



Leveraging Water-Based Infrastructure to Maximize the Restoration of Coastal Ecosystems

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Engineering with Nature: Designing Navigation
Infrastructure for Greater Environmental Sustainability

September 7-8, 2011

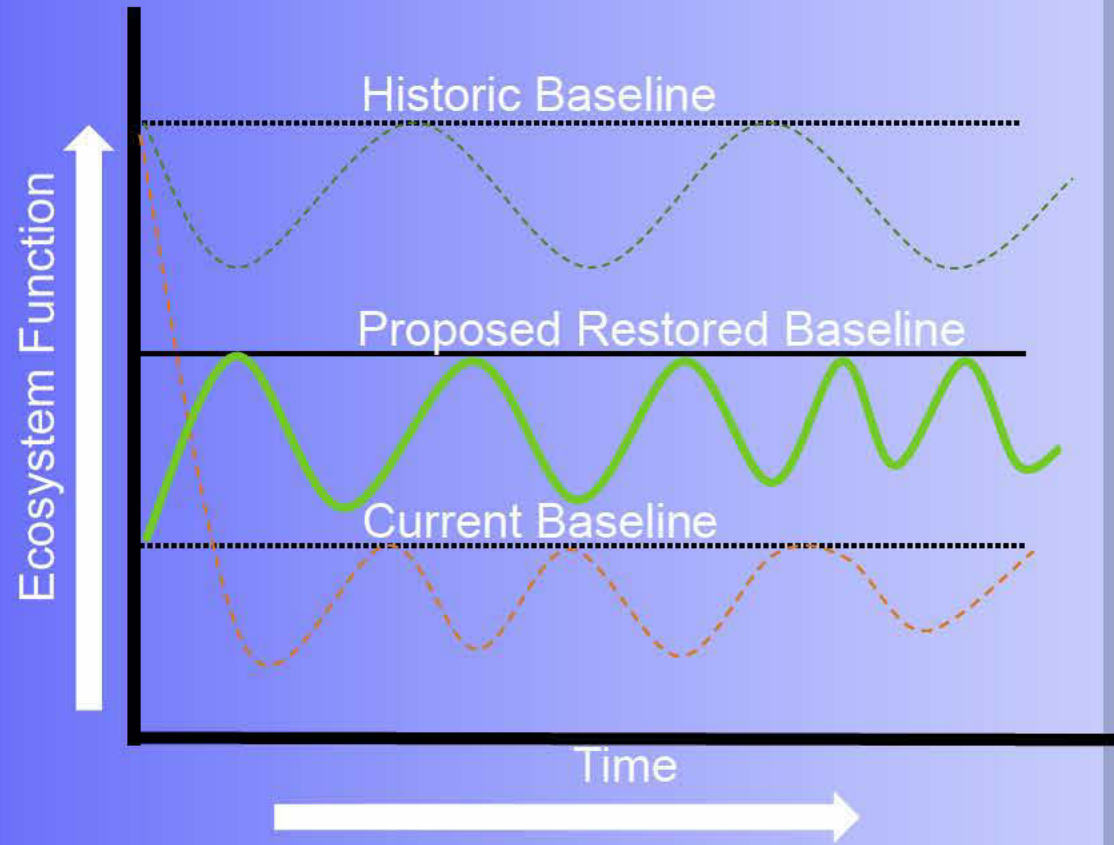
Presentation Framework

