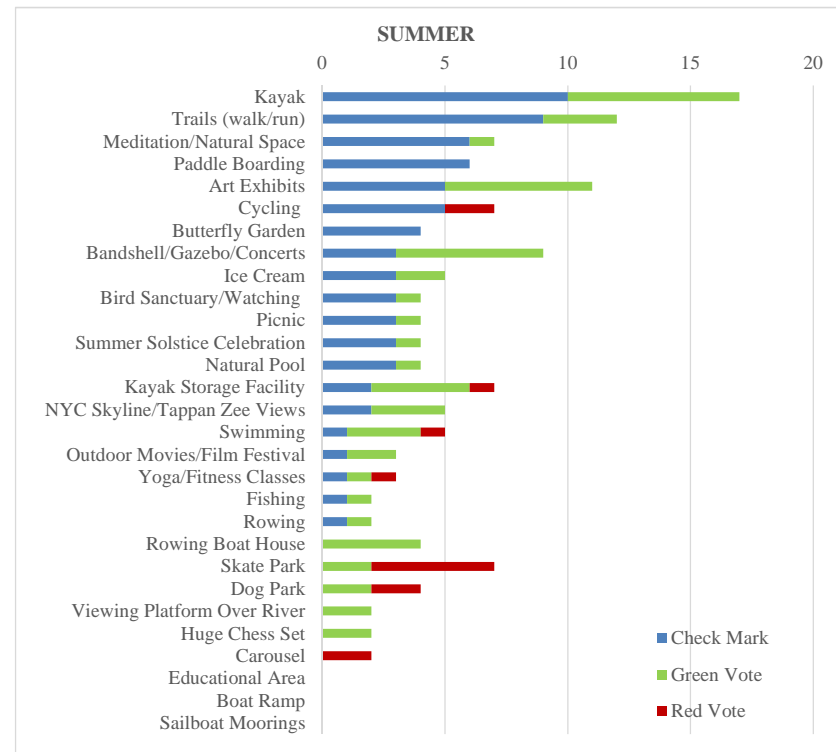
Conceptual Shoreline Design– Anaconda Wire & Cable Plant
1 River Street, Hastings-On-Hudson, New York

TABLES

1. Results of Public Meeting Banner Exercise: Seasons
2. Results of Public Meeting Banner Exercise: Identity and Parking Lot
3. Summary of preferred shoreline elements from Public Meeting
(*Embedded*)
4. Summary of major design elements and location by conceptual design
option (*Embedded*)
5. Summary of major design elements and location to be further
developed in the preferred conceptual design (*Embedded*)
6. Summary of feedback received by NYSDEC regarding draft
conceptual shoreline design (*Embedded*)
7. Breakdown of defined shoreline area for existing Site conditions
versus proposed conditions based upon the proposed conceptual
shoreline design (*Embedded*)
8. Breakdown of water resource classifications for existing Site conditions
versus proposed conditions based upon the conceptual shoreline
design (*Embedded*)
9. Breakdown of parkland preservation in proposed conceptual design
compared to 2015 Final Modified Consent Decree (*Embedded*)

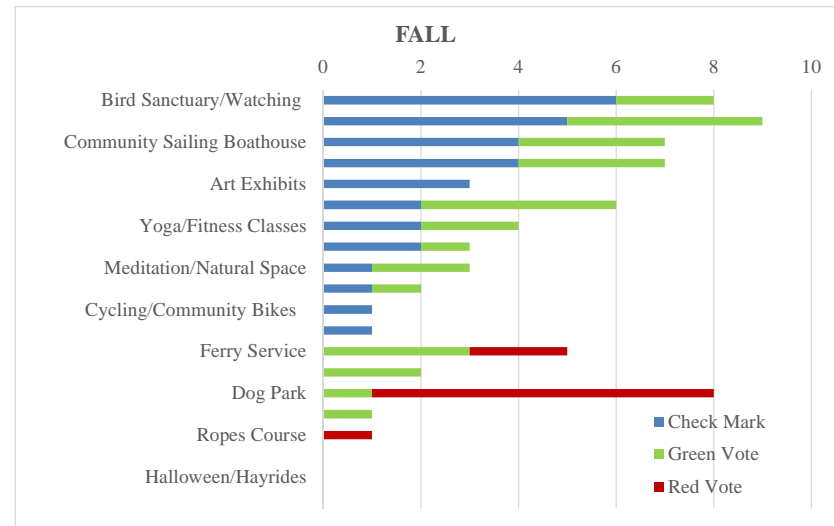
**Table 1. Results of Public Meeting Banner Exercise: Seasons
Conceptual Shoreline Design
Village of Hastings-on-Hudson, New York**

SUMMER	Check Mark	Green Vote	Red Vote
Kayak	10	7	0
Trails (walk/run)	9	3	0
Meditation/Natural Space	6	1	0
Paddle Boarding	6	0	0
Art Exhibits	5	6	0
Cycling	5	0	2
Butterfly Garden	4	0	0
Bandshell/Gazebo/Concerts	3	6	0
Ice Cream	3	2	0
Bird Sanctuary/Watching	3	1	0
Picnic	3	1	0
Summer Solstice Celebration	3	1	0
Natural Pool	3	1	0
Kayak Storage Facility	2	4	1
NYC Skyline/Tappan Zee Views	2	3	0
Swimming	1	3	1
Outdoor Movies/Film Festival	1	2	0
Yoga/Fitness Classes	1	1	1
Fishing	1	1	0
Rowing	1	1	0
Rowing Boat House	0	4	0
Skate Park	0	2	5
Dog Park	0	2	2
Viewing Platform Over River	0	2	0
Huge Chess Set	0	2	0
Carousel	0	0	2
Educational Area	0	0	0
Boat Ramp	0	0	0
Sailboat Moorings	0	0	0

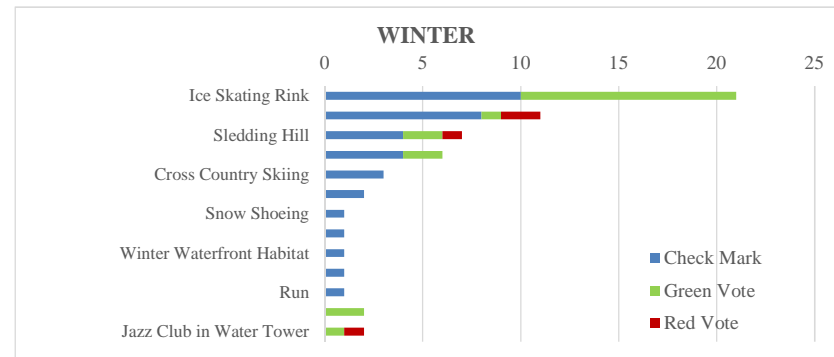


**Table 1. Results of Public Meeting Banner Exercise: Seasons
Conceptual Shoreline Design
Village of Hastings-on-Hudson, New York**

FALL	Check Mark	Green Vote	Red Vote
Bird Sanctuary/Watching	6	2	0
Trails (walk/run)	5	4	0
Community Sailing Boathouse	4	3	0
Bonfire Rings with Seating	4	3	0
Art Exhibits	3	0	0
Food Markets/Food Truck	2	4	0
Yoga/Fitness Classes	2	2	0
Sunset Viewing/Bar	2	1	0
Meditation/Natural Space	1	2	0
Educational Area/Classroom Space	1	1	0
Cycling/Community Bikes	1	0	0
Ping Pong	1	0	0
Ferry Service	0	3	2
Basketball Court	0	2	0
Dog Park	0	1	7
Cider Pressing	0	1	0
Ropes Course	0	0	1
Carnival	0	0	0
Halloween/Hayrides	0	0	0
Compost Demo Area	0	0	0



WINTER	Check Mark	Green Vote	Red Vote
Ice Skating Rink	10	11	0
Café	8	1	2
Sledding Hill	4	2	1
Star Gazing Site	4	2	0
Cross Country Skiing	3	0	0
Toboggan	2	0	0
Snow Shoeing	1	0	0
Kayaking	1	0	0
Winter Waterfront Habitat	1	0	0
Winter Art Festival	1	0	0
Run	1	0	0
View/Interpret Palisades	0	2	0
Jazz Club in Water Tower	0	1	1



SPRING	Check Mark	Green Vote	Red Vote
Trails (walk/run)	12	5	0
Bird Sanctuary/Watching	8	6	0
Plant Native Flora	6	5	0
Kayak	5	2	0
Guided Nature Walks	3	7	1
Benches	2	0	0
Fishing	2	0	0
Bandshell/Gazebo/Concerts	1	10	2
Food Festival	1	2	0
Swimming	1	0	0
Educational Area	1	0	0
Open Mic	0	0	2
Yoga Classes	0	0	1

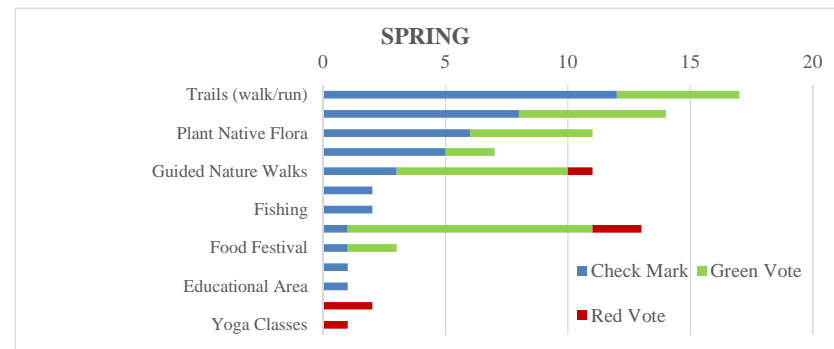
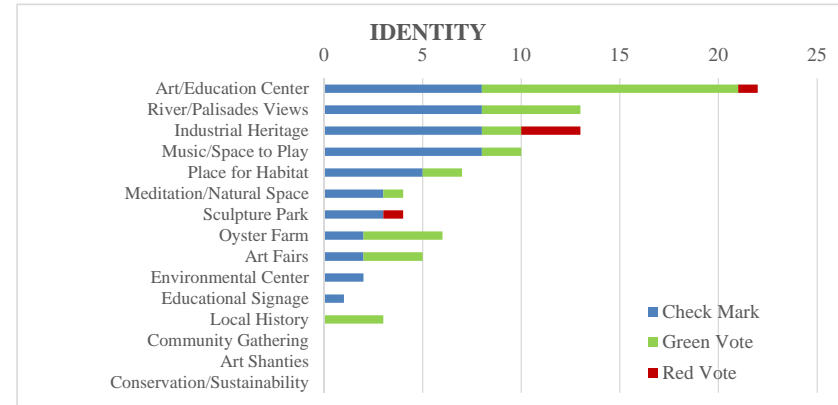
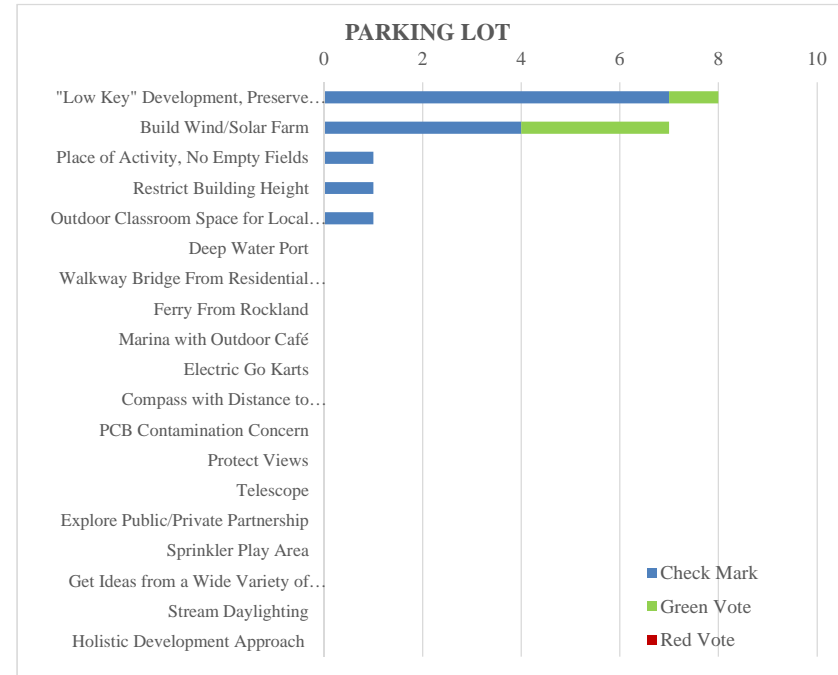


Table 2. Results of Public Meeting Banner Exercise: Identity and Parking Lot
Conceptual Shoreline Design
Village of Hastings-on-Hudson, New York

IDENTITY	Check Mark	Green Vote	Red Vote
Art/Education Center	8	13	1
River/Palisades Views	8	5	0
Industrial Heritage	8	2	3
Music/Space to Play	8	2	0
Place for Habitat	5	2	0
Meditation/Natural Space	3	1	0
Sculpture Park	3	0	1
Oyster Farm	2	4	0
Art Fairs	2	3	0
Environmental Center	2	0	0
Educational Signage	1	0	0
Local History	0	3	0
Community Gathering	0	0	0
Art Shanties	0	0	0
Conservation/Sustainability	0	0	0



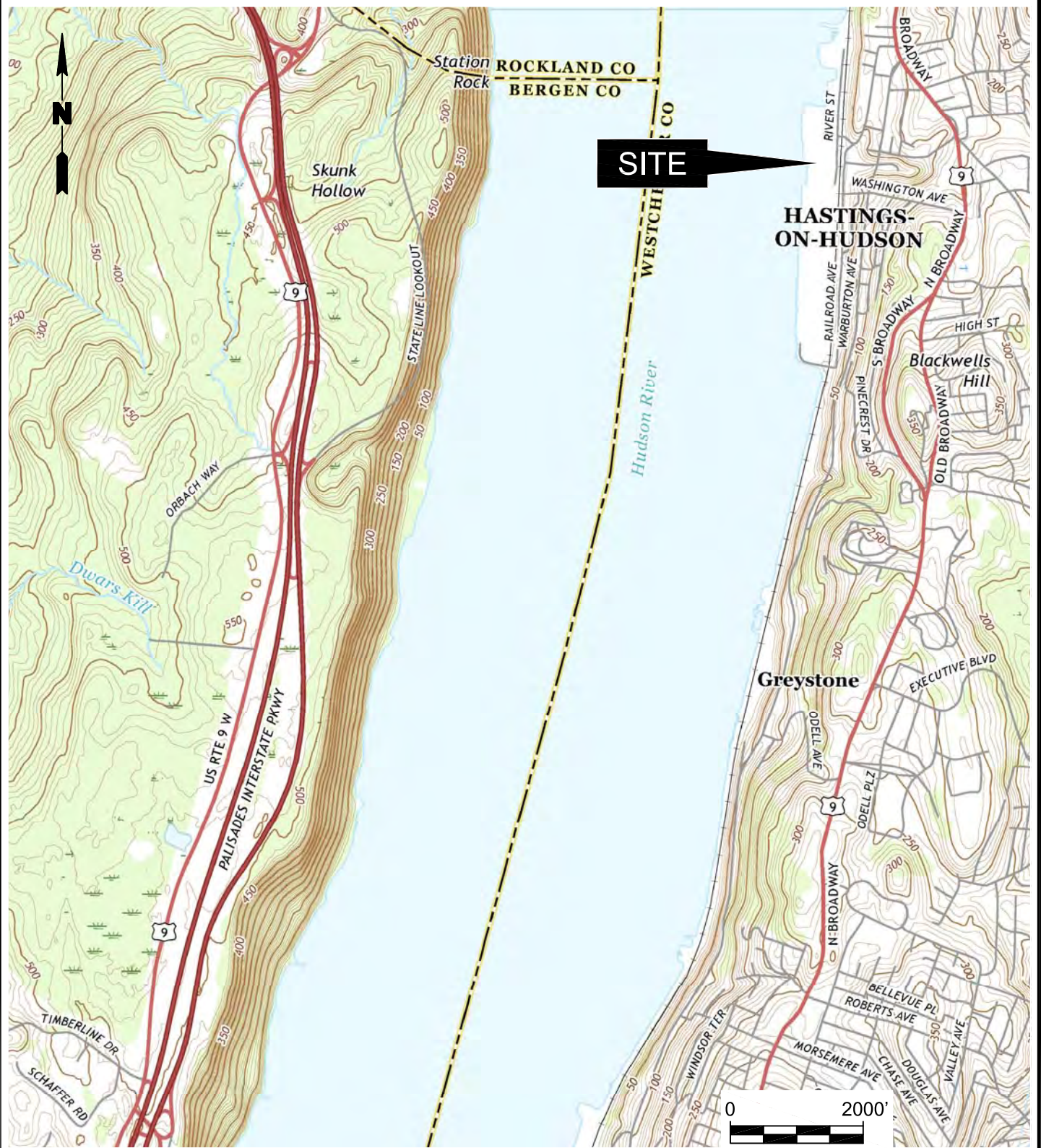
PARKING LOT	Check Mark	Green Vote	Red Vote
"Low Key" Development, Preserve Views, Limit Tourism	7	1	0
Build Wind/Solar Farm	4	3	0
Place of Activity, No Empty Fields	1	0	0
Restrict Building Height	1	0	0
Outdoor Classroom Space for Local Schools	1	0	0
Deep Water Port	0	0	0
Walkway Bridge From Residential Area to Waterfront	0	0	0
Ferry From Rockland	0	0	0
Marina with Outdoor Café	0	0	0
Electric Go Karts	0	0	0
Compass with Distance to Countries/Cities	0	0	0
PCB Contamination Concern	0	0	0
Protect Views	0	0	0
Telescope	0	0	0
Explore Public/Private Partnership	0	0	0
Sprinkler Play Area	0	0	0
Get Ideas from a Wide Variety of Waterfront Developments	0	0	0
Stream Daylighting	0	0	0
Holistic Development Approach	0	0	0



Conceptual Shoreline Design – Anaconda Wire & Cable Plant
1 River Street, Hastings-On-Hudson, New York

FIGURES

1. Site Location Map
2. Site Context Map
3. Shoreline Limits of Work
4. Conceptual Sketch – Option A
5. Conceptual Sketch – Option B
6. Conceptual Sketch – Option C
7. Conceptual Sketch – Preferred Option
8. DRAFT Conceptual Design
9. Conceptual Sketch – Revised Preferred Option
10. Revised DRAFT Conceptual Design
11. FINAL Conceptual Design Plan View
12. FINAL Conceptual Design Sections
13. FINAL Conceptual Design Renderings 1
14. FINAL Conceptual Design Renderings 2
15. FINAL Conceptual Design Renderings 3
16. Village Owned Park



QUADRANGLE LOCATION



SOURCE:
USGS; 2016, Yonkers, NY-NJ
7.5 Minute Topographic Quadrangle



Title:

SITE LOCATION MAP

Prepared For: VILLAGE OF HASTINGS-ON-HUDSON
7 MAPLE AVENUE,
HASTINGS-ON-HUDSON, NEW YORK, 10706



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Project Mgr:	Project:
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FIGURE

1

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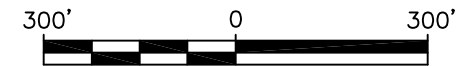


Title:			
SITE CONTEXT MAP			
Prepared For: VILLAGE OF HASTINGS-ON-HUDSON 7 MAPLE AVENUE, HASTINGS-ON-HUDSON, NEW YORK, 10706			
ROUX	Compiled by: A.L.	Date: 07MAR18	FIGURE 2
	Prepared by: G.M.	Scale: AS SHOWN	
	Project Mgr: A.L.	Project: 2831.0001Y000	
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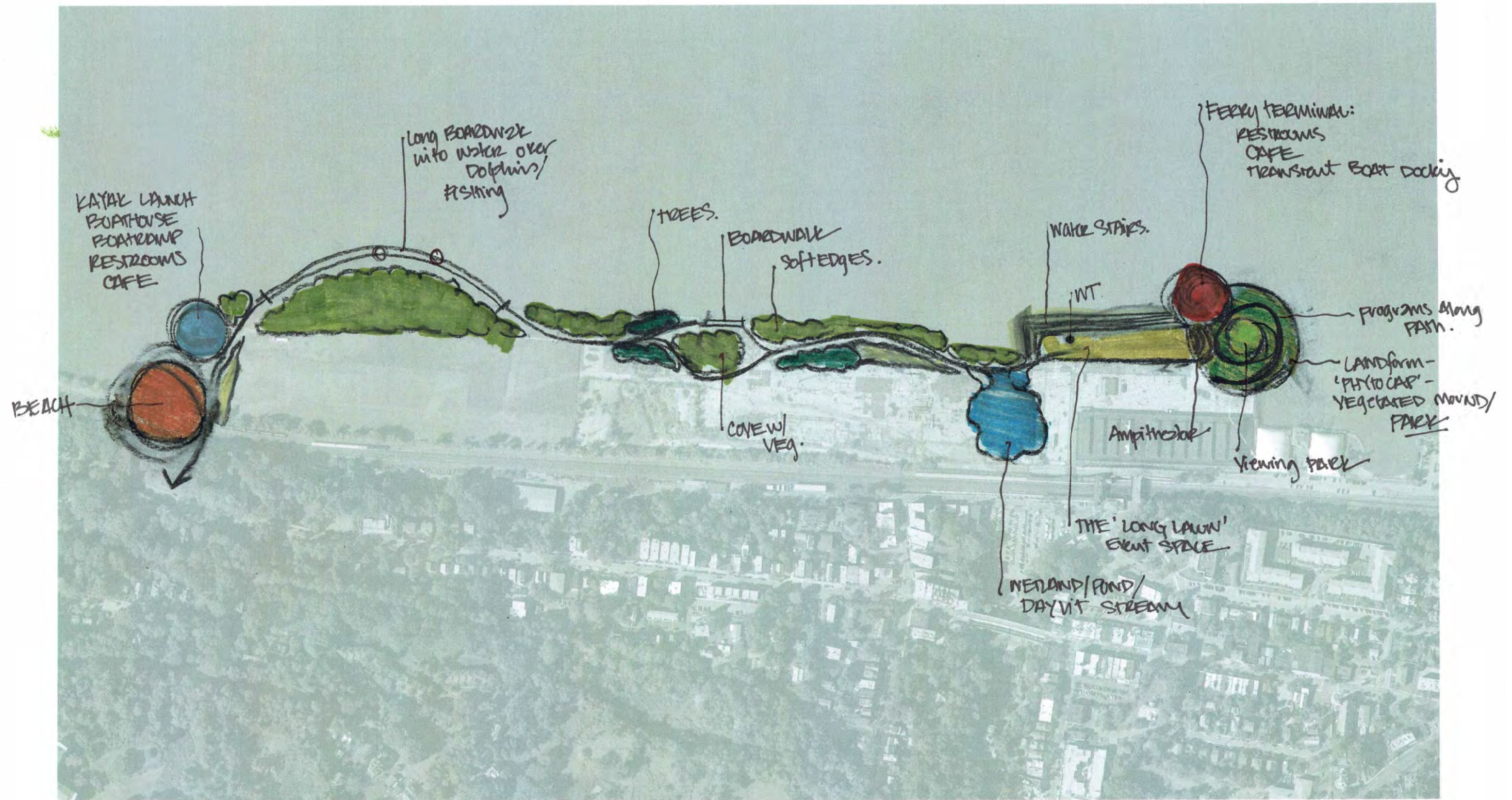
- LEGEND
- SHORELINE LIMITS OF WORK
 - EXXONMOBIL PROPERTY
 - UHLICH PROPERTY
 - FORMER ANACONDA WIRE & CABLE PROPERTY



Title: SHORELINE LIMITS OF WORK			
Prepared For: VILLAGE OF HASTINGS-ON-HUDSON 7 MAPLE AVENUE, HASTINGS-ON-HUDSON, NEW YORK, 10706			
	Compiled by: A.L.	Date: 07MAR18	FIGURE 3
	Prepared by: G.M.	Scale: AS SHOWN	
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Title:

CONCEPTUAL SKETCH OPTION A

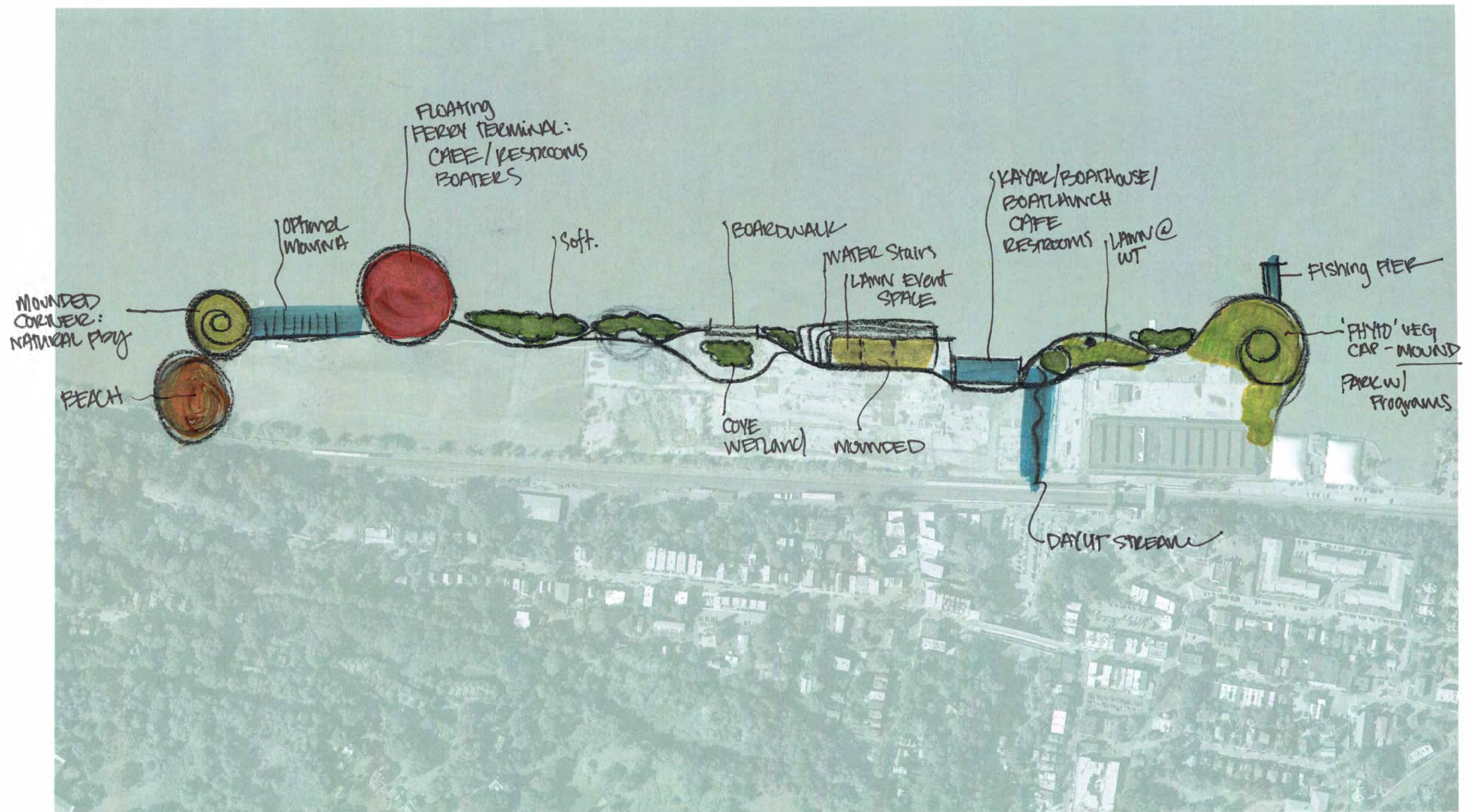
Prepared For: VILLAGE OF HASTINGS-ON-HUDSON
7 MAPLE AVENUE,
HASTINGS-ON-HUDSON, NEW YORK, 10706

Compiled by: A.L.	Date: 07MAR18	FIGURE 4
Prepared by: G.M.	Scale: AS SHOWN	
Project Mgr: A.L.	Project: 2831.0001Y000	
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offshoots
PRODUCTIVE LANDSCAPES

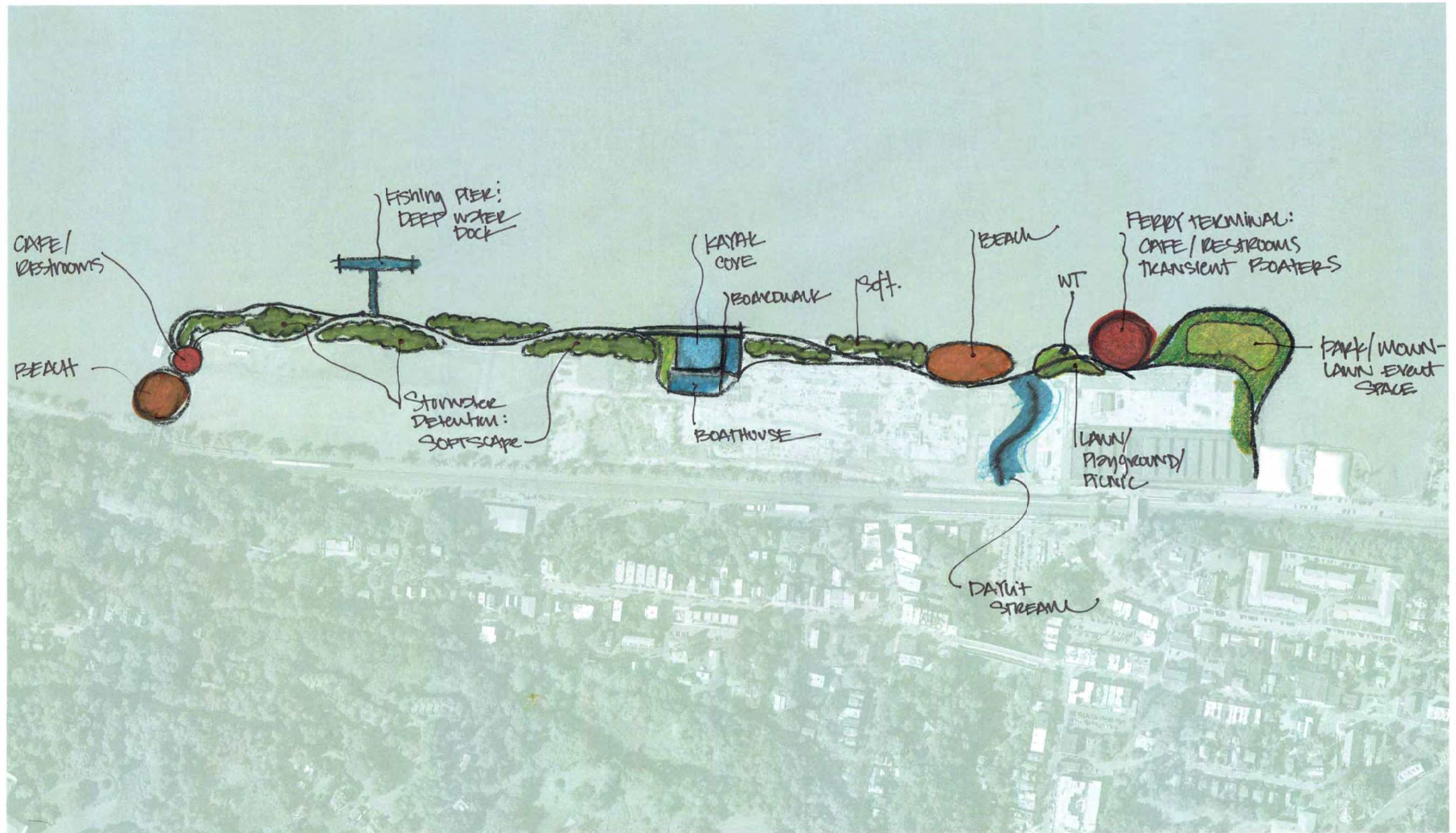
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CONCEPTUAL SKETCH OPTION B			
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Compiled by: A.L.	Date: 07MAR18	FIGURE	
Prepared by: G.M.	Scale: AS SHOWN	5	
Project Mgr: A.L.	Project: 2831.0001Y000		
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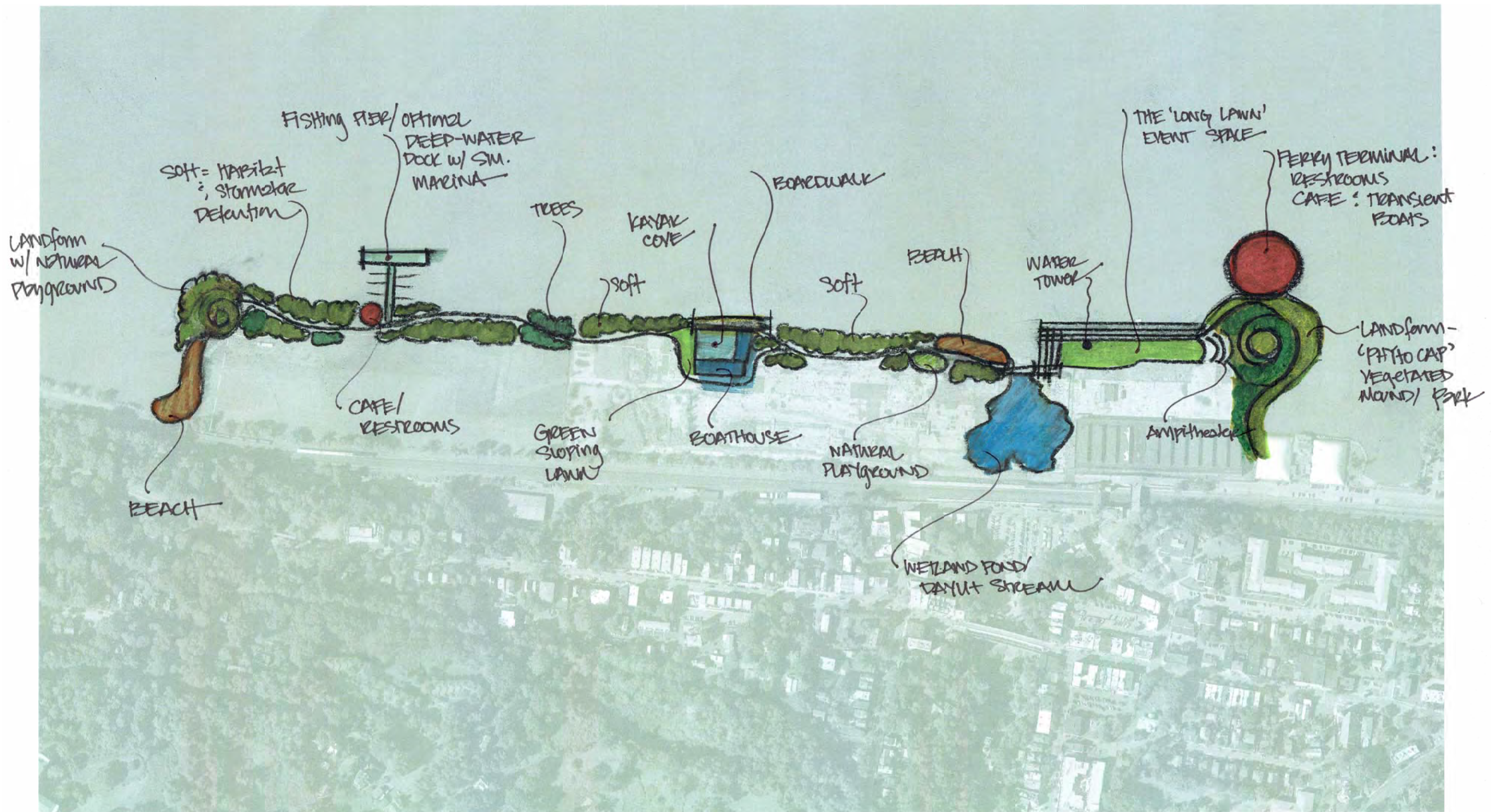
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Title: CONCEPTUAL SKETCH OPTION C			
Prepared For: VILLAGE OF HASTINGS-ON-HUDSON 7 MAPLE AVENUE, HASTINGS-ON-HUDSON, NEW YORK, 10706			
Compiled by: A.L.	Date: 07MAR18	FIGURE 6	
Prepared by: G.M.	Scale: AS SHOWN		
Project Mgr: A.L.	Project: 2831.0001Y000		
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Title:			
CONCEPTUAL SKETCH PREFERRED OPTION			
Prepared For: VILLAGE OF HASTINGS-ON-HUDSON 7 MAPLE AVENUE, HASTINGS-ON-HUDSON, NEW YORK, 10706			
Compiled by: A.L.	Date: 07MAR18	FIGURE	
Prepared by: G.M.	Scale: AS SHOWN	7	
Project Mgr: A.L.	Project: 2831.0001Y000		
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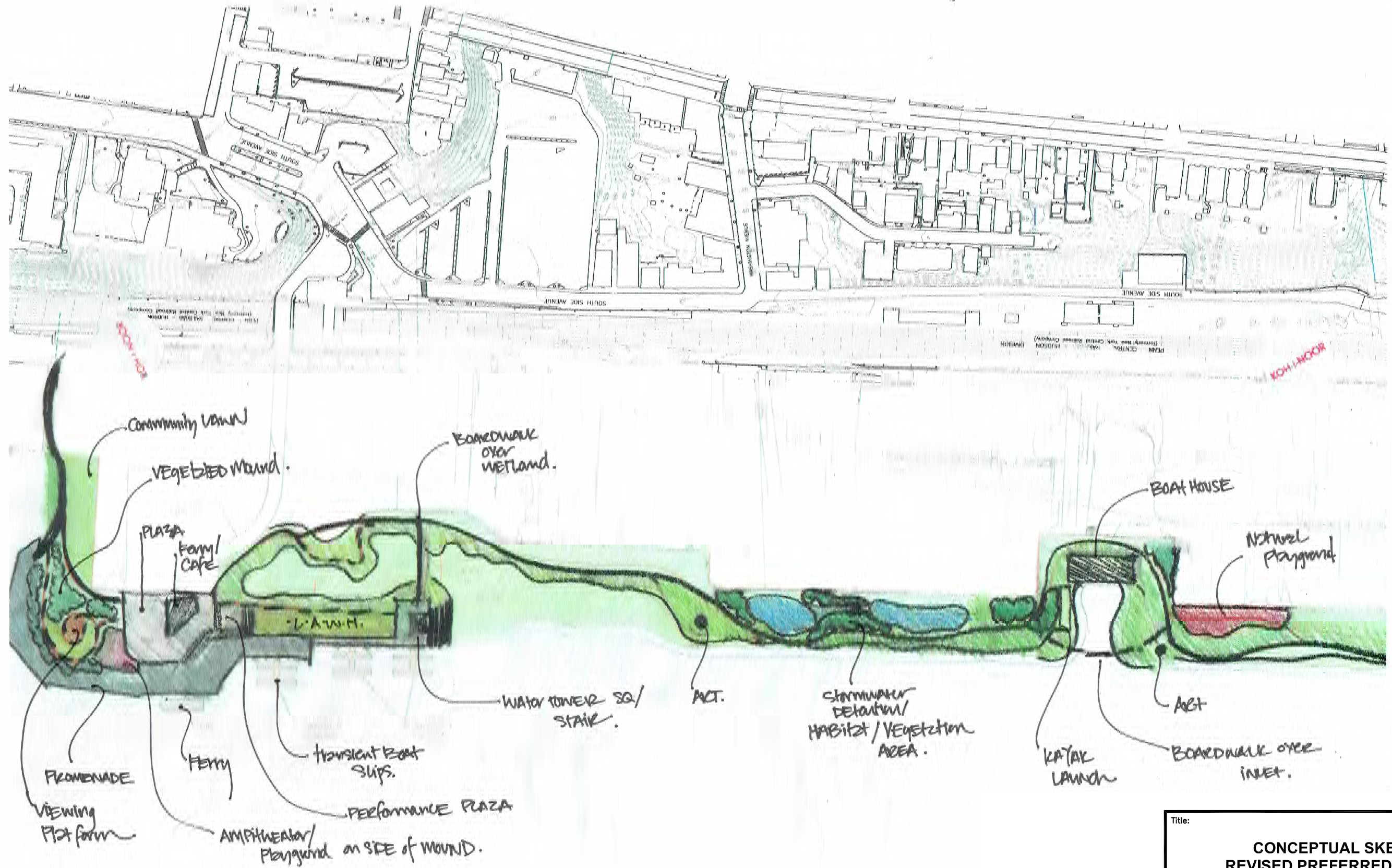


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Title: DRAFT CONCEPTUAL DESIGN			
Prepared For: VILLAGE OF HASTINGS-ON-HUDSON 7 MAPLE AVENUE, HASTINGS-ON-HUDSON, NEW YORK, 10706			
ROUX	Compiled by: A.L.	Date: 07MAR18	FIGURE 8
	Prepared by: G.M.	Scale: AS SHOWN	
	Project Mgr: A.L.	Project: 2831.0001Y000	
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Title: CONCEPTUAL SKETCH REVISED PREFERRED OPTION			
Prepared For: VILLAGE OF HASTINGS-ON-HUDSON 7 MAPLE AVENUE, HASTINGS-ON-HUDSON, NEW YORK, 10706			
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Plan
1"=50'



Title: DRAFT CONCEPTUAL DESIGN PLAN			
Prepared For: VILLAGE OF HASTINGS-ON-HUDSON 7 MAPLE AVENUE, HASTINGS-ON-HUDSON, NEW YORK, 10706			
	Compiled by: A.L.	Date: 07MAR18	FIGURE 10
	Prepared by: G.M.	Scale: AS SHOWN	
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Plan
1"=50'



Title: FINAL CONCEPTUAL DESIGN PLAN			
Prepared For: VILLAGE OF HASTINGS-ON-HUDSON 7 MAPLE AVENUE, HASTINGS-ON-HUDSON, NEW YORK, 10706			
ROUX	Compiled by: A.L.	Date: 07MAR18	FIGURE 11
	Prepared by: G.M.	Scale: AS SHOWN	
	Project Mgr: A.L.	Project: 2831.0001Y000	
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Section A
1" = 20'



Section B
1" = 20'



Section C
1" = 20'



Title: FINAL CONCEPTUAL DESIGN SECTIONS			
Prepared For: VILLAGE OF HASTINGS-ON-HUDSON 7 MAPLE AVENUE, HASTINGS-ON-HUDSON, NEW YORK, 10706			
	Compiled by: A.L.	Date: 07MAR18	FIGURE 12
	Prepared by: G.M.	Scale: AS SHOWN	
	Project Mgr: A.L.	Project: 2831.0001Y000	
	File: 2831.0001Y104.02.DWG		



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Title:

CONCEPTUAL DESIGN RENDERING 1

Prepared For: VILLAGE OF HASTINGS-ON-HUDSON
7 MAPLE AVENUE,
HASTINGS-ON-HUDSON, NEW YORK, 10706

ROUX

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Prepared by:	Scale: AS SHOWN
Project Mgr:	Project:
File: 2831.0001Y104.02.DWG	

FIGURE

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Title:

CONCEPTUAL DESIGN RENDERING 2

Prepared For: VILLAGE OF HASTINGS-ON-HUDSON
7 MAPLE AVENUE,
HASTINGS-ON-HUDSON, NEW YORK, 10706

Compiled by: A.L.	Date: 07MAR18	FIGURE 14
Prepared by: G.M.	Scale: AS SHOWN	
Project Mgr: A.L.	Project: 2831.0001Y000	
File: 2831.0001Y104.02.DWG		



V:\CAD\PROJECTS\2831\0001\104\2831.0001Y104.02.DWG




Title:			
CONCEPTUAL DESIGN RENDERING 3			
Prepared For: VILLAGE OF HASTINGS-ON-HUDSON 7 MAPLE AVENUE, HASTINGS-ON-HUDSON, NEW YORK, 10706			
ROUX	Compiled by: A.L.	Date: 07MAR18	FIGURE 15
	Prepared by: G.M.	Scale: AS SHOWN	
	Project Mgr: A.L.	Project: 2831.0001Y000	
	File: 2831.0001Y104.02.DWG		



C:\USERS\ALUDLOW\DESKTOP\MISC\HASTING ON HUDSON\FINAL REPORT\2831.0001Y104.02.DWG



Title:			
"VILLAGE-OWNED PARK"			
Prepared For: VILLAGE OF HASTINGS—ON—HUDSON 7 MAPLE AVENUE, HASTINGS—ON—HUDSON, NEW YORK, 10706			
	Compiled by: A.L.	Date: 31MAY18	FIGURE 16
	Prepared by: G.M.	Scale: AS SHOWN	
	Project Mgr: A.L.	Project: 2831.0001Y000	
	File: 2831.0001Y104.02.DWG		

Conceptual Shoreline Design – Anaconda Wire & Cable Plant
1 River Street, Hastings-On-Hudson, New York

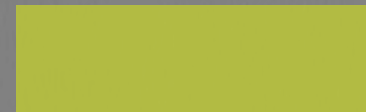
APPENDICES

- A. Public Meeting Presentation January 18, 2017
- B. Public Meeting Photographs
- C. NYSDEC Meeting March 13, 2017
- D. NYSDEC Meeting July 25, 2017
- E. Village of Hastings-on-Hudson Board of Trustees Meeting –
Presentation of Conceptual Design January 15, 2018

Conceptual Shoreline Design – Anaconda Wire & Cable Plant
1 River Street, Hastings-On-Hudson, New York

APPENDIX A

Public Meeting Presentation
January 18, 2017



A scenic landscape photograph showing a wide river or lake under a blue sky with scattered clouds. In the foreground, several bare, dark trees with intricate branch structures are silhouetted against the sky and water. Below the trees, the dark, sloping roofs of several buildings are visible. In the middle ground, a tall, slender metal water tower stands on the left side of the riverbank. The far bank of the river is a dark, forested hill. The overall lighting suggests a late afternoon or early morning setting.

Mayor Peter Swiderski
& Anthony Devito

Agenda

Slide Presentation
30-40 Minutes



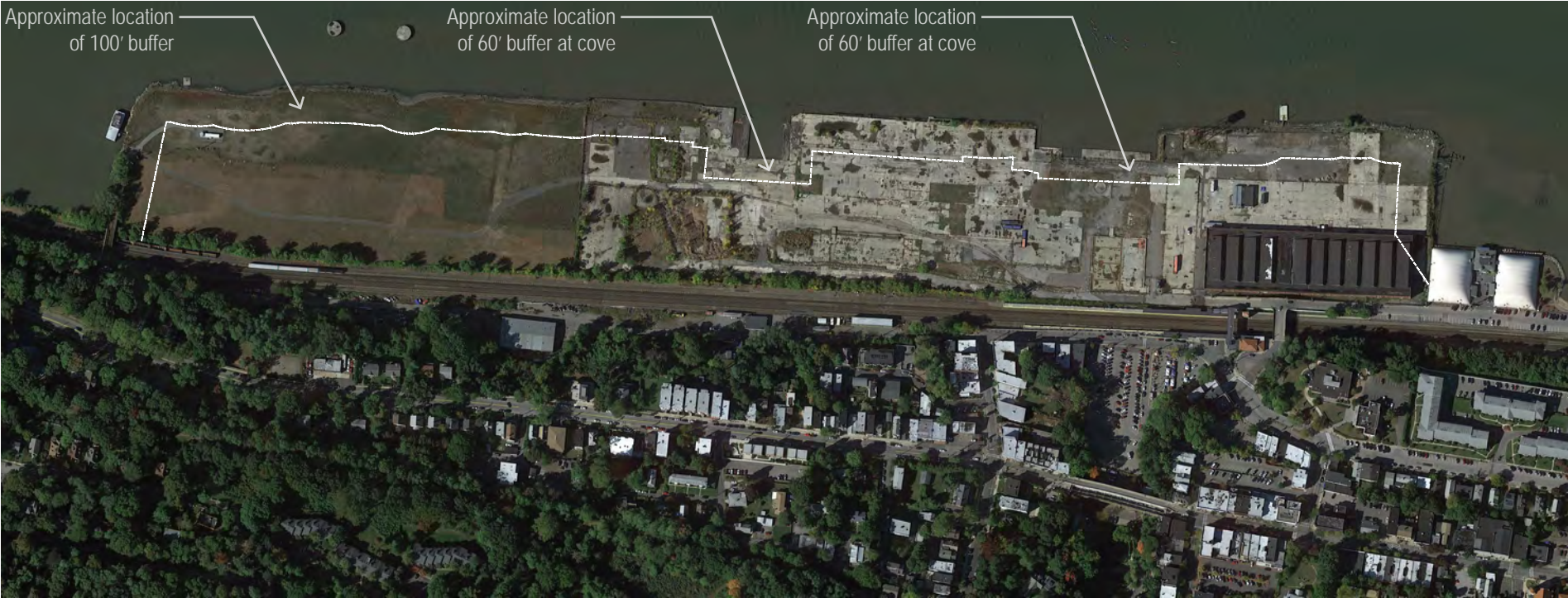
Banners- 35 Minutes

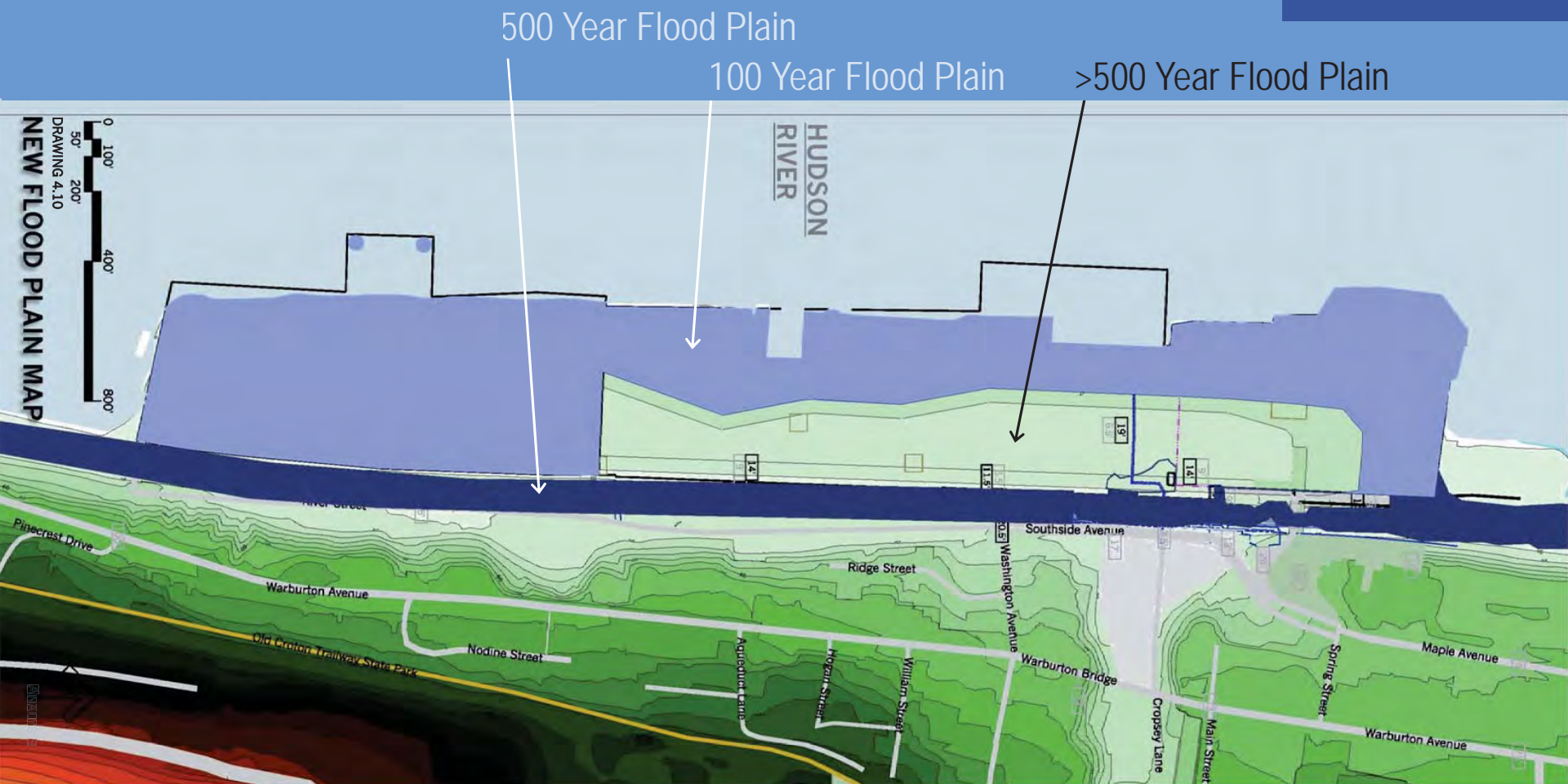
Mapping- 45 Minutes

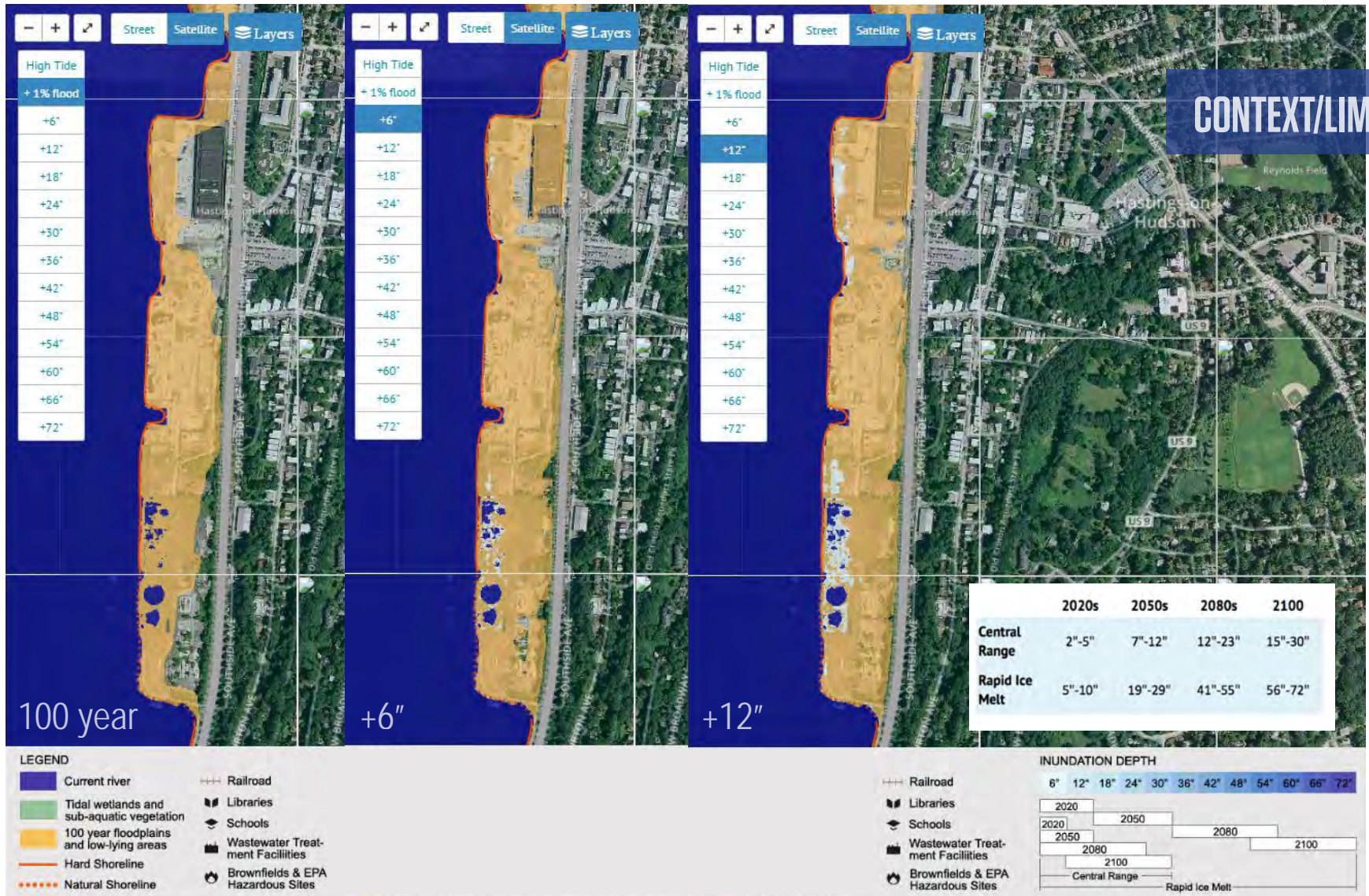
Hastings-On-Hudson

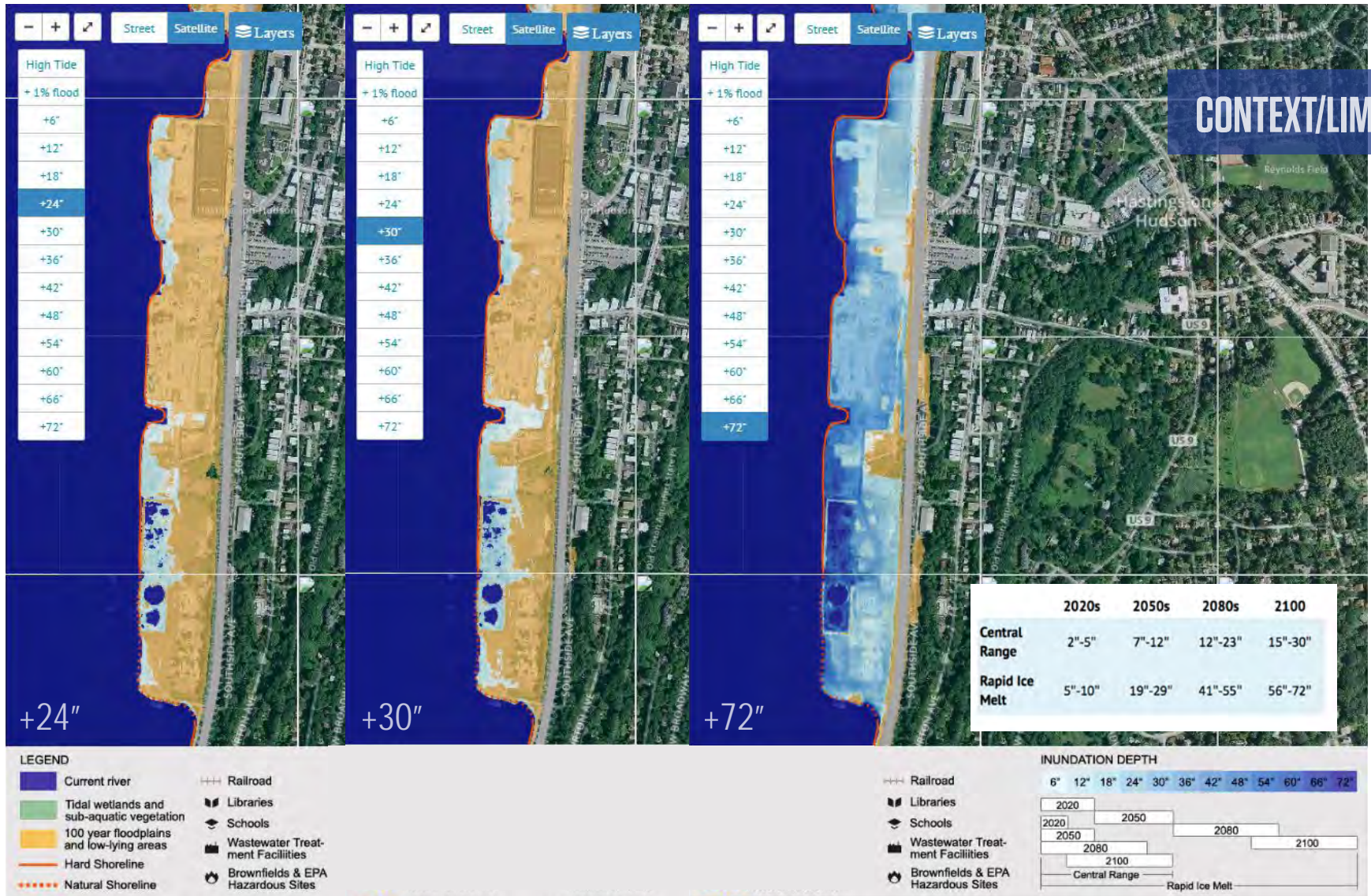
CONTEXT/LIMITS







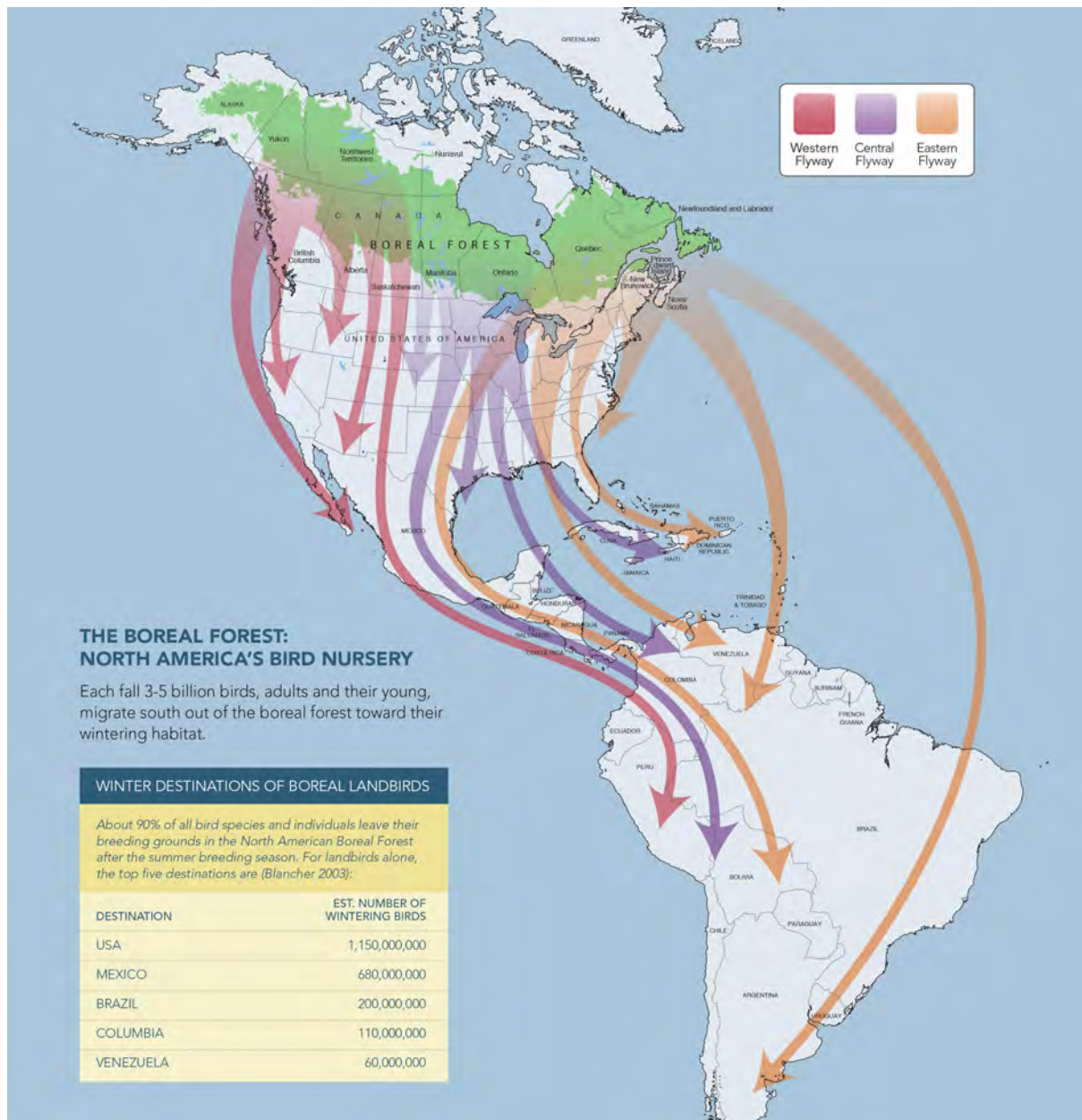






OPEN SPACE & TRAIL NETWORK

Trailway Map of
Hastings-On Hudson, NY
Greenway Conservancy +
Greenway Council



EASTERN FLYWAY

1 Water Based Uses

- kayaking and canoing
- beaches
- fishing pier
- swimming
- pier or dock (for tour or ferry boats)
- marina for transient boaters

2 Land Based Uses

- walking/strolling
- picnicking
- nature trails
- playgrounds
- biking
- physical fitness course

VILLAGE SURVEY

June 2013
704 participants
98% Hastings residents



PHOTO 4.18 — BEACH



PHOTO 4.17 — SOFT EDGE



PHOTO 4.15 — BOARDWALK/NATURE TRAIL



PHOTO 4.13 — RIP RAP AND SEAWALL



PHOTO 4.16 — IN-WATER DOLPHINS



PHOTO 4.14 — HIGH PLATFORM

FINAL REPORT



Tertiary
Infrastructure
Pathway

Secondary
Infrastructure
Pathway

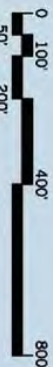
Primary
Infrastructure
Pathway

Existing
Sewer
Pumping
Station

FINAL REPORT

INFRASTRUCTURE PATHWAYS

DRAWING 4.3



1 Project Precedents:

Brooklyn Bridge Park

Long Dock Park

Mill Race Park

2 Program Precedents

3 Community Program Ideas

4 Shoreline Precedents

1. Harbor View Lawn
2. Bridge View Lawn
3. Granite Prospect
4. Vale
5. Promenade
6. Tot Lot
7. Fulton Ferry Landing
8. Water Gardens
9. Salt Marsh
10. Kayak Launch
11. Bicycle and Pedestrian Path
12. Spiral Ramp



BROOKLYN BRIDGE PARK



Designer: MVVA
Brooklyn, NY

CONSTRUCTED TOPOGRAPHY

UNDERGROUND STORAGE TANKS

WATER GARDENS

FUTURE BRIDGE TO SQUIBB PARK

WATERFRONT PROMENADE

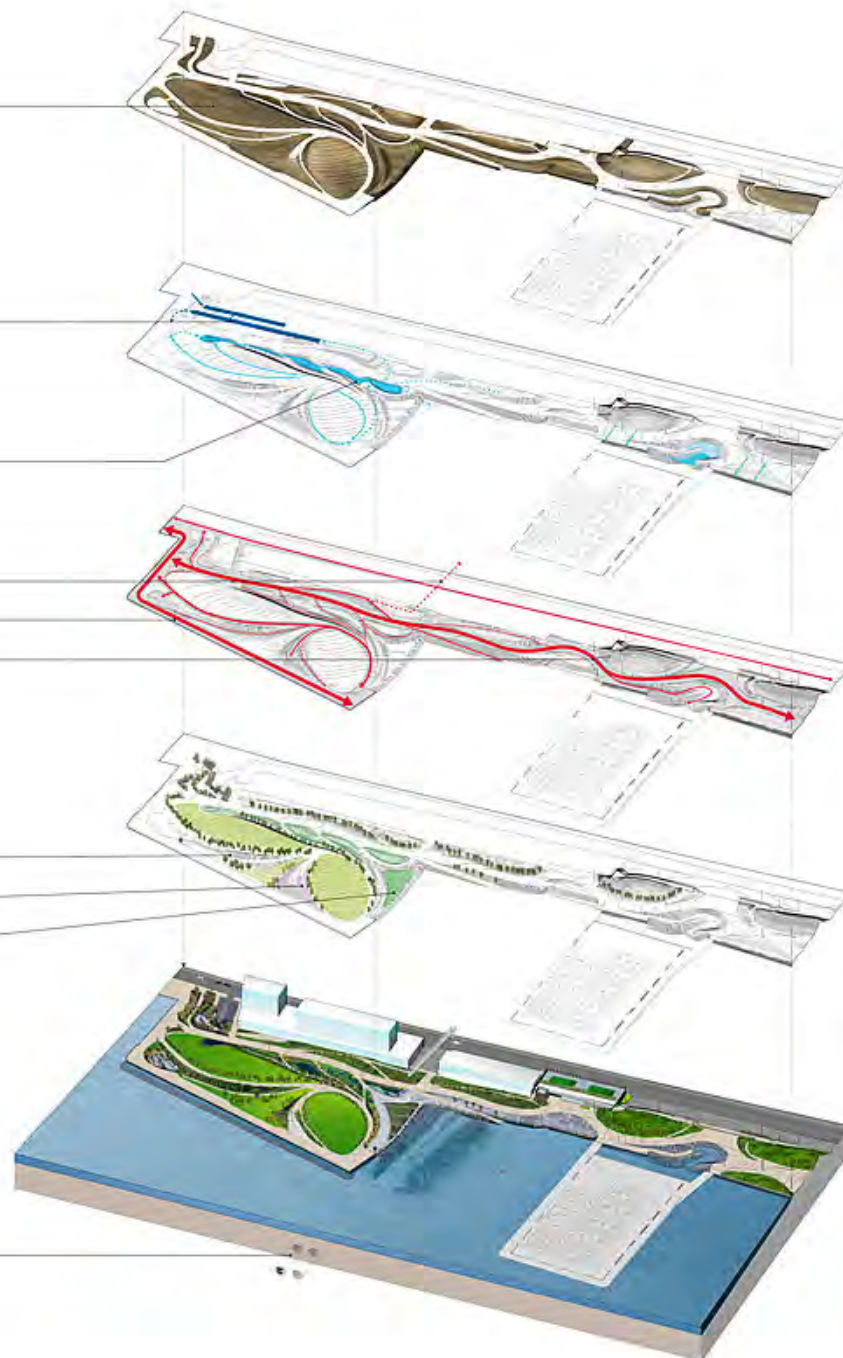
BIKEWAY

SUCCESSIONAL HEDGEROWS

RUGOSA ROSE

CORDGRASS SALT MARSH

MTA SUBWAY TUNNEL







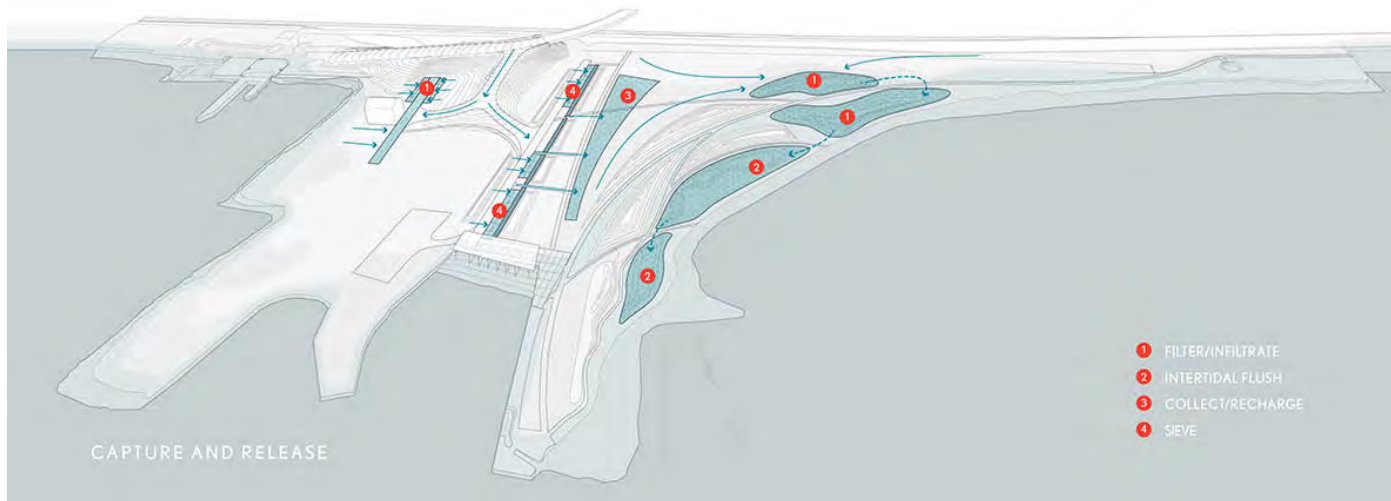
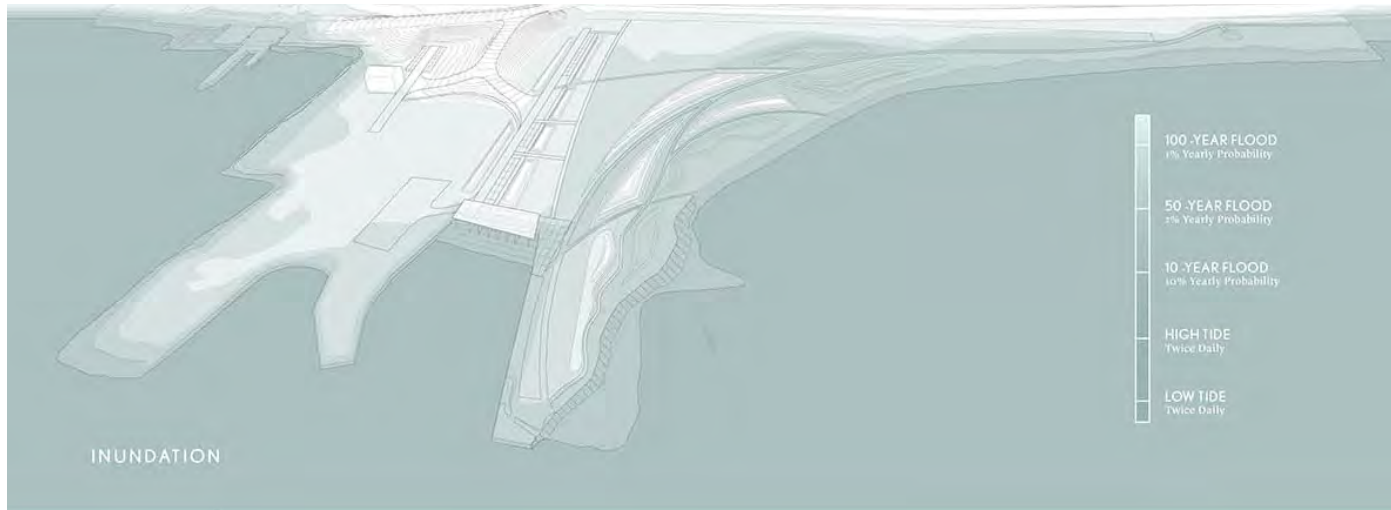