- Background
- Process
- Projects
- Conclusion



Sustainable, Functioning Landscapes

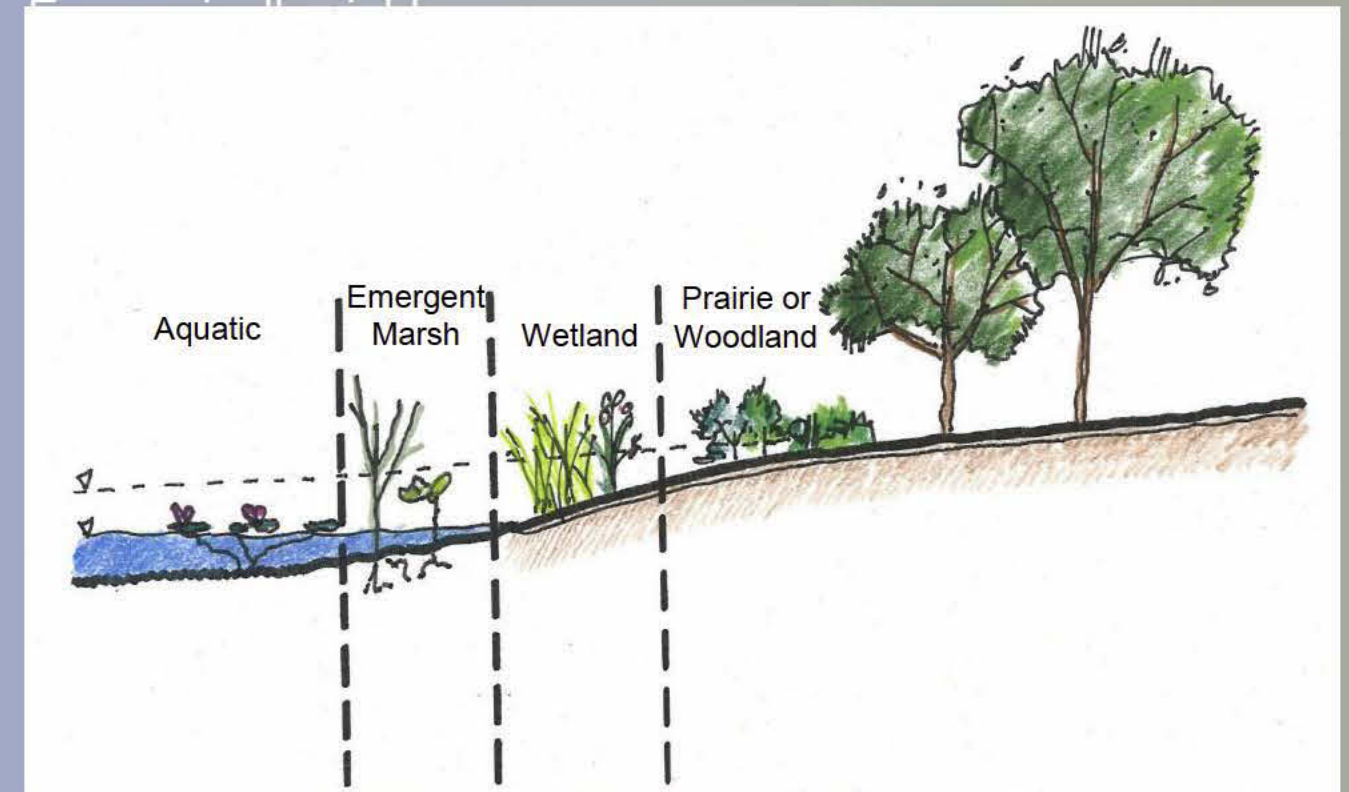
- Flood Control
- SW Conveyance
- Water Quality
- Nutrient Cycling
- Habitat
- Biodiversity
- Soil Stability
- Food Production
- Spiritual
- Recreational
- Educational



...Are Landscapes that Work ...