SITE PLAN

LONG DOCK PARK

Designer:
Reed Hilderbrand
Beacon, NY













The River Center at
Long Dock Park
Designer:
Reed Hilderbrand
Beacon, NY



HYANNIS HARBOR CAPE COD



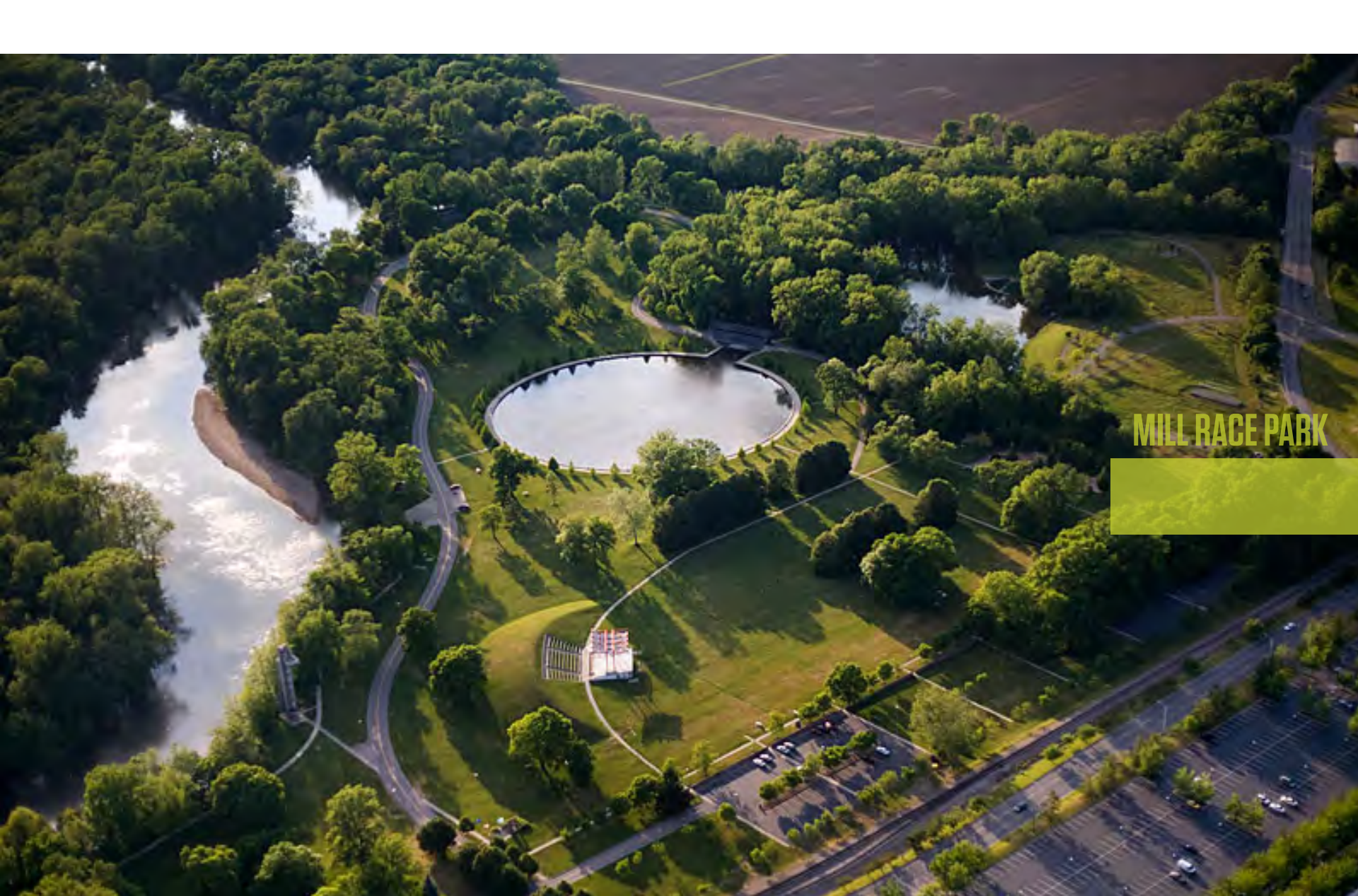












MILL RACE PARK

Mill Race Park
Designer: MVVA
Columbus, IN
1989-1993



1 Project Precedents

2 Program Precedents:

kayak launch
fishing pier/vessel dock
beach
event space
restrooms
marina/boathouse
ferry terminal
food kiosk or small cafe
habitat/vegetation
art

3 Community Program Ideas

4 Shoreline Precedents



KAYAK LAUNCH

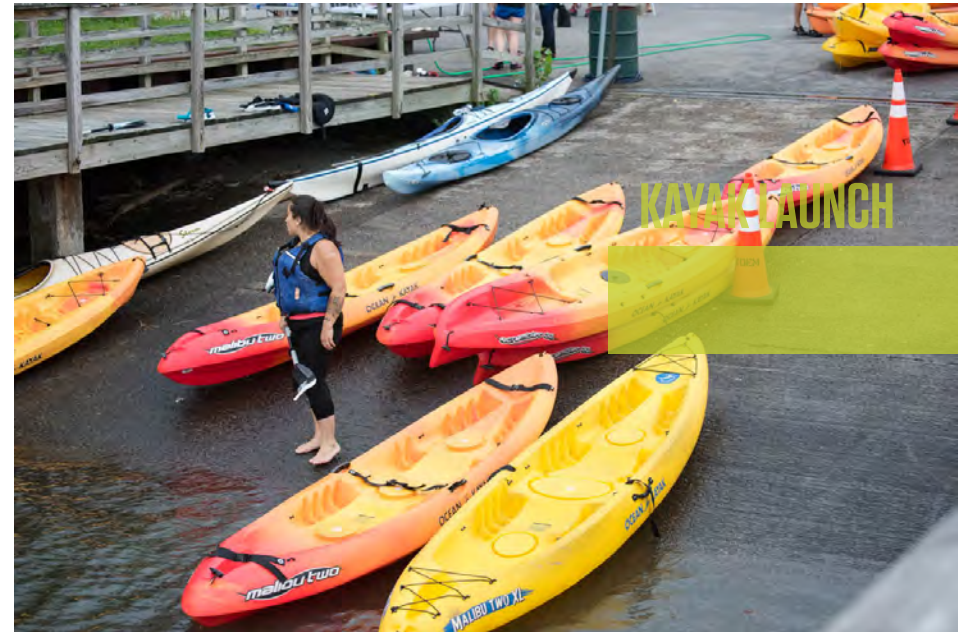


Brooklyn Bridge Park
Designer: MVVA
Brooklyn, NY



KAYAK LAUNCH

Long Dock Park
Designer: MVVA
Beacon, NY



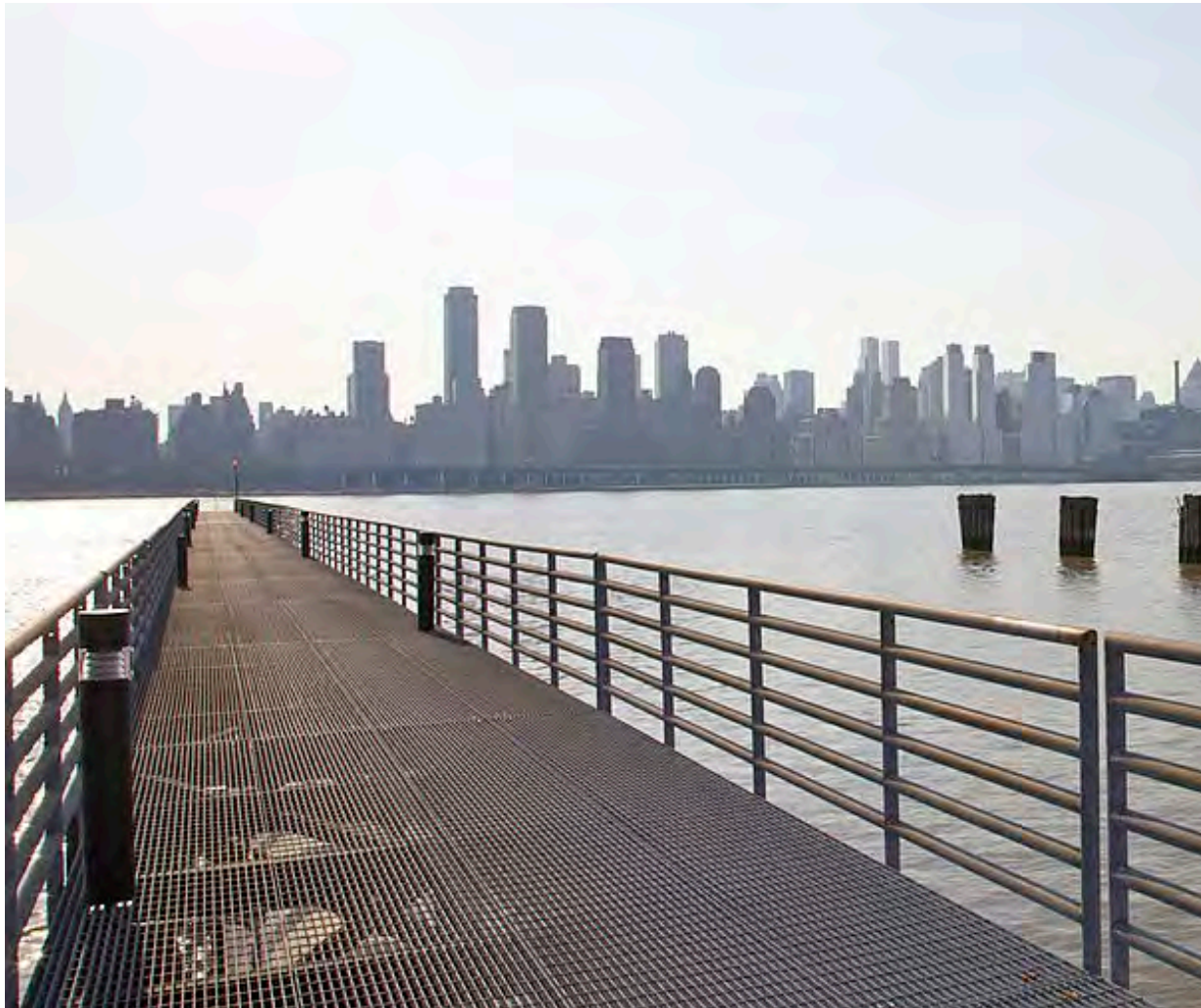


VESSEL DOCK

© 2016 Jim Metzger Photographer

fishing pier

FISHING PIER



Weehawken, NJ

beach



BEACH

Olympic Sculpture
Park Beach
Seattle, WA



event space

EVENT SPACE



event space

EVENT SPACE



event space

EVENT SPACE



event space

EVENT SPACE



event space

EVENT SPACE

OAXACA TAQUERIA

OAXACA
TAQUERIA



event space

EVENT SPACE



RESTROOM





RESTROOM

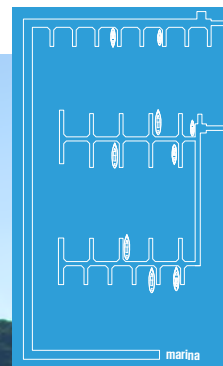
The Portland Loo
Cambridge, MA



BOATHOUSE



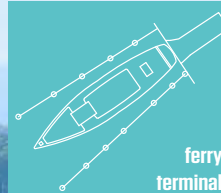
Community Rowing Inc.
Brighton, MA



MARINA



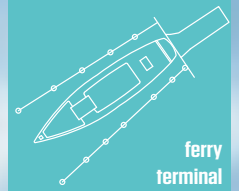
Shadows Marina
Poughkeepsie, NY



FERRY PRECEDENTS



Breakwater Cafe & Grill, Ferry,
Marina, Spirit of Ethan Allen
Burlington, VT



PRECEDENTS

S.S. Columbia
1902



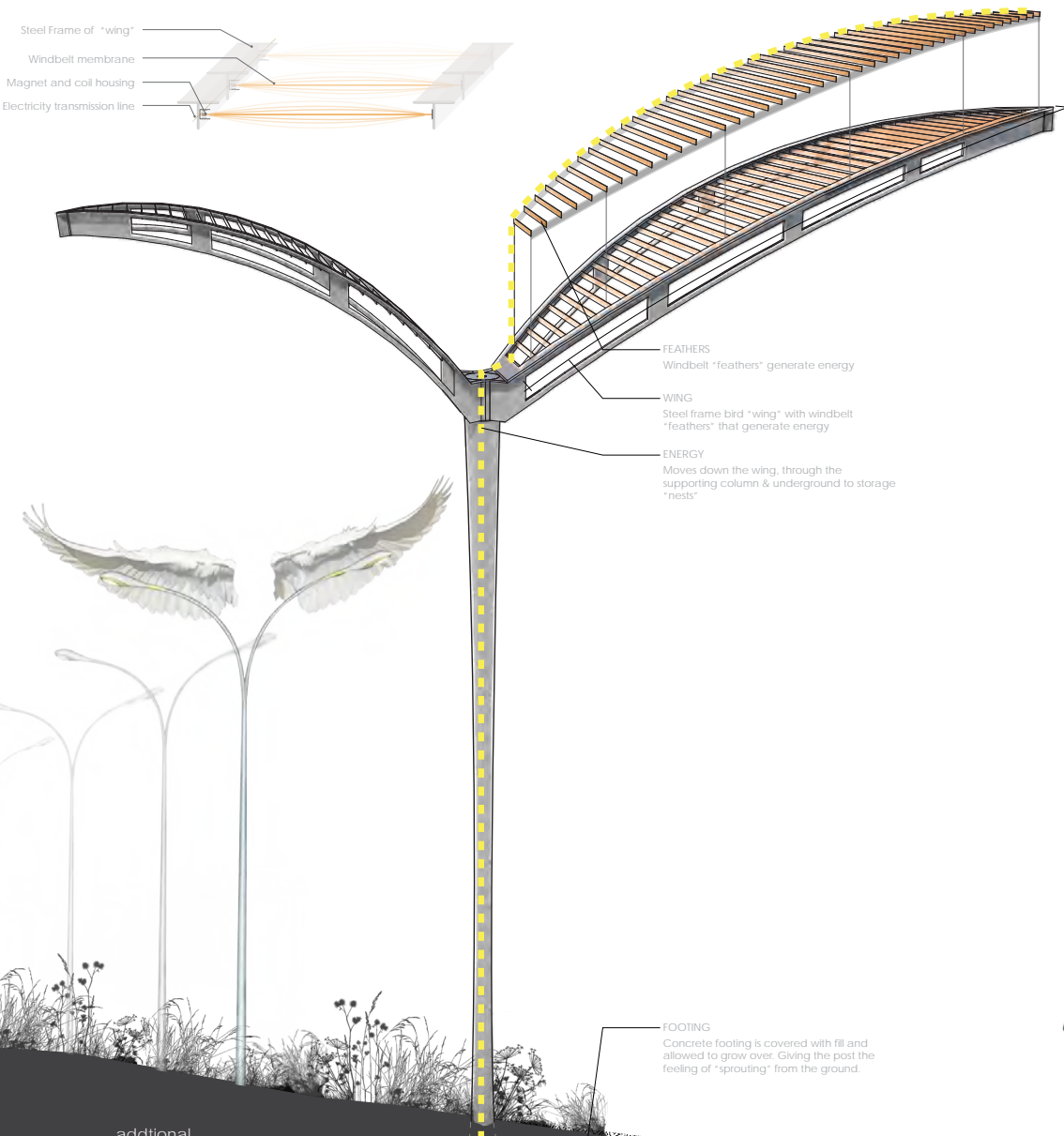
SMALL CAFE



Sip Cafe
Boston, MA



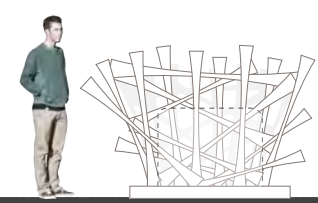
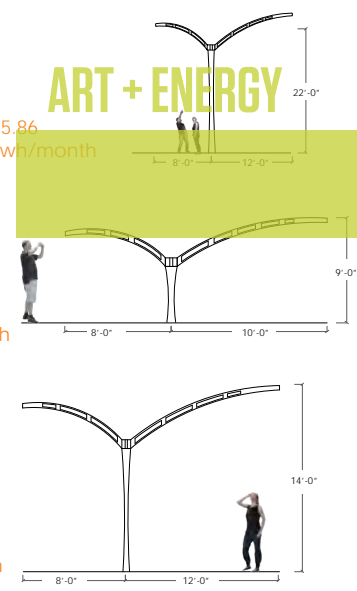
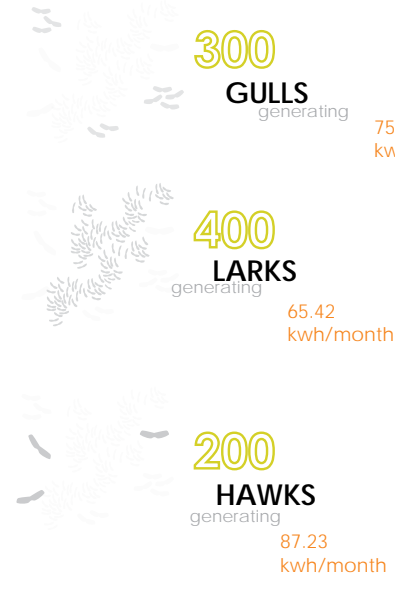
FOOD KIOSK



ROBUST production and ROUSING curiosity

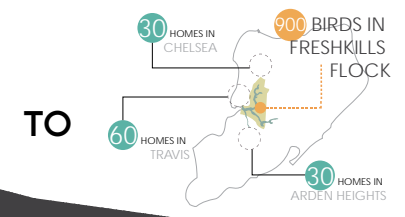
The bird operates at both the human and infrastructural scale. Each bird generates approximately **2.83kwh/day**.

Windbelts attach to the wing's steel structure - a readily deployable renewable energy technology that can be applied at many scales. the FreshKills Flock exemplifies this scalability - it could be used in part to power a home or in whole to power an entire neighborhood



ENERGY MOVES TO **COLLECTION "NESTS"**

10,000 kWh Battery & DC to AC Transformer





ART + ENERGY

Wind Nests
Designer: Suprafutures
in collaboration with the
Land Art Generator Institute



ART + ENERGY

Aeroleaf Tree Turbines
Designer: New Wind r&d



ART

'Nepenthes Paisley'
Artist: Dan Corson



ART

'Nepenthes Paisley'
Artist: Dan Corson

1 Project Precedents

2 Program Precedents

3 Community Program Ideas:

Cold Spring	Public Park	Skate Park
Dobbs Ferry	Open Space	Causeway
Irvington	Ferris Wheel	Event Space
MacEacheron Park	Ball Fields	Wetlands
Kingston Beach	Gardens	Grasses
Bryant Park Gazebo	Bandstand	Oyster Beds
Buildings on Stilts	Sculpture Park	Daylight Creek
Shops	Iconic Art	Oak Trees
Kayak Launch	Dog Park	Evergreen Trees

4 Shoreline Precedents



DOBBS FERRY

A photograph of a beach area. In the foreground, there is a wide expanse of dark, wet, reddish-brown rocks. To the left, the water is calm and reflects the sky. A small sandy patch is visible where the water meets the shore. In the background, a large, full-canopied green tree stands prominently. To the right of the tree, a group of people is gathered on a sandy area, some appearing to be playing a sport. A yellow banner with text is overlaid on the right side of the image.

KINGSTON BEACH

PRECEDENTS



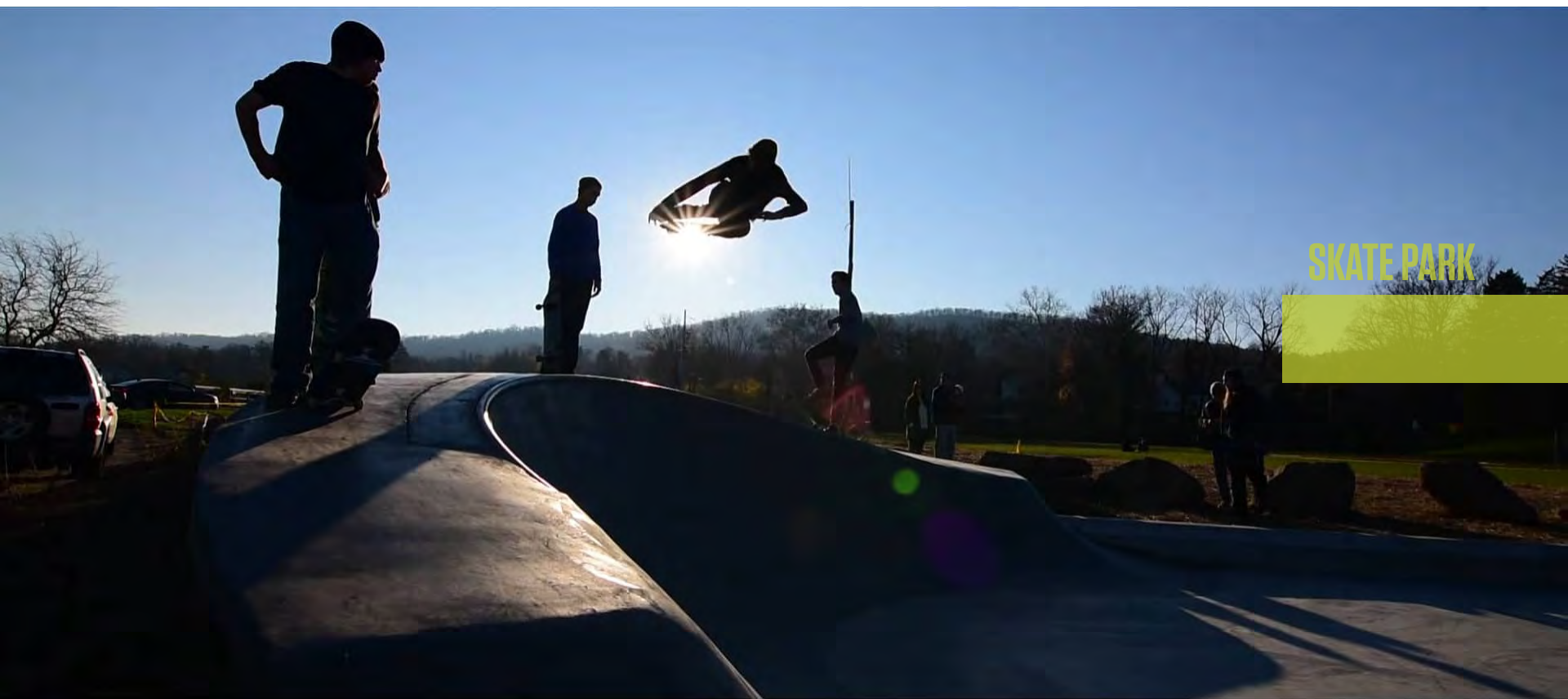
FERRIS WHEEL

PRECEDENTS



ICONIC ART

Artist: Tom Fruin
Brooklyn, NY



SKATE PARK

Nyack, NY



OYSTER
BEDS

PRECEDENTS

- 1 Project Precedents
- 2 Program Precedents
- 3 Community Program Ideas
- 4 Shoreline Precedents:

Soft



Hard

Natural Shoreline
Natural Shoreline + Wave Break
Soft Gabions
Cellular Confinement System (CCS)
Articulated Concrete Block (ACB)
Vegetated Riprap/ Armor Stone
Riprap
Armor Stone
Bulkhead + Beach Access



NATURAL SHORELINE



**NATURAL
SHORELINE WITH
SALT MARSH
& RIPRAP
WAVE BREAK**

© 2016 Jim Metzger Photographer

Habirshaw Park
Yonkers, NY



BEACH ACCESS



before



**SALT MARSH
WITH BULKHEAD
REMAINS SERVING
AS WAVE BREAK
& STONE GABION
SLOPE
PROTECTION**



CELLULAR CONFINEMENT SYSTEM (CCS)

White Island
Marine Park, Brooklyn, NY



**CELLULAR
CONFINEMENT
SYSTEM (CCS)
AFTER
RESTORATION**

White Island
Marine Park, Brooklyn, NY



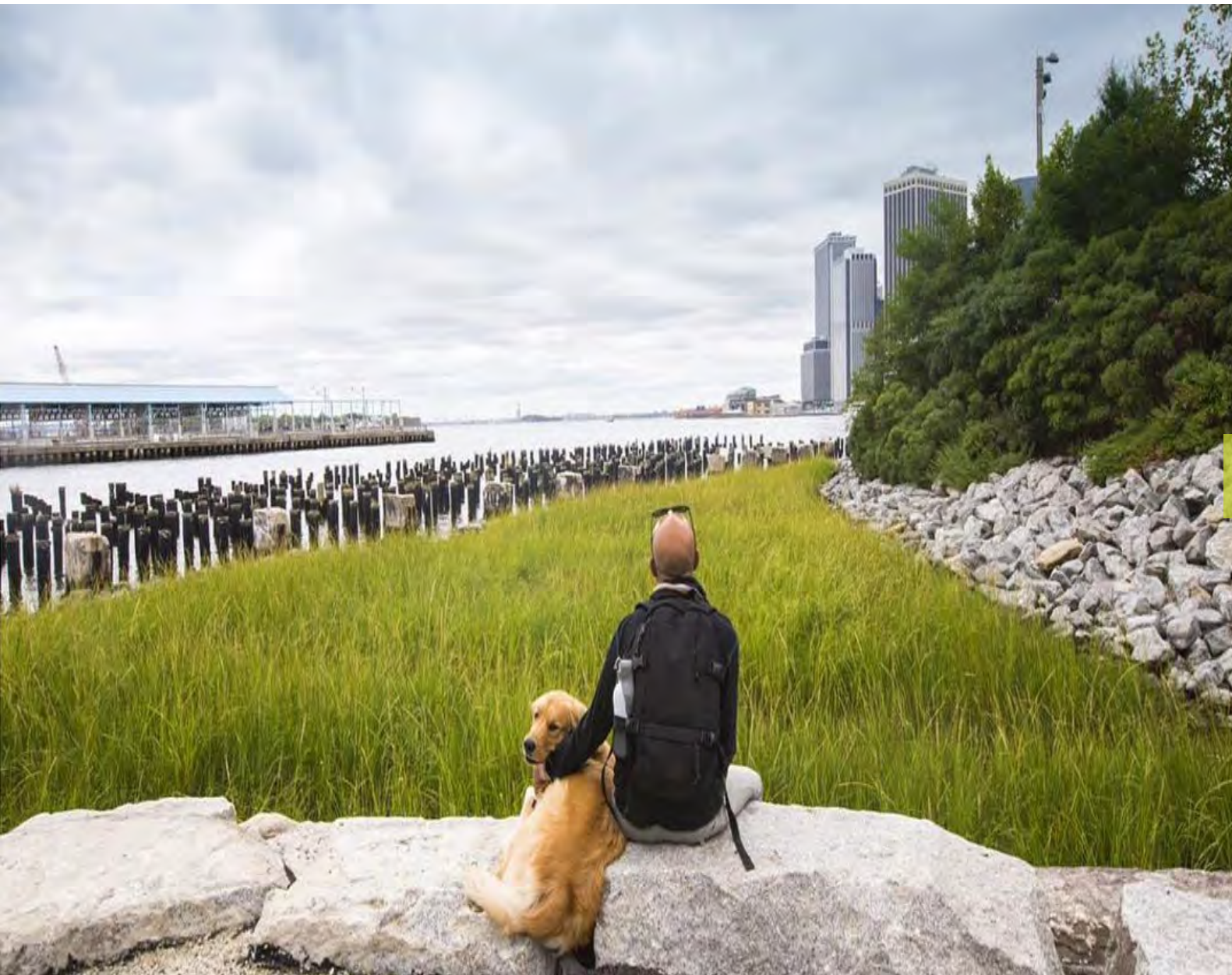
ARTICULATED CONCRETE BLOCK (ACB)

White Island
Marine Park, Brooklyn, NY



**ARTICULATED
CONCRETE
BLOCK (ACB)
WITH RIPRAP TOE
AFTER
RESTORATION**

White Island
Marine Park, Brooklyn, NY



**SALT MARSH
WITH BULKHEAD
REMAINS SERVING
AS WAVE BREAK
+ RIPRAP SLOPE**

Brooklyn Bridge Park
Designer: MVVA
Brooklyn, NY



RIPRAP

Haverstraw



CONCRETE BULKHEAD



**SALT MARSH
ADJACENT TO
BULKHEAD
FISHING PIER &
BOAT LAUNCH**





SALT MARSH ADJACENT TO BULKHEAD FISHING PIER & BOAT LAUNCH





BEACH ACCESS



Margate
Sea Defence Steps
Margate, UK

BANNER ACTIVITY

1 PROGRAM:

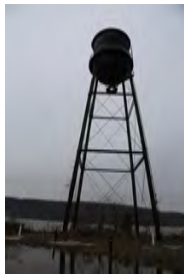
SPRING SUMMER FALL WINTER

What activities could be done within the 100' buffer?

2 IDENTITY:

NATURAL ENVIRONMENT? HISTORY?
PEOPLE? EVENTS?...

What could the unique identity of this site be?



BANNER ACTIVITY

3 RATING:

● Most important to YOU ● Ideas you do not want

MAPPING ACTIVITY

1 EXISTING CONDITIONS ANALYSIS:



Community Events + how do you get there?



Views to the water



Sidewalk or Trail Connections (currently used)

MAPPING ACTIVITY

1 EXISTING CONDITIONS ANALYSIS:



Community Events + how do you get there?



Views to the water



Sidewalk or Trail Connections (currently used)

2 New Program Relationships:



boathouse



kayak launch



fishing pier



marina



ferry terminal



event space



beach



restrooms



cafe/food kiosk



Hard shoreline elements



Soft shoreline elements



Sidewalks/bike paths/roads

MAPPING ACTIVITY

3 Presentation:

Park Name

Location of Program Elements

4 Rating:

● Ideas you like most

● Ideas you do not want



Questions?

aludlow@rouxinc.com

kate@offshootsinc.com

ROUX

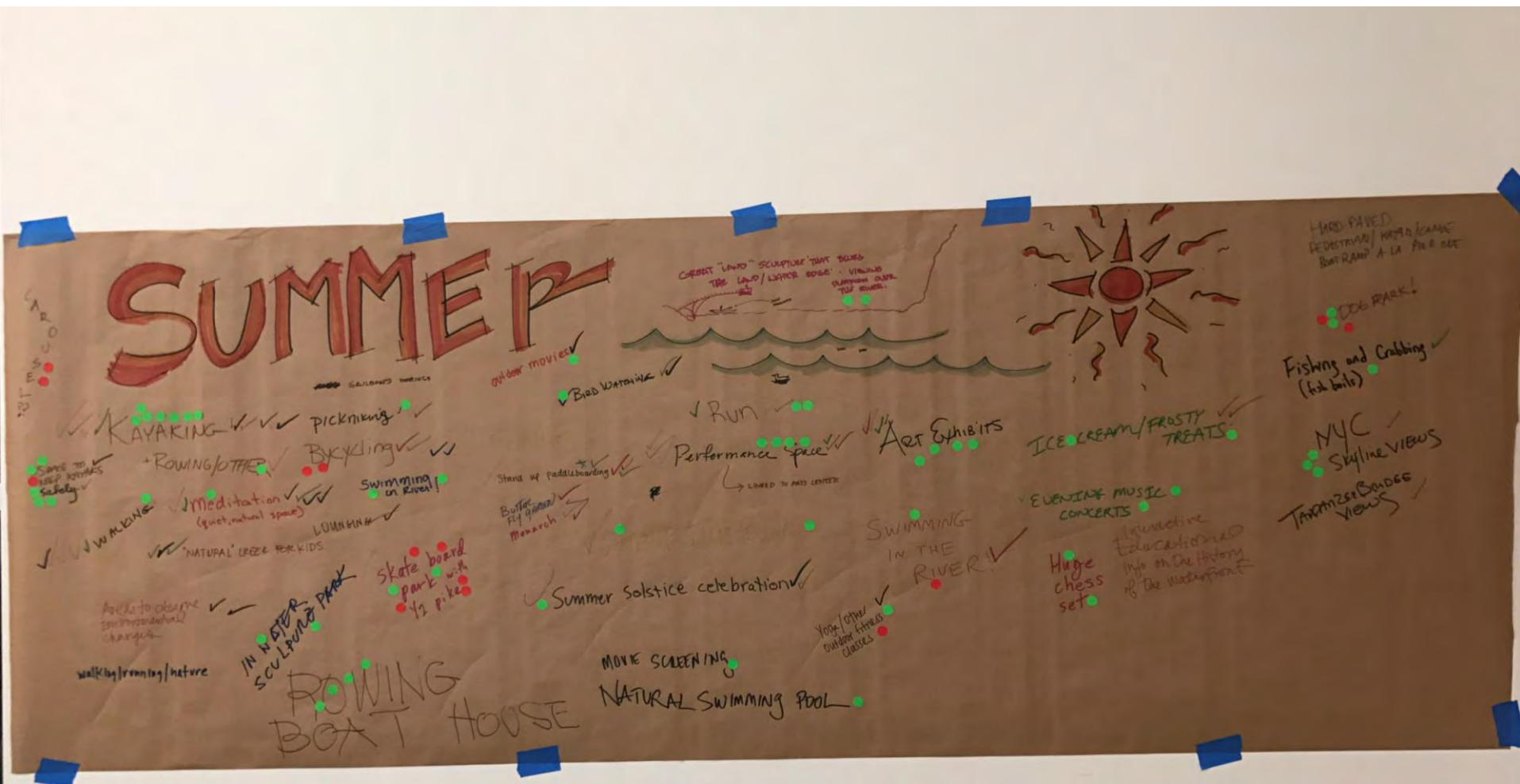
offshoots
PRODUCTIVE LANDSCAPES

Conceptual Shoreline Design – Anaconda Wire & Cable Plant
1 River Street, Hastings-On-Hudson, New York

APPENDIX B

Public Meeting Photographs

Banner Exercise - Summer



Banner Exercise - Fall

FALL

✓ Run

✓ MEDITATION SITE

Carnival

✓ Art Exhibit

✓ pop-up food markets

order picking
big per son
after the
dinner press

walking/running

Enviored prags for students
• an inspiring classroom space

Connect to Dobbs Ferry's Park?

Bonfire ring with seating
(like southwest deck in Bryant Park)

Food truck event

ping pong

Dog run & beach

✓ WALKING AMONG
THE FALLEN
LEAVES OF
NEWLY PLANTED TREES

Low ropes course
for play & group
teambuilding

✓ Bird houses

Compost demo area

basketball court

✓ WALKING PATHS

✓ Connected to the park

ENJOY THE SUNSET w/ A BEVERAGE

✓ Watch migratory birds

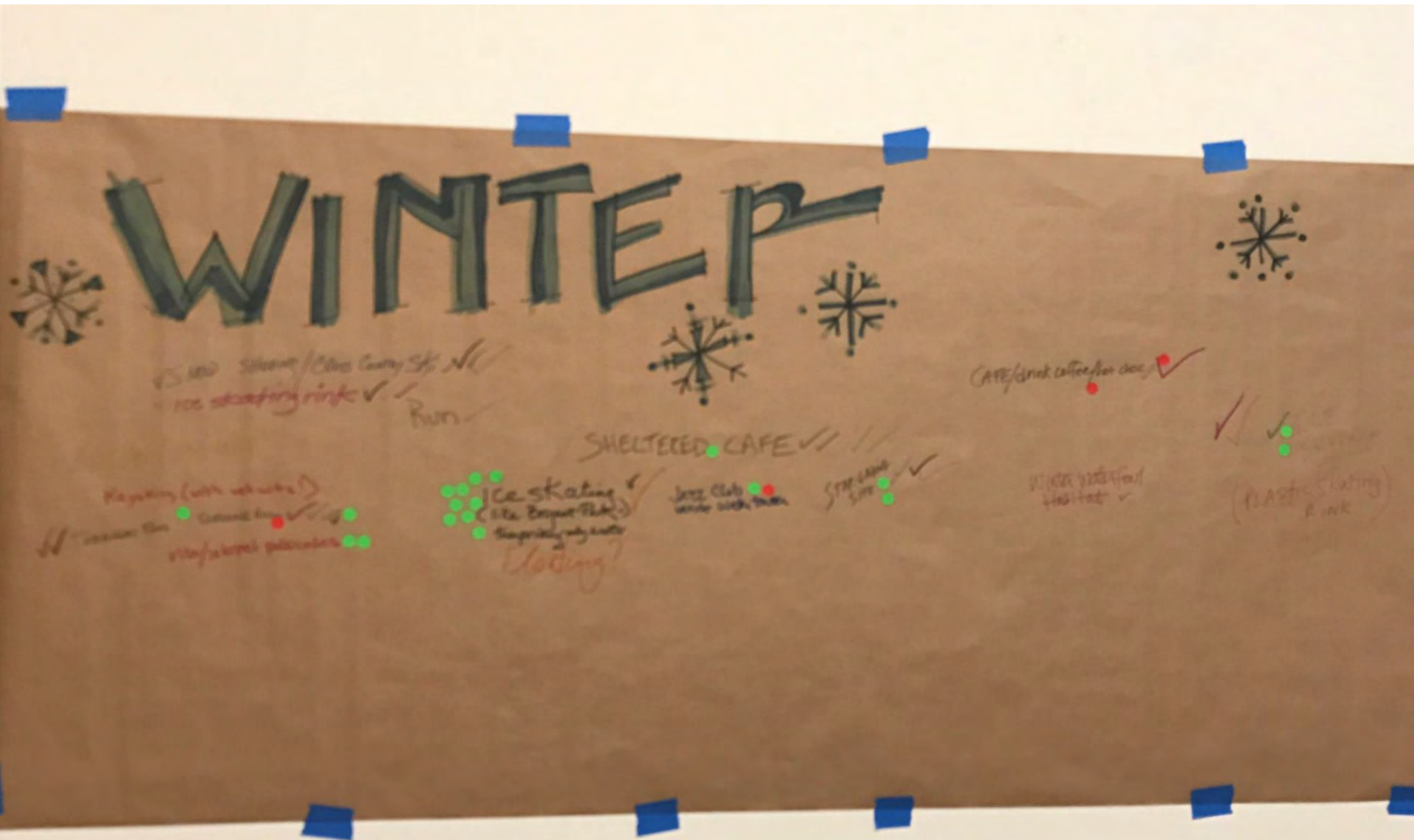
Leaf peeping
hayrides & halloween
jaunts for kids

community bike borrowing

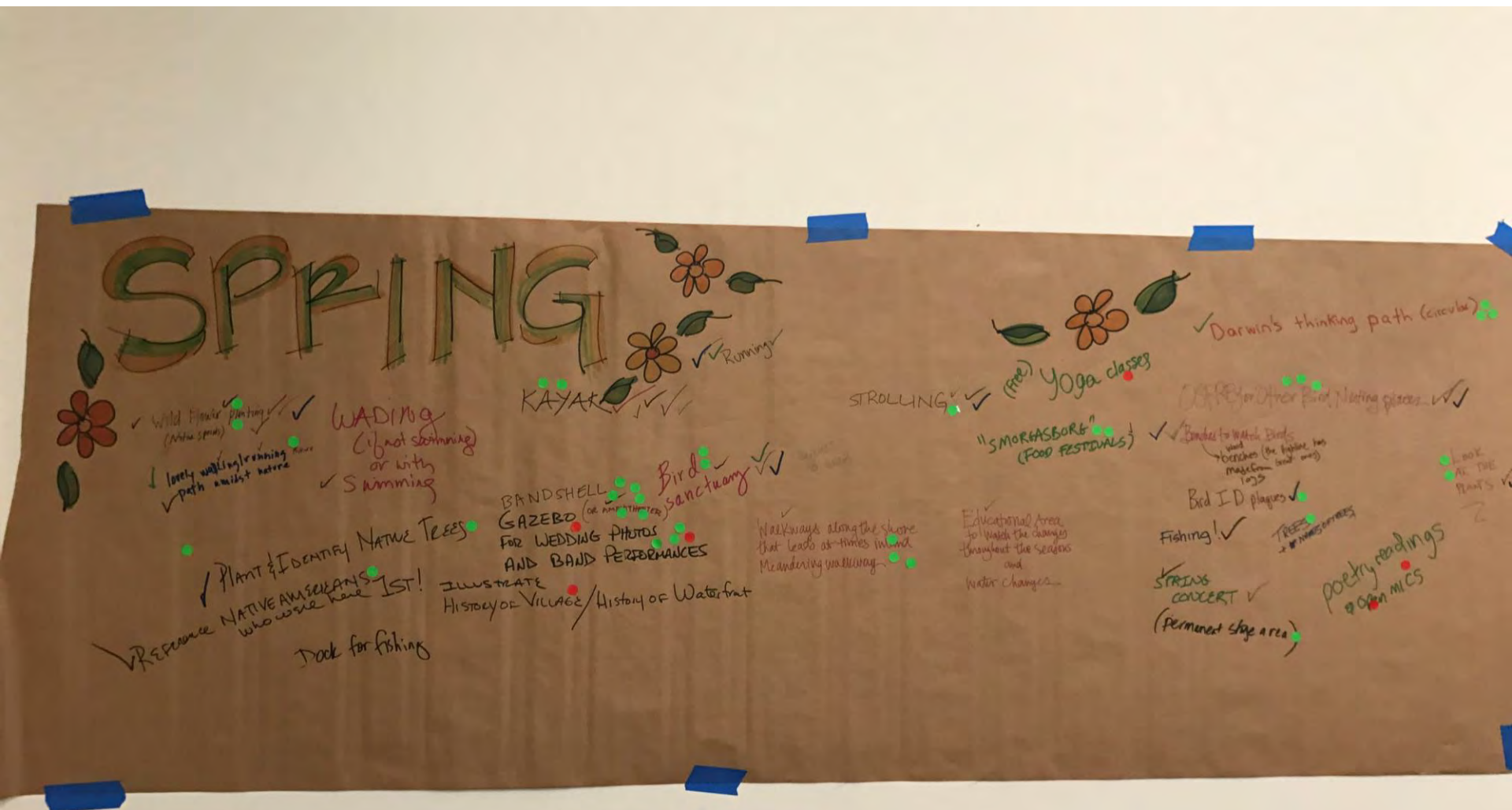
Community Sailing Boathouse
(example: Hudson River Community Sailing)
(bring back Ferry Shops)



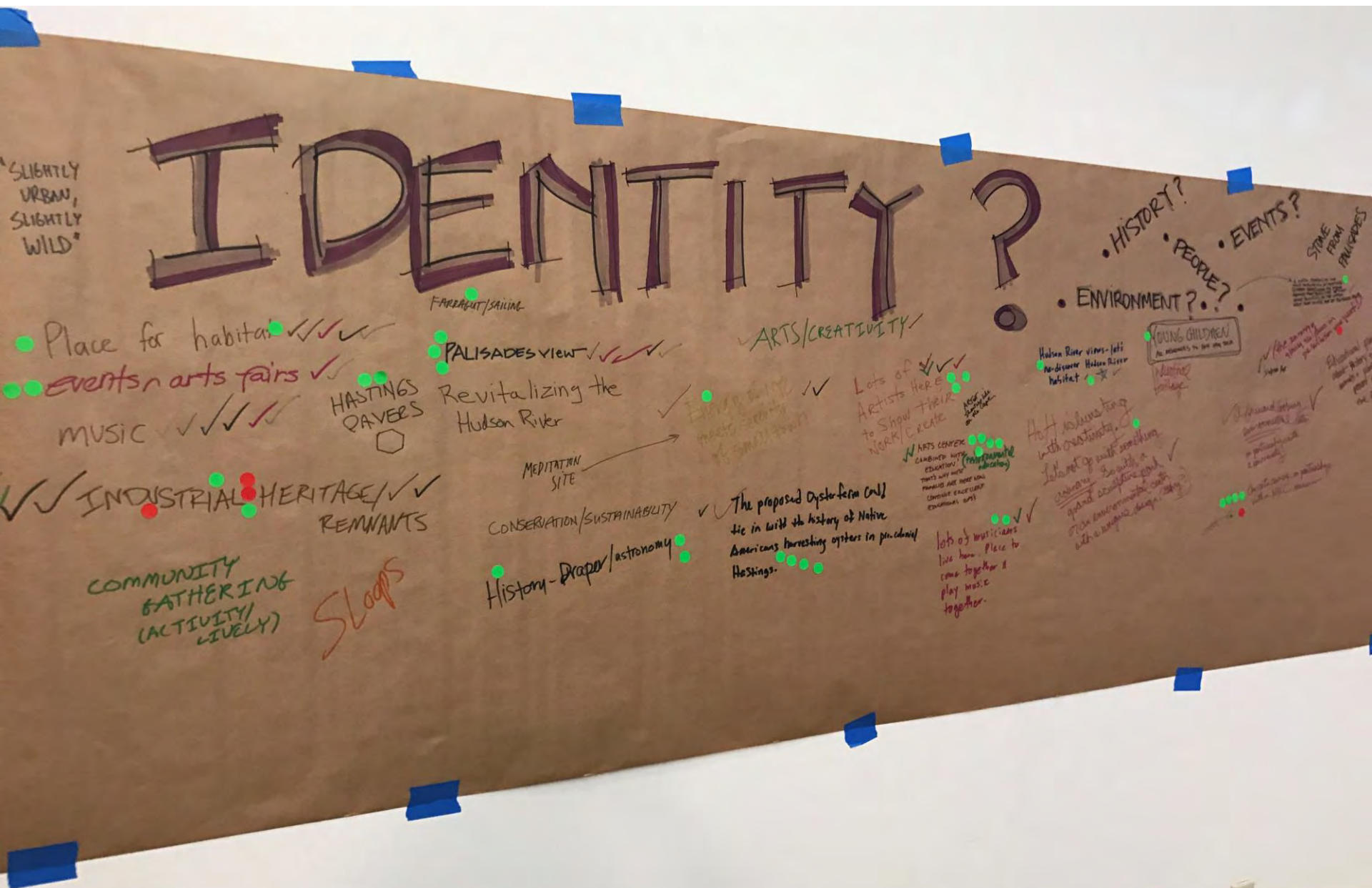
Banner Exercise - Winter



Banner Exercise - Spring



Banner Exercise - Identity



Banner Exercise – Parking Lot

PARKING LOT

A wind farm to provide jobs, offset the soon to be increased cost of electricity, and set a good example for combating climate change. *Yes we care about renewable energy.*

Keep it lowkey - don't turn our waterfront into a tourist attraction - it can't generate too much traffic or need for more parking lots - preserve views from the train stations - one of the only great things about the commute!

yes, use solar + wind power creatively

Do NOT underestimate the pernicious effects of PCBs especially in NW corner - be careful with beaches & children

MAKE IT A PLACE OF ACTIVITY - NOT JUST EMPTY PIECES

Use clap nets put opposing ~~from~~ *from Rockland* to use train to D *Leaving to create local traffic + a gathering place*



OTHER IDEAS ?