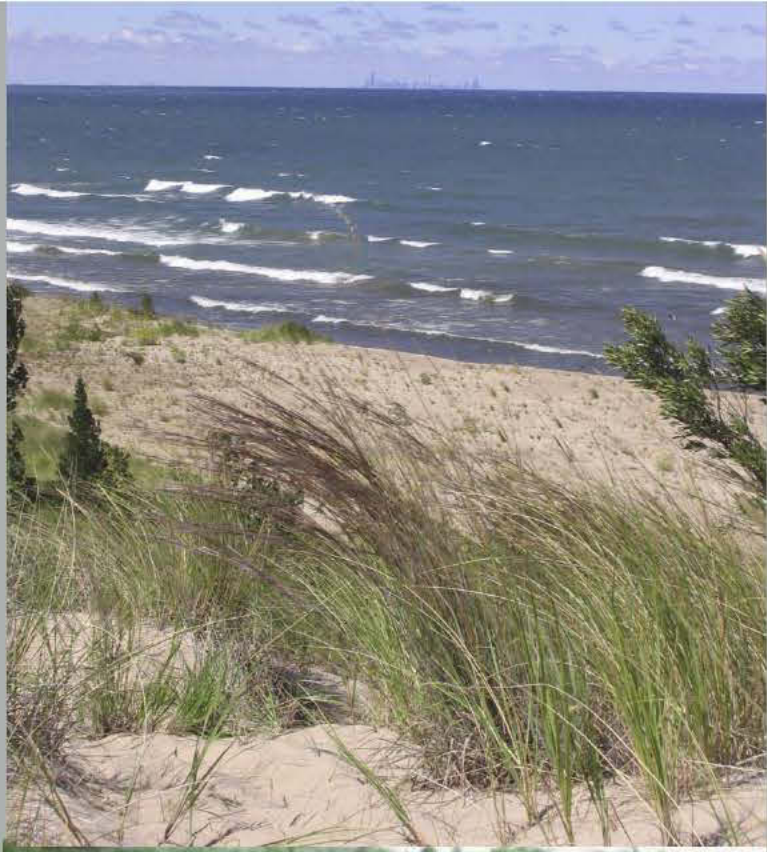
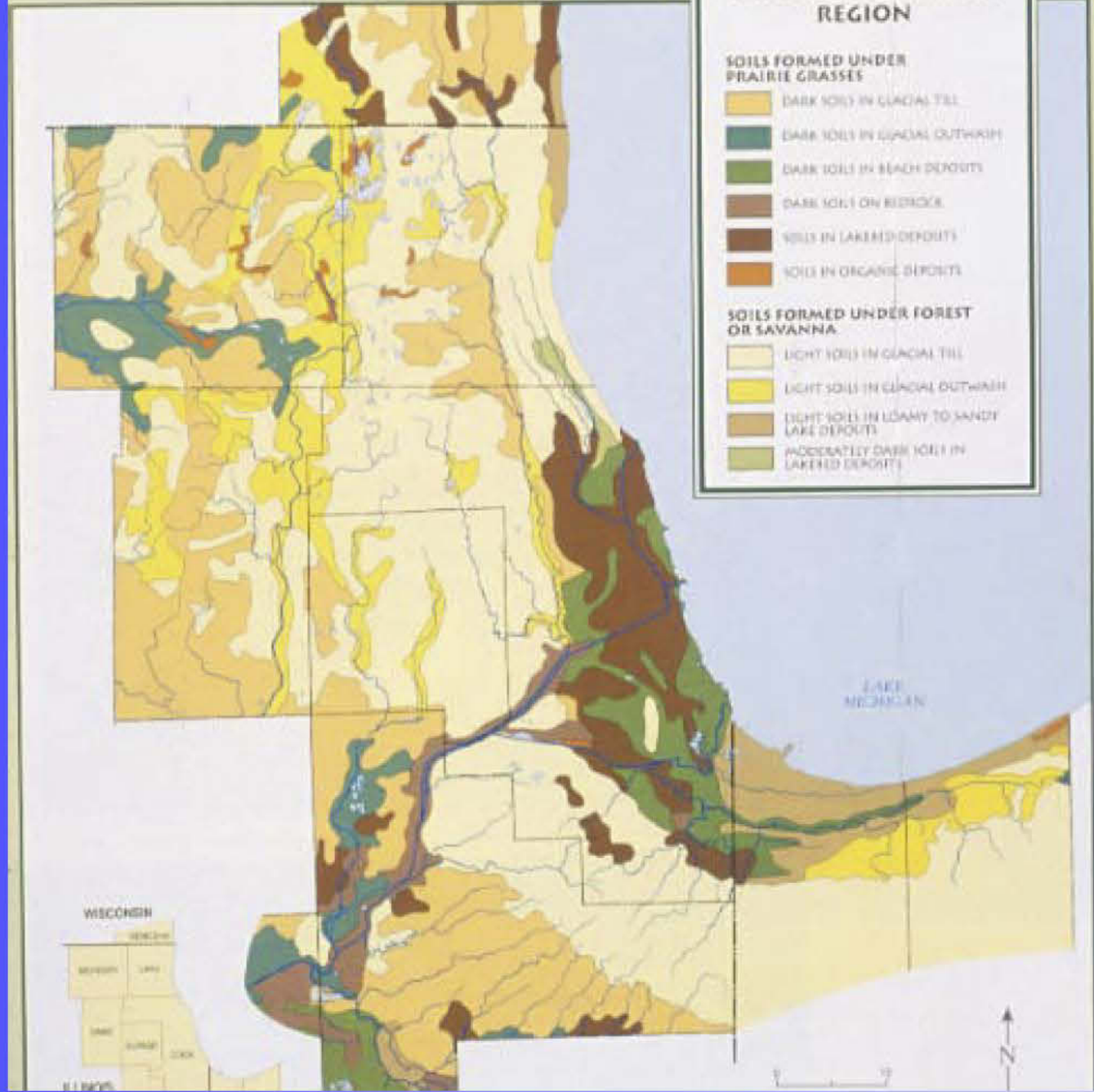
At least maintain (hopefully improve) the ecosystem functions (or work) of the landscape relative to a specific baseline