Break up unrelenting rectangular landfill wedges by urban memory like, and on site, small versions. *Protect views of peninsula + harbor*

LOOK AT MORE WATERFRONTS Ranging from @ Quebec City to San Antonio

Explore the Public Private Partnership at this stage NOW!

See small examples in Newport on Long Island

SPRINKLER PLAY AREA

The potential of surface water...
The potential of surface water...
The potential of surface water...

...the potential of surface water...
...the potential of surface water...
...the potential of surface water...

Mapping Exercise



Mapping Exercise



Mapping Exercise – Group 1



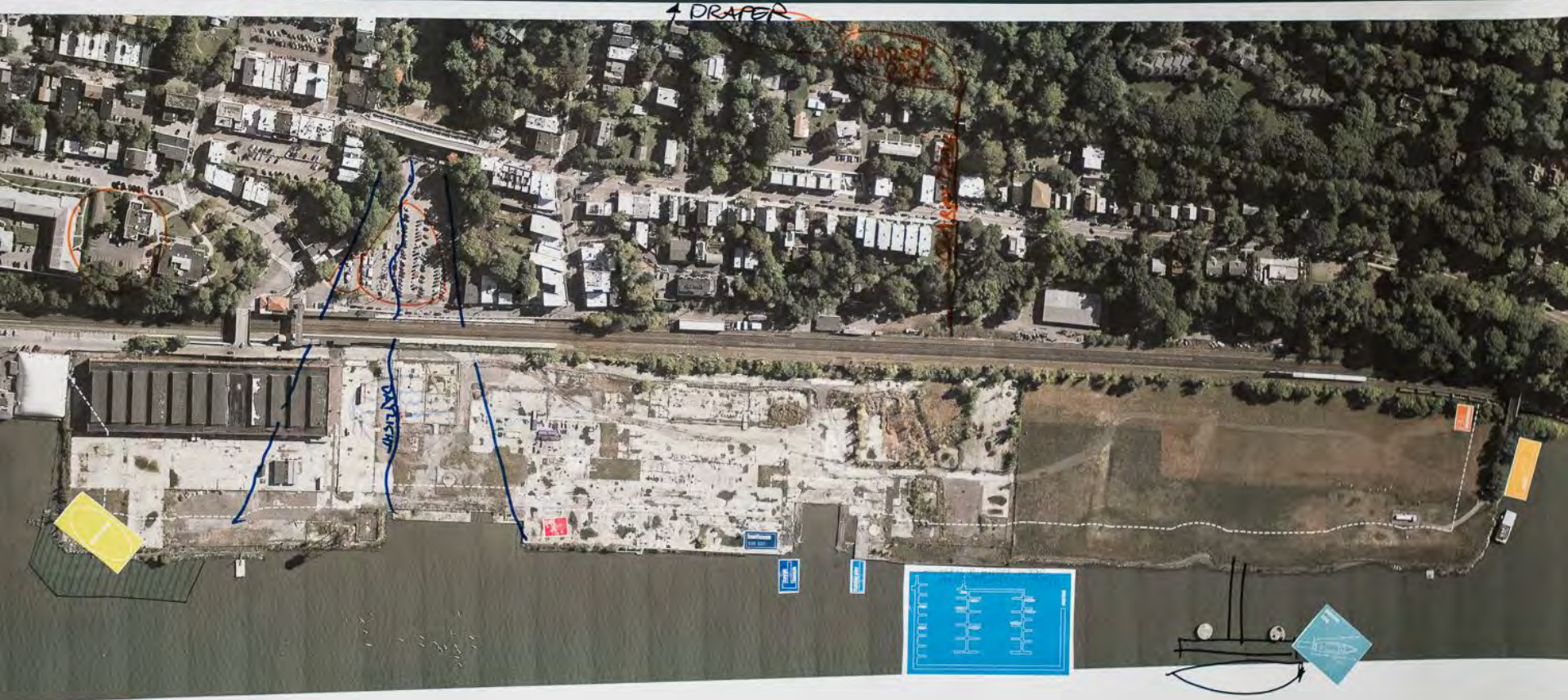
Mapping Exercise – Group 2



Mapping Exercise – Group 3



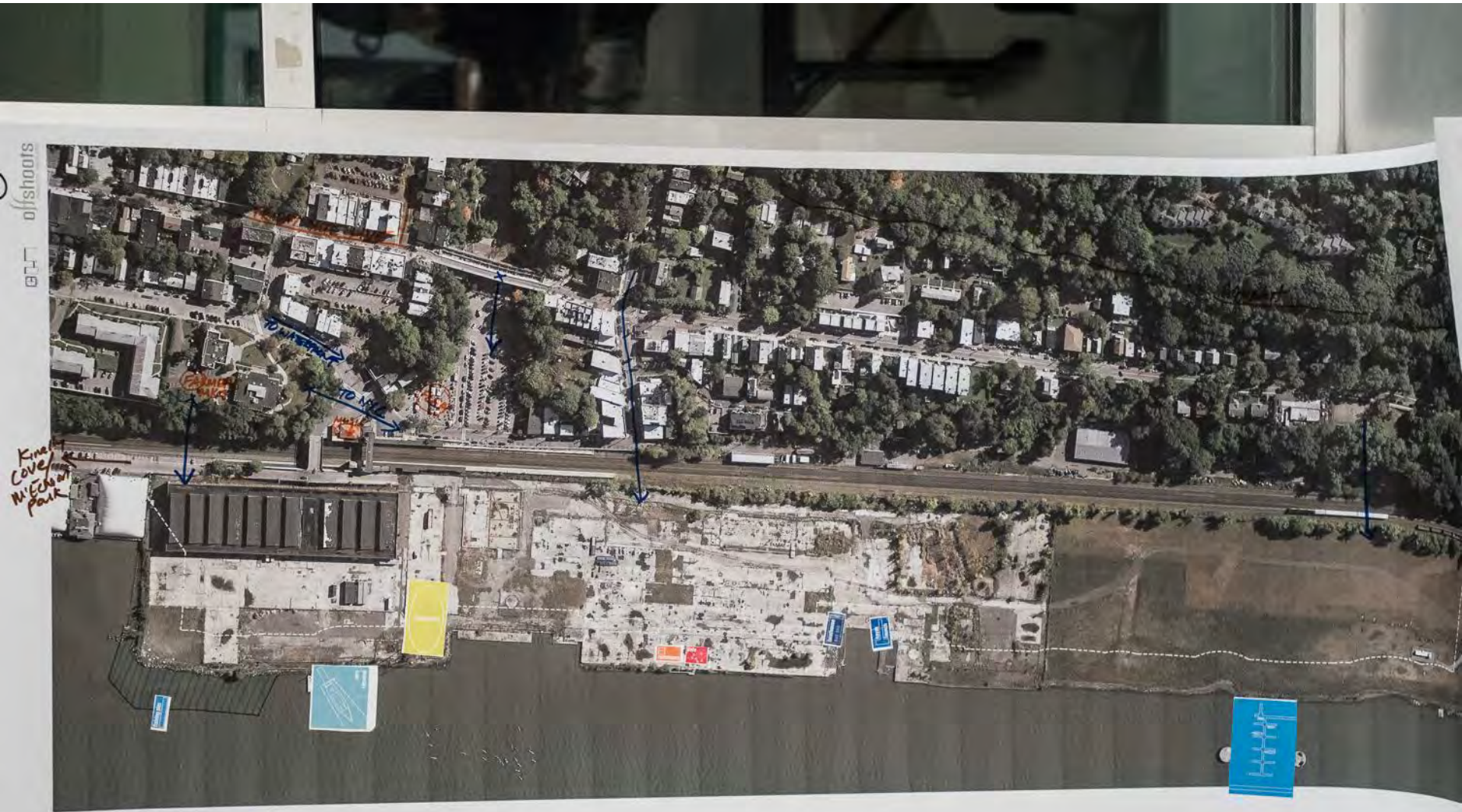
Mapping Exercise – Group 4



✓ R
 Perfor
 cele
 ENING
 SW



Mapping Exercise – Group 6



Conceptual Shoreline Design – Anaconda Wire & Cable Plant
1 River Street, Hastings-On-Hudson, New York

APPENDIX C

NYSDEC Meeting
March 13, 2017

Conceptual Design Elements Hastings-on-Hudson Shoreline

ROUX

offshoots
PRODUCTIVE LANDSCAPES



March 13, 2017

Proposed Approach

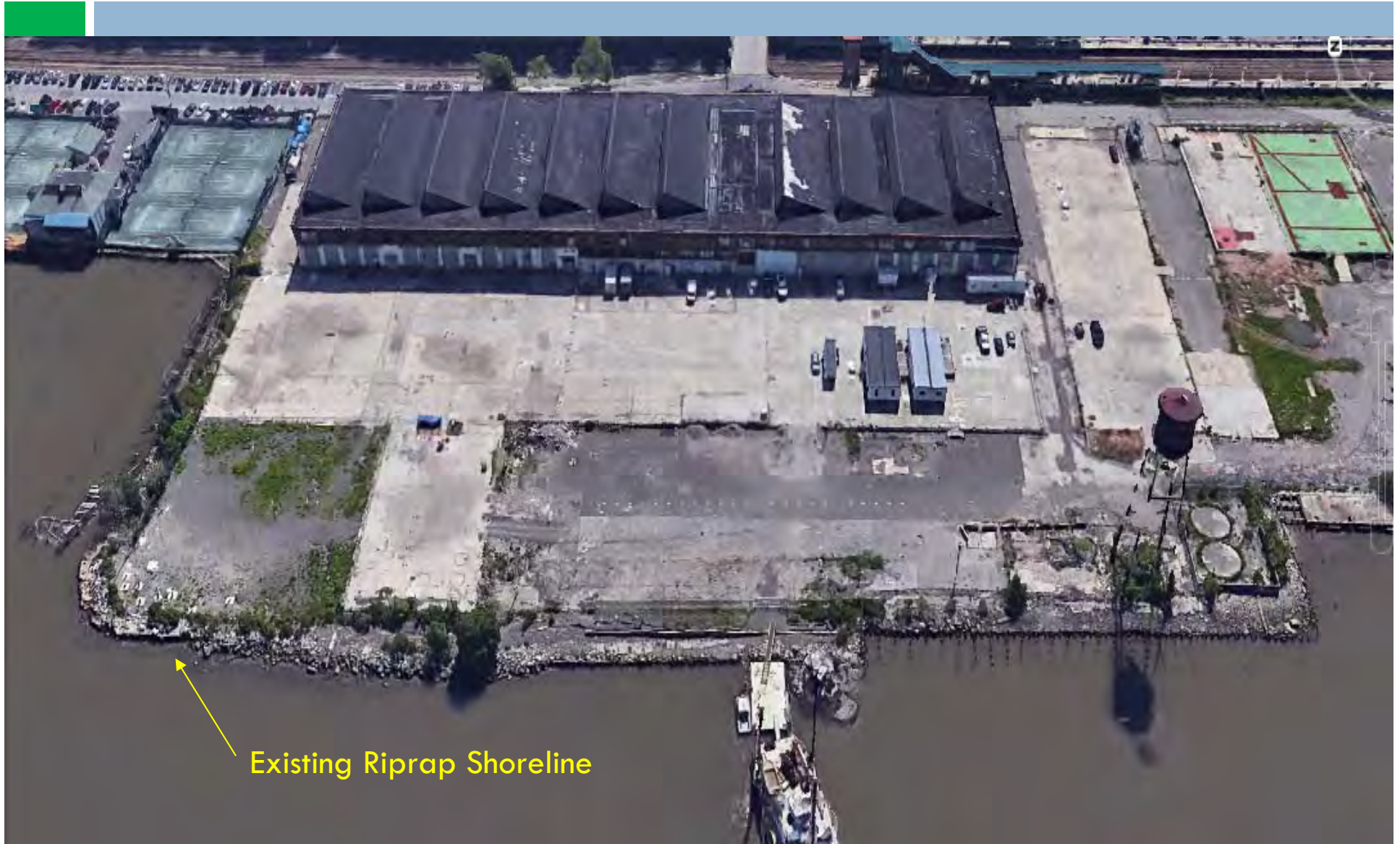
- ❑ Public access to waterfront
- ❑ Connectivity
- ❑ Responsive programming
- ❑ Flexible amenities
- ❑ Bioengineering solutions
- ❑ Habitat creation
- ❑ Remedial containment
- ❑ Long term performance & resiliency



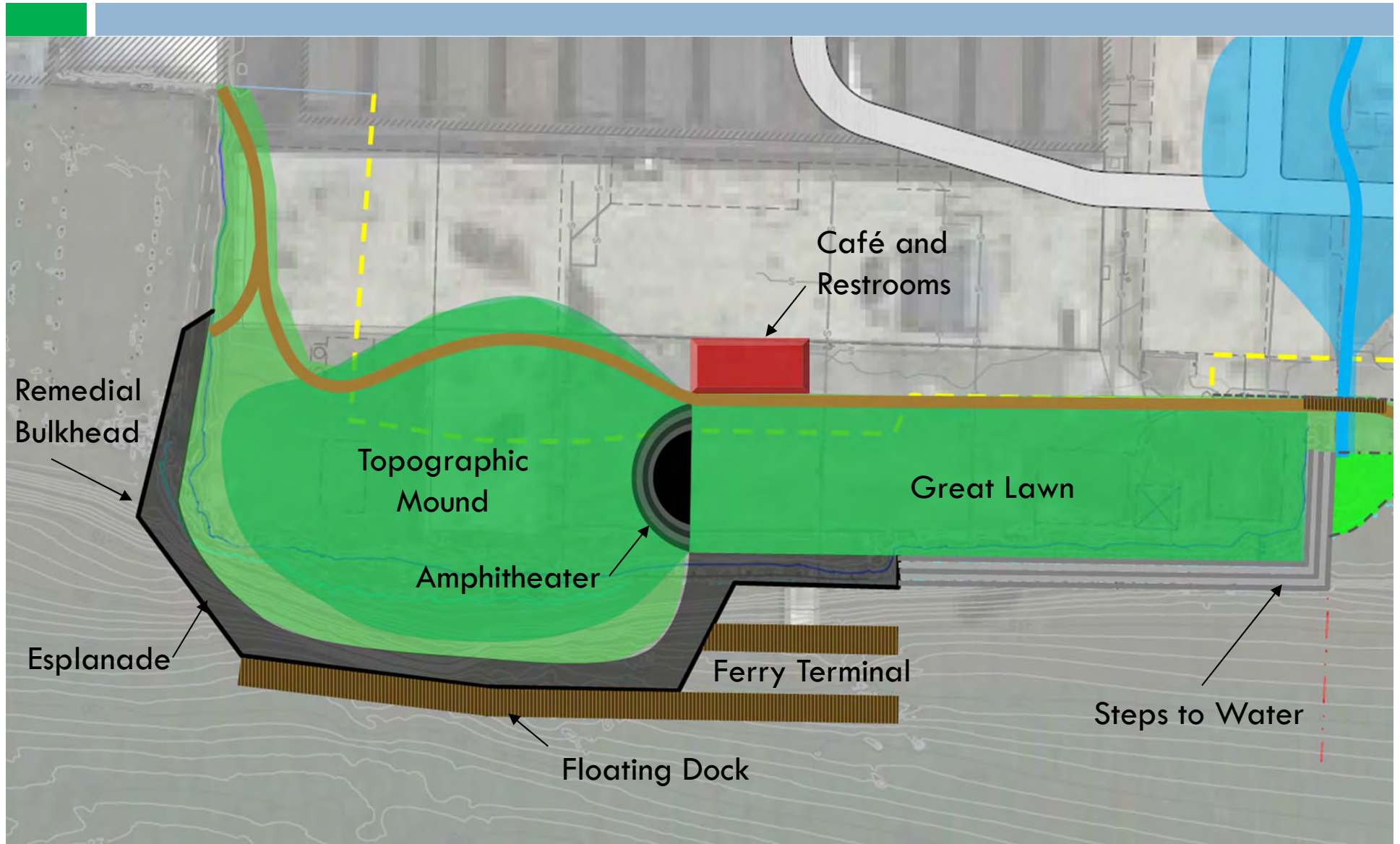
Conceptual Elements



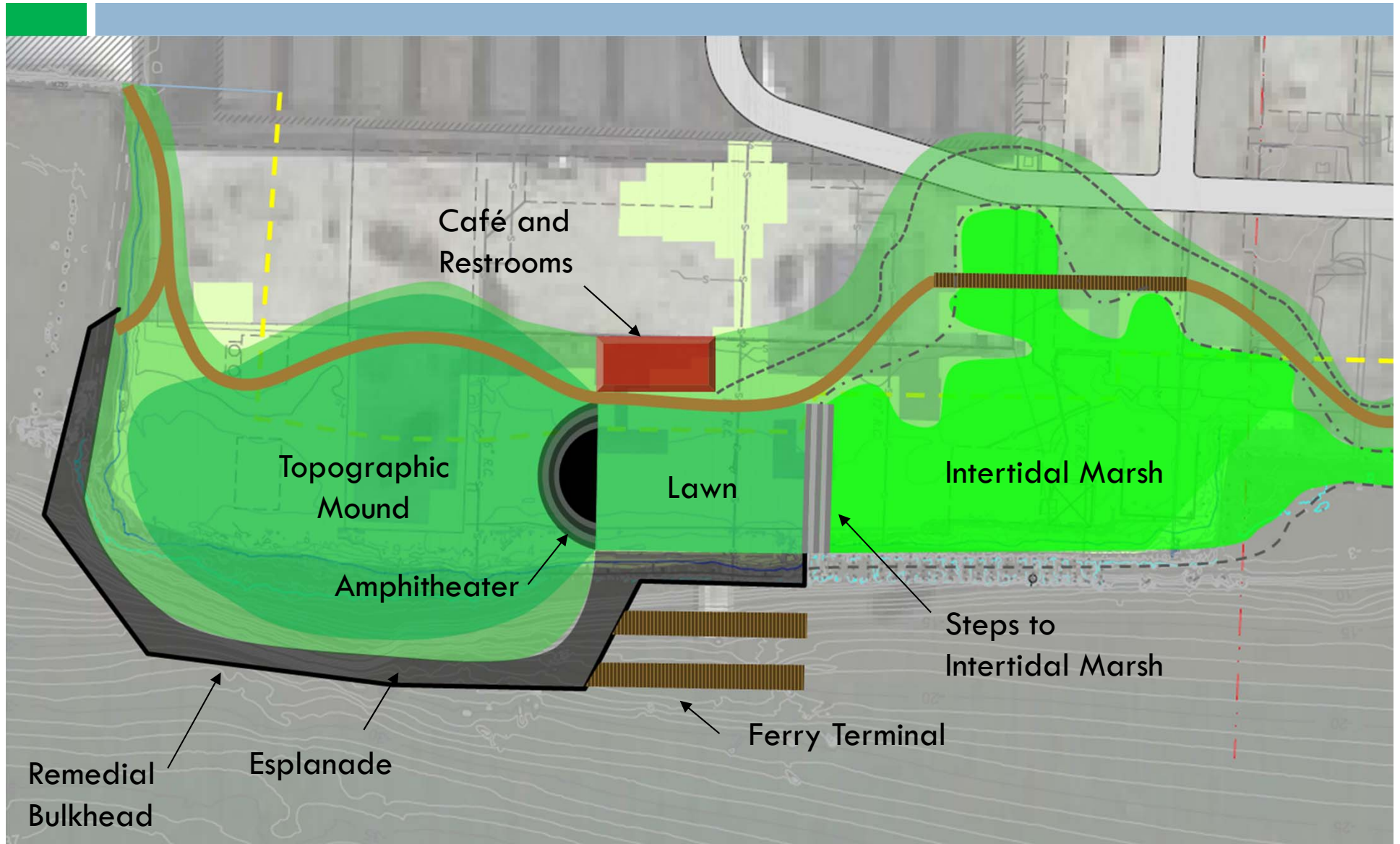
Site North



Site North



Site North



Site North

Great Lawn and Esplanade



Site North

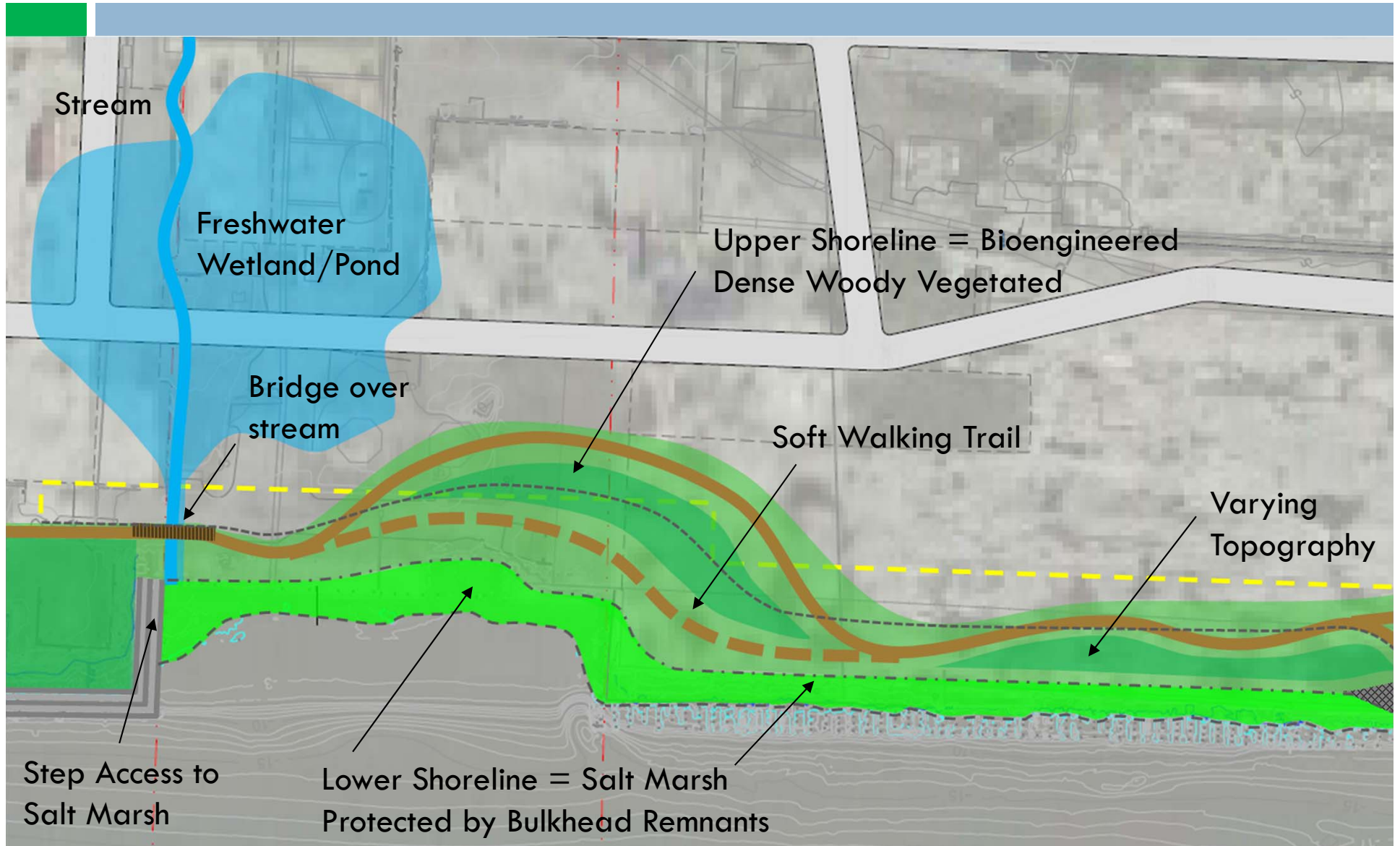
Water Access and Ferry Terminal



North Cove



North Cove

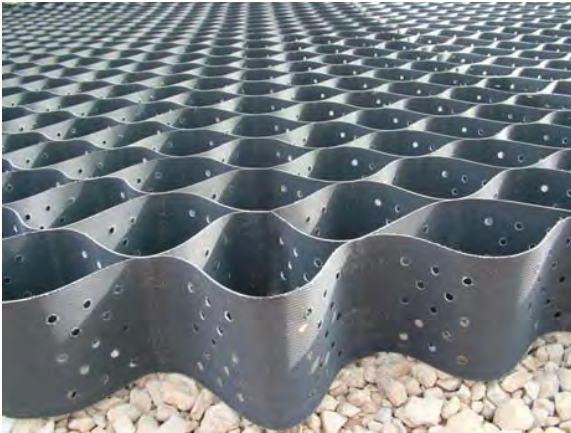


North Cove Habitat Creation

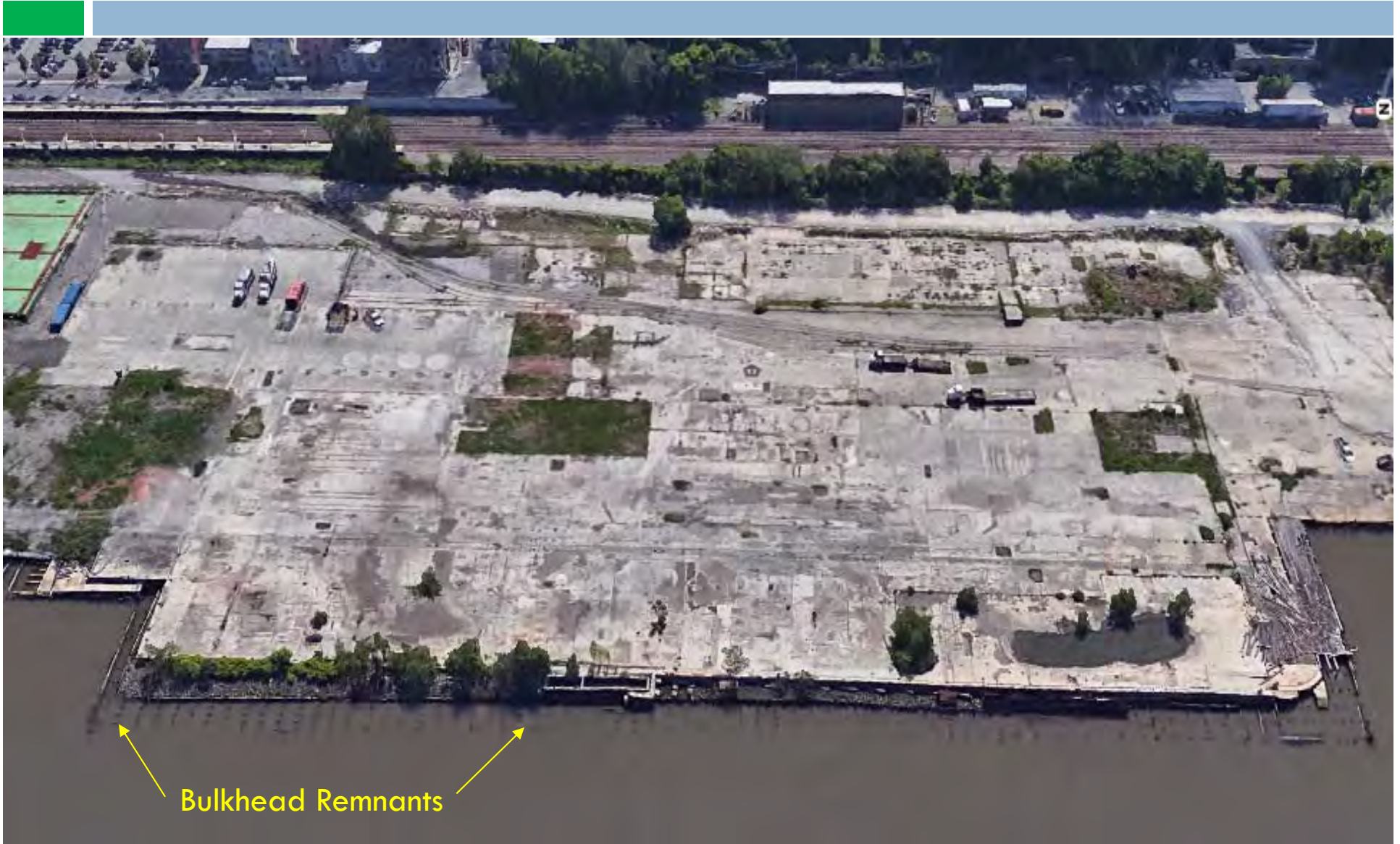
ROUX



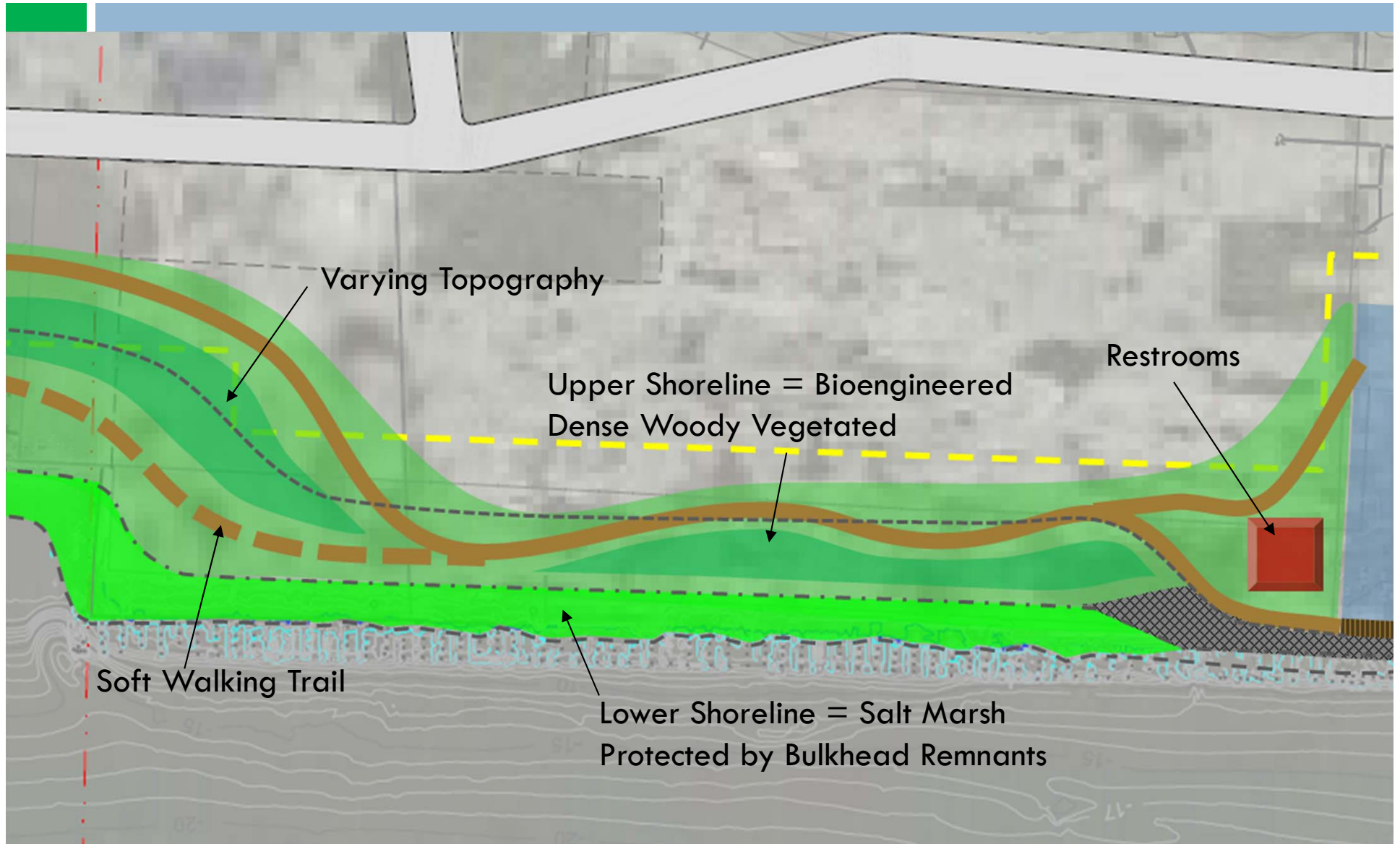
Shoreline Stabilization Elements



Former Bulkhead and South Cove



Former Bulkhead and South Cove



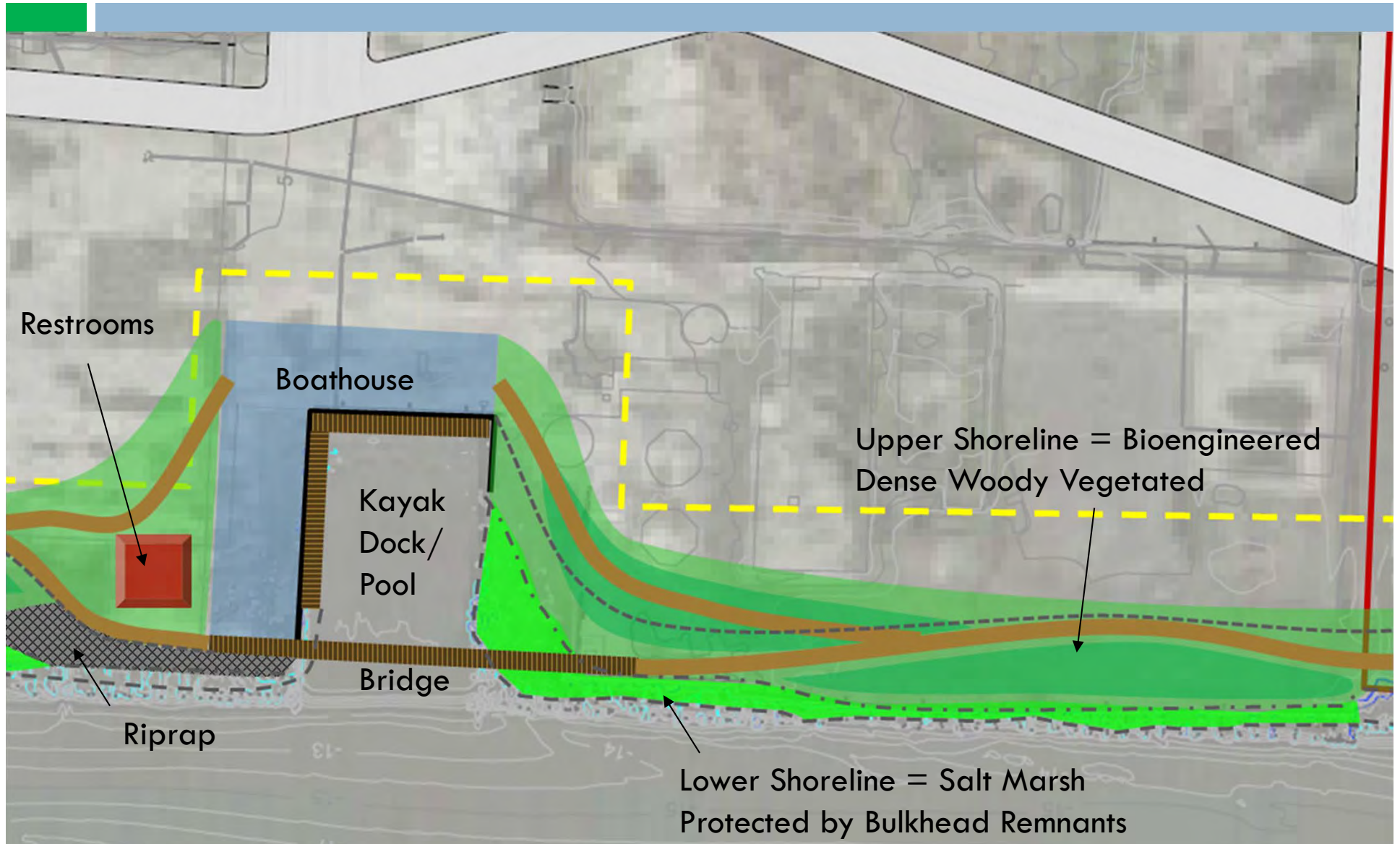
Former Bulkhead and South Cove



South Cove



South Cove



South Cove

Boathouse and Kayak Pool

ROUX



Long Dock Park, Beacon



Dallas Community Boathouse



South Cove

Habitat, Boardwalk, and Bridge

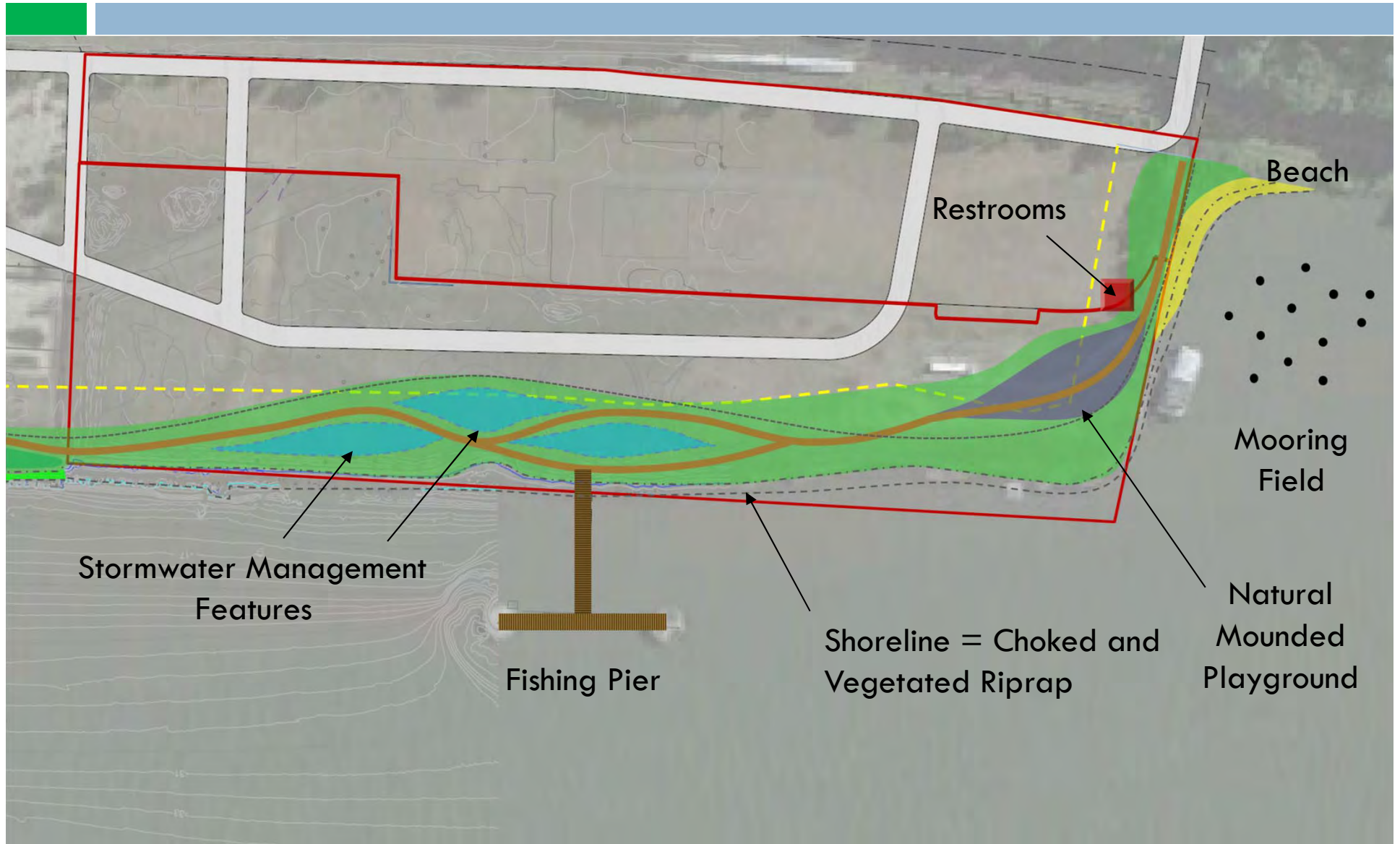
ROUX



Off Site

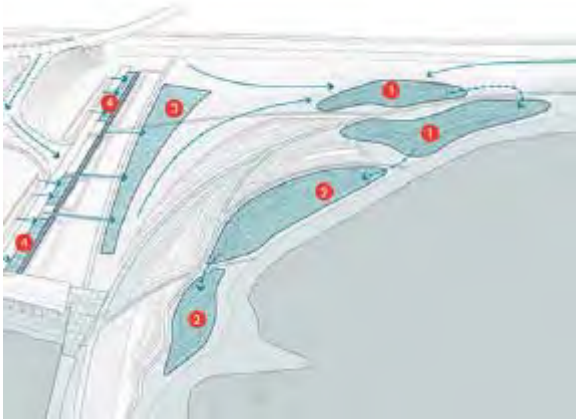


Off Site



Off Site

Stormwater and Flood Control



Off Site

Additional Features



Conceptual Elements

□ Shoreline:

- ▣ *range of types (from soft to hard)*
- ▣ *steepness of slope*
- ▣ *width of slope and elevation variations*
- ▣ *pond or day lighted stream*

□ Marine uses and locations:

- ▣ *ferry and excursion boats*
- ▣ *transient boaters*
- ▣ *kayak area with boathouse*
- ▣ *fishing pier*
- ▣ *floating dock*

□ Habitat:

- ▣ *mitigation requirement*
- ▣ *salt marsh*
- ▣ *trees*
- ▣ *grasses and other emergents*

□ Structures:

- ▣ *cafe*
- ▣ *restrooms*
- ▣ *boathouse*

□ Mounds and varied topography:

- ▣ *Northwest Corner and elsewhere*
Shape of fill at Northwest Corner



ROUX



Questions?

aludlow@rouxinc.com
(631) 232-2600

Conceptual Shoreline Design – Anaconda Wire & Cable Plant
1 River Street, Hastings-On-Hudson, New York

APPENDIX D

NYSDEC Meeting
July 25, 2017

Conceptual Design Elements Hastings-on-Hudson Shoreline



July 25, 2017

Proposed Approach

- Public access to waterfront
- Connectivity
- Responsive programming
- Flexible amenities
- Bioengineering solutions
- Habitat creation
- Remedial containment
- Long term performance & resiliency



Conceptual Elements

- Shoreline:
 - ▣ *range of types (from soft to hard)*
 - ▣ *steepness of slope*
 - ▣ *width of slope and elevation variations*
 - ▣ *Salt marsh creation for mitigation*
- Marine uses and locations:
 - ▣ *ferry and excursion boats*
 - ▣ *transient boaters*
 - ▣ *kayak area with boathouse*
 - ▣ *fishing pier*
 - ▣ *floating dock(s)*
- Habitat:
 - ▣ *mitigation requirement*
 - ▣ *salt marsh*
 - ▣ *trees and shrubs*
 - ▣ *grasses and other emergents*
- Structures:
 - ▣ *cafe*
 - ▣ *restrooms*
 - ▣ *boathouse*
- Mounds and varied topography:
 - ▣ *Northwest Corner and elsewhere*
Shape of fill at Northwest Corner

Conceptual Plan



Site North



Existing Riprap Shoreline

Site North



North Sections



Section A
1" = 20'



Section B
1" = 20'

Site North

Great Lawn and Esplanade



Site North

Water Access and Ferry Terminal



North Cove



North Cove
EL. -3ft to +2ft

North Cove



Created Salt Marsh Section



Section B
1" = 20'

Shoreline Section

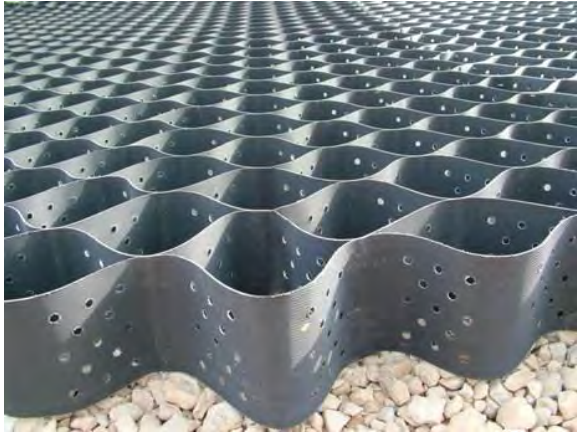


Section C
1" = 20'

North Cove Habitat Creation



Shoreline Stabilization Elements



South Cove and Shoreline



South Cove
EL. -4ft to +2ft

South Cove and Shoreline



South Cove

Boathouse and Kayak Pool



Former Bulkhead and South Cove



South Cove

Habitat, Boardwalk, and Bridge



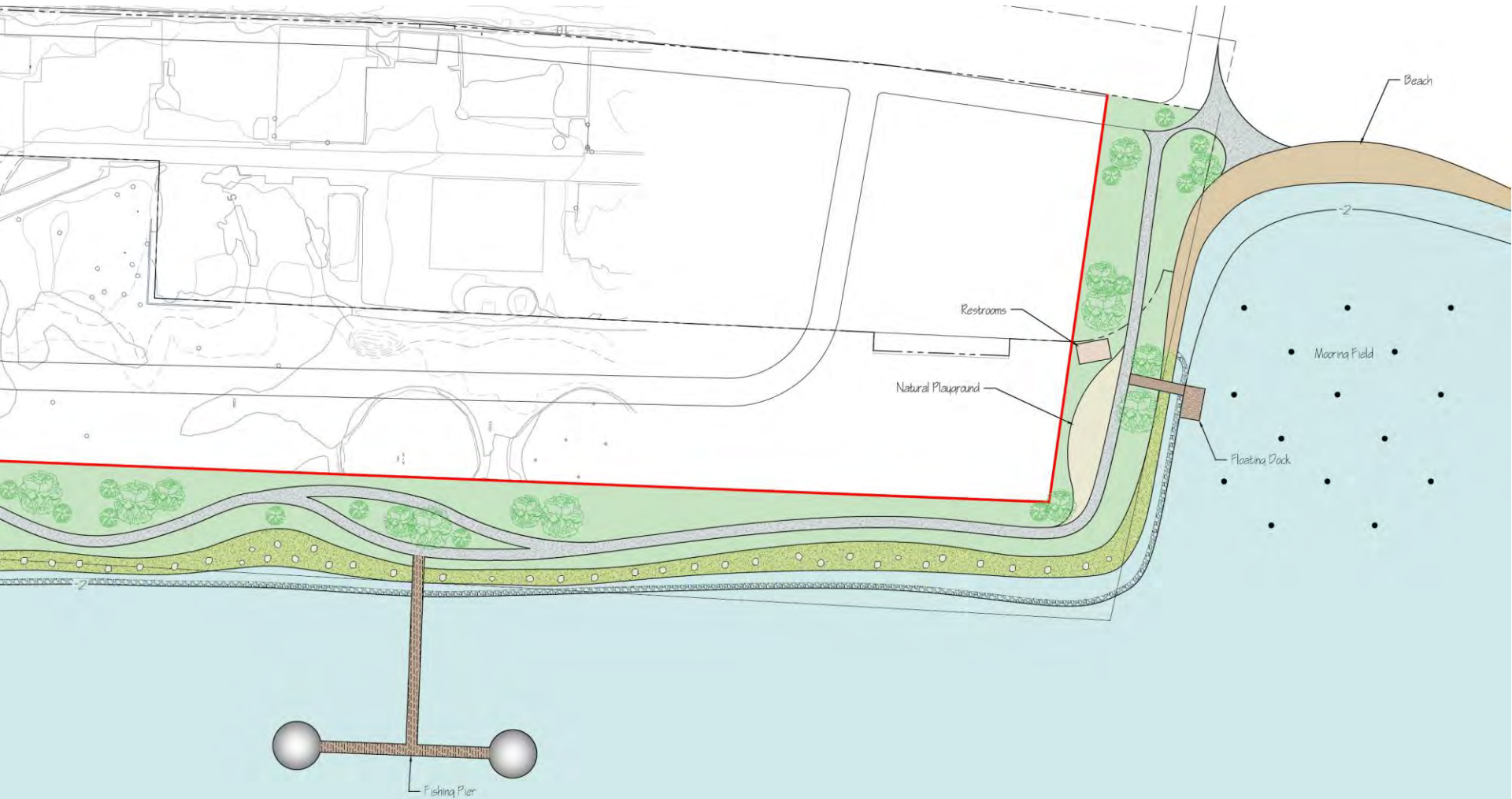
Off Site



Dolphins

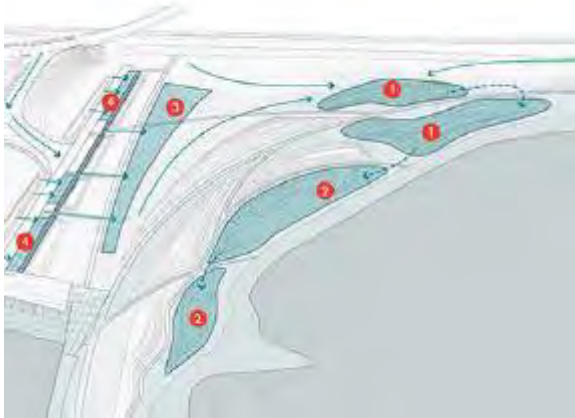
Existing Riprap Shoreline

Off Site



Off Site

Stormwater and Flood Control



Off Site

Additional Features





Questions?