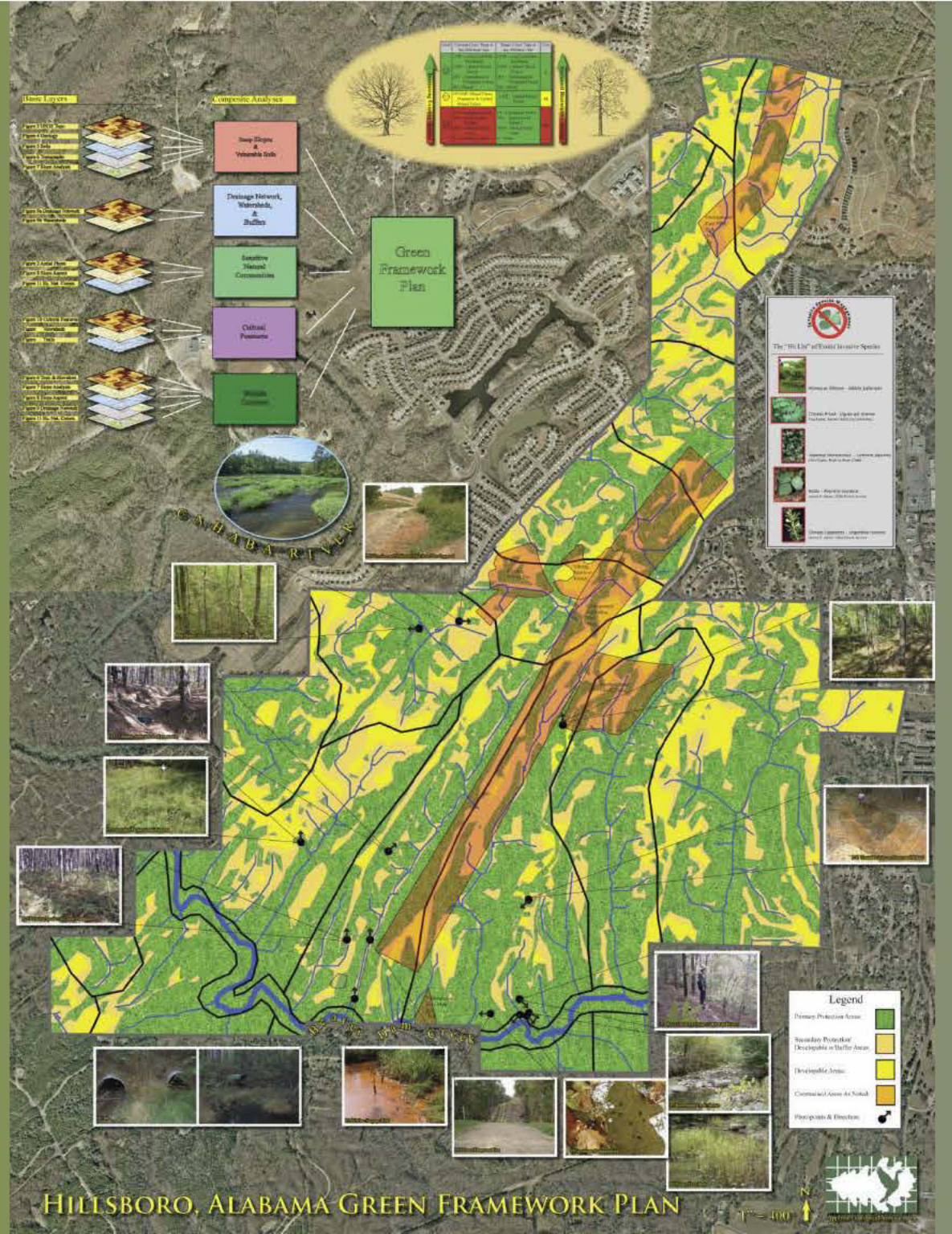
Provide for the needs of the human community