aludlow@rouxinc.com
(631) 232-2600

Conceptual Shoreline Design – Anaconda Wire & Cable Plant
1 River Street, Hastings-On-Hudson, New York

APPENDIX E

Village of Hastings-on-Hudson Board of Trustees Meeting
Presentation of Conceptual Design
January 15, 2018



- Public access to waterfront
- Connectivity
- Responsive programming
- Flexible amenities
- Bioengineering solutions
- Habitat creation
- Remedial containment
- Long term performance & resiliency



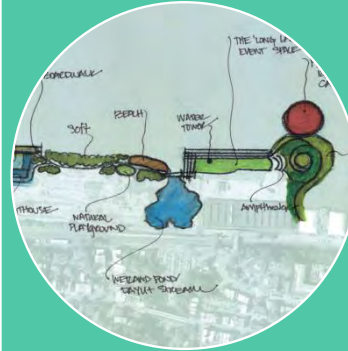
Precedent Site Visits

October 5, 2016
December 8, 2016



Public Meeting

January 18, 2017



Conceptual Designs

February 2017



NYSDEC Meetings

March 13, 2017
July 25, 2017



Final Plan & Renderings

January 16, 2018



Final Report

TBD

Hastings-On-Hudson Conceptual Shoreline Plan





Public Needs & Wants:

Central Plaza

- Ferry Terminal
- Café/Restrooms
- Optional Small Marina

Passive recreation

- Walk/bike trails
- Access to natural areas

Programmatic Elements

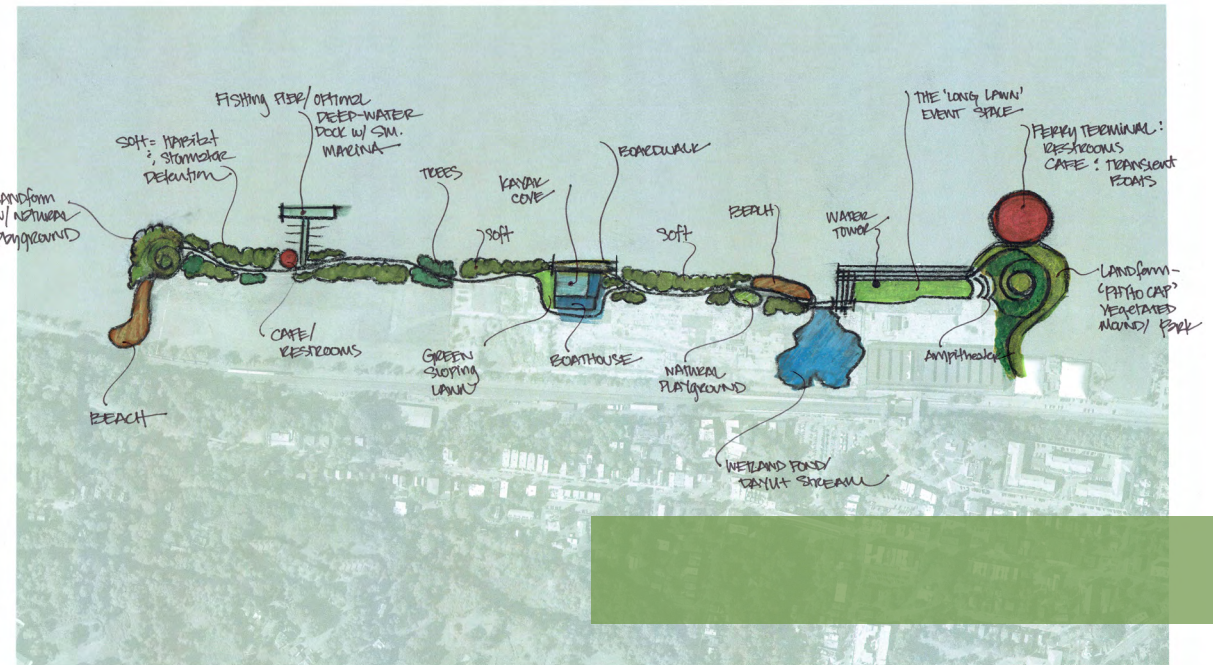
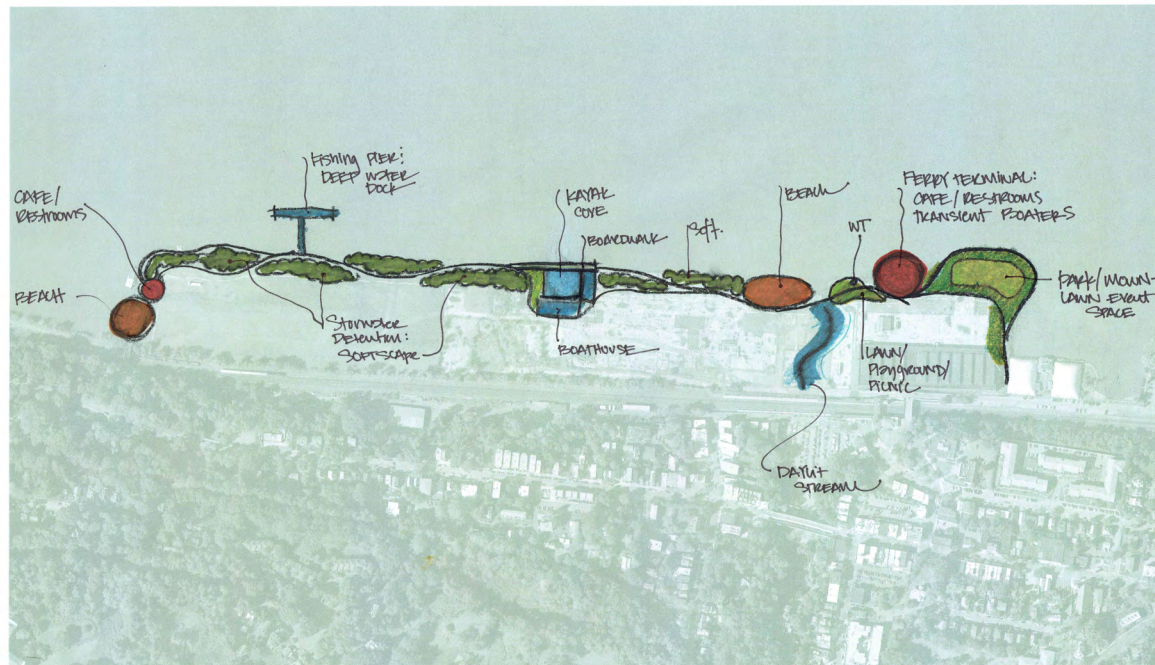
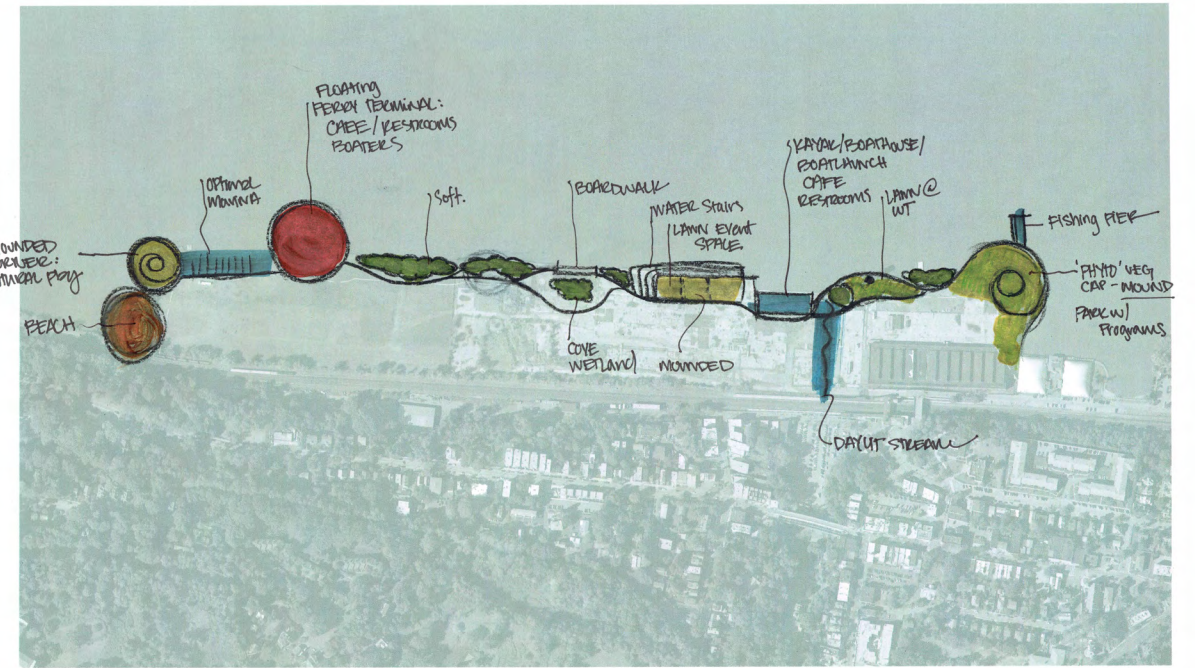
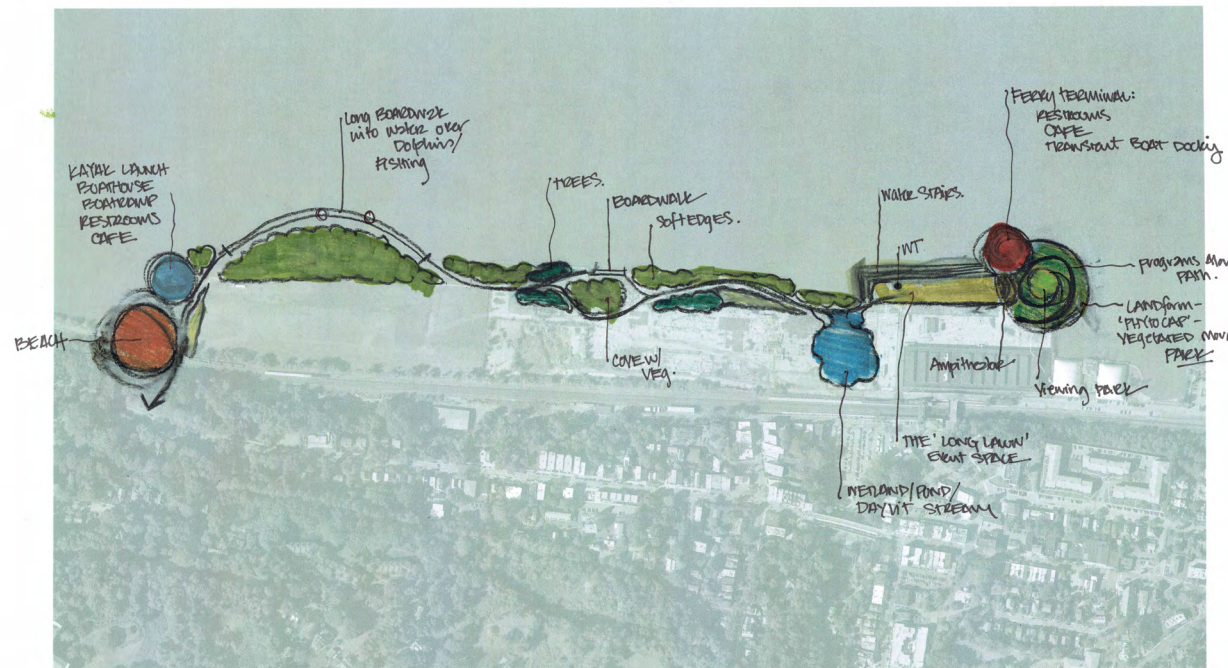
- Boathouse/ kayaking
- Playground
- Flexible Lawn

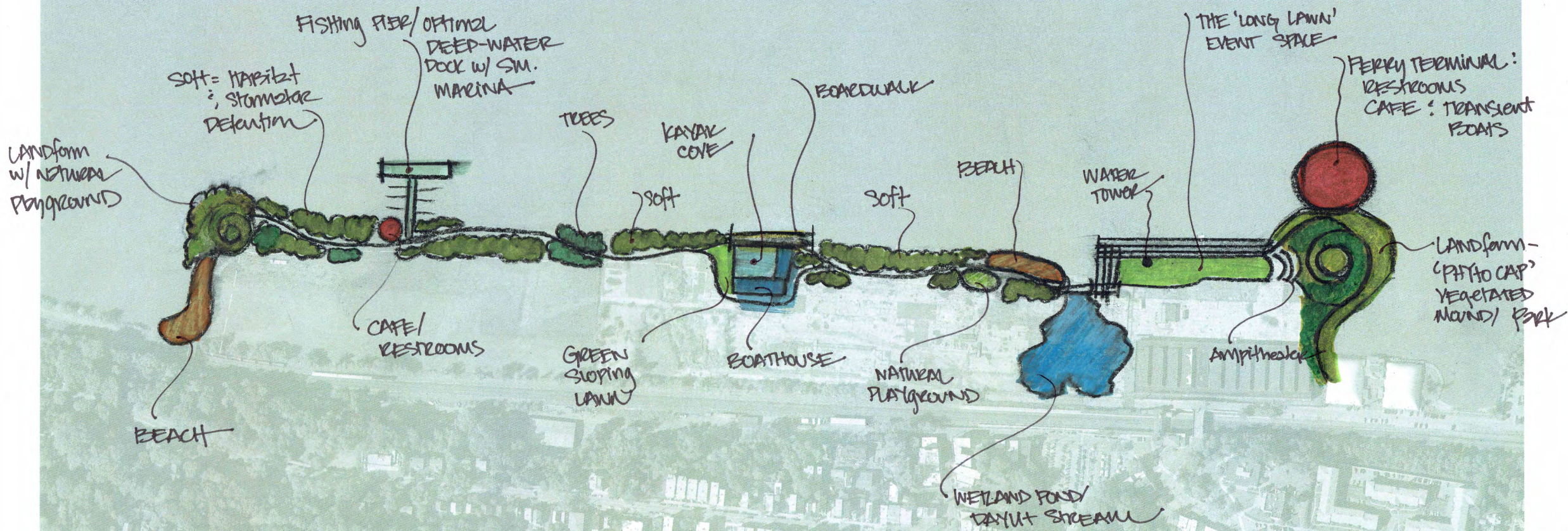
Natural Elements

- Stormwater retention pond
- Connection to existing creek

South Site Programming

- Beach
- Fishing Pier/ Utilize Dolphins
- Natural areas + Enhanced Ecology









Section A

Community Lawn

Ferry Terminal & Cafe

Plaza

Playground

Esplanade

Boat Docks

Lawn

Steps

Salt Marsh

Section B

Section B

Rock Wave Break

Steps down to Marsh

Boardwalk

Path

Salt Marsh

Section C

Section C

Habitat / Vegetation Area

Boathouse

Kayak Launch

Art

Path

NYSDEC Feedback:

- Structures (e.g., docks, boathouse) would require permit review and approval
 - set back 50 ft from shoreline
- Restricted public access around recovery wells/pump house
- Public access would require posting a public advisory along the walkways and piers to discourage fish consumption
- Mitigation preference =
 - intertidal marsh within north and south coves
- Utilize excavation areas for intertidal marsh creation
- Break up linear shoreline
- Minimize riprap on slopes
- Minimize stone sill/wave break

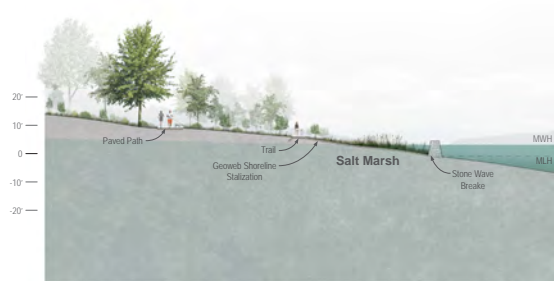




Section A
1" = 20'



Section B
1" = 20'



Section C
1" = 20'





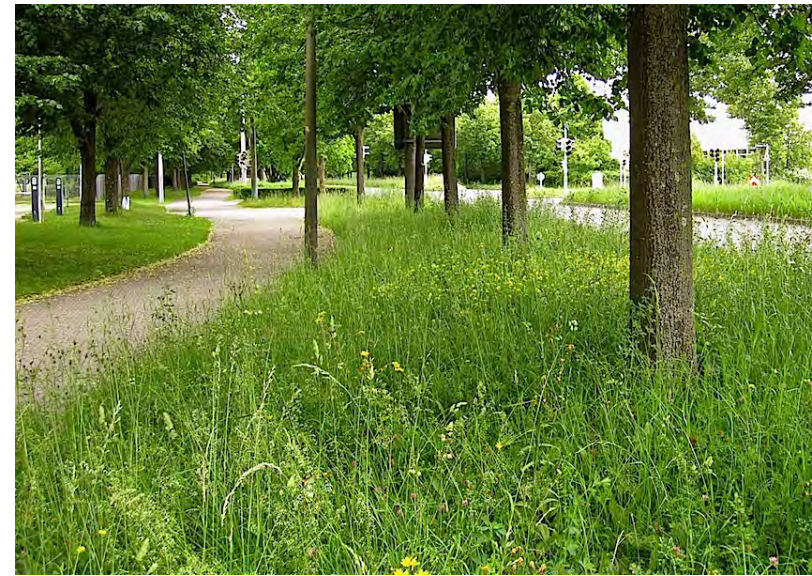
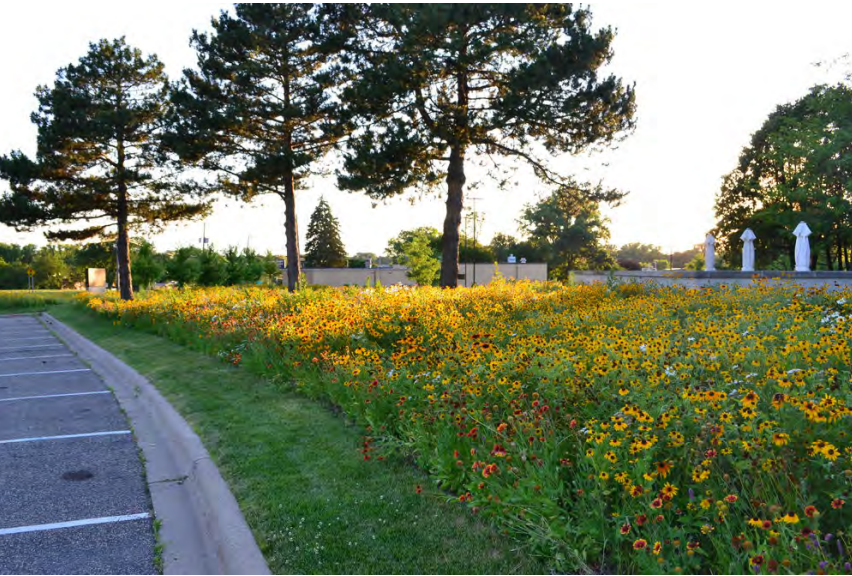
NORTH SITE - Water Access and Ferry Terminal

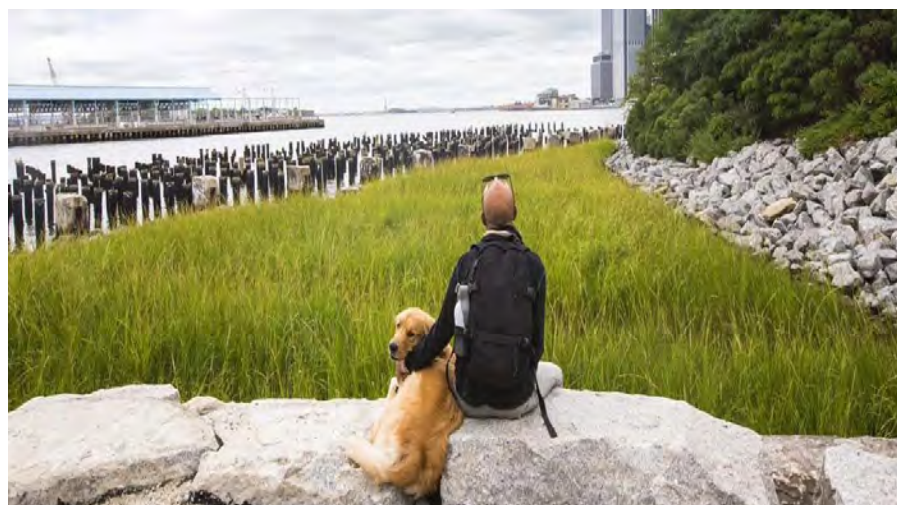


NORTH SITE - Great Lawn and Esplanade



NORTH SITE - Topography/ phytoremediation





NORTH COVE - Marsh Habitat Creation



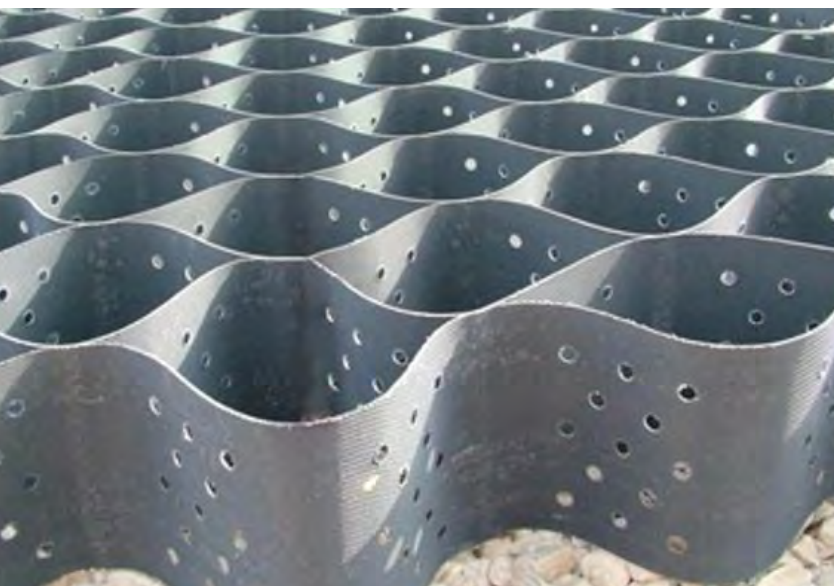
SOUTH COVE - Boathouse and Kayak Ramp



other/better bulkhead photos?



SHORELINE - Riprap/ Marsh Edge



SHORELINE - Living Shoreline Stabilization Elements