SURFACE DEPOSITS IN THE CHICAGO WILDERNESS REGION

- SOILS FORMED UNDER PRAIRIE GRASSES**
- DARK SOILS IN GLACIAL TILL
 - DARK SOILS IN GLACIAL OUTWASH
 - DARK SOILS IN BEACH DEPOSITS
 - DARK SOILS ON BEDROCK
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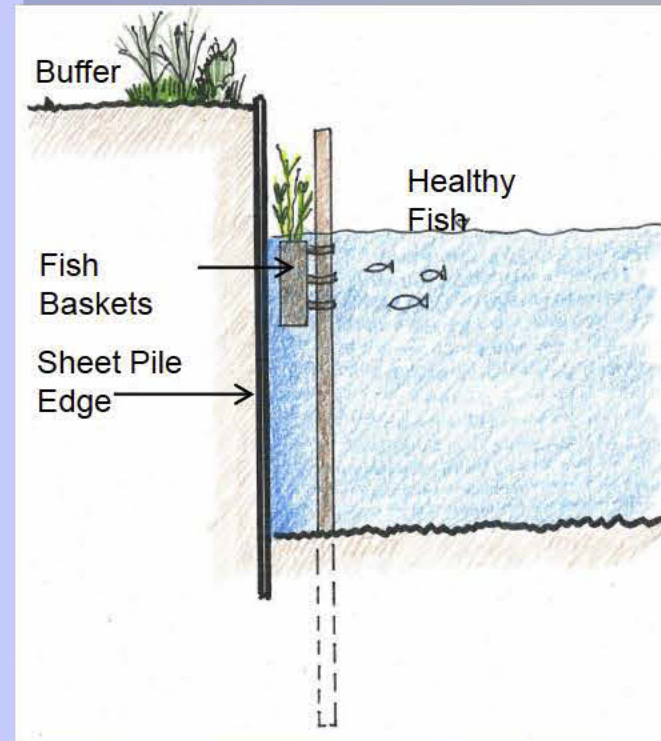
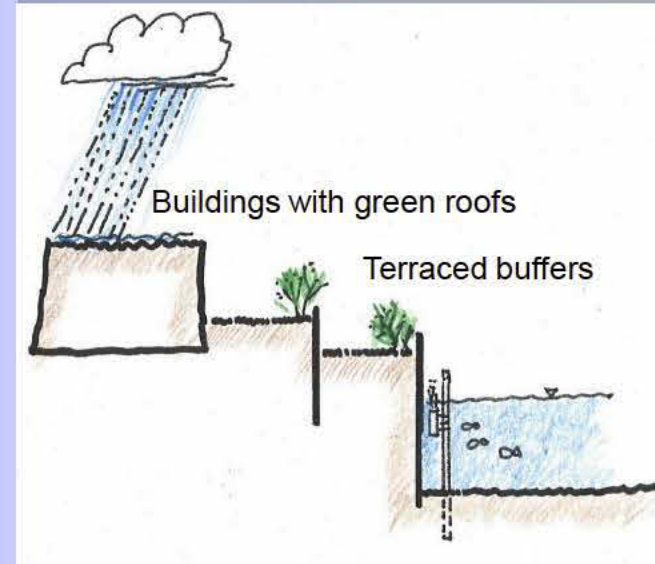
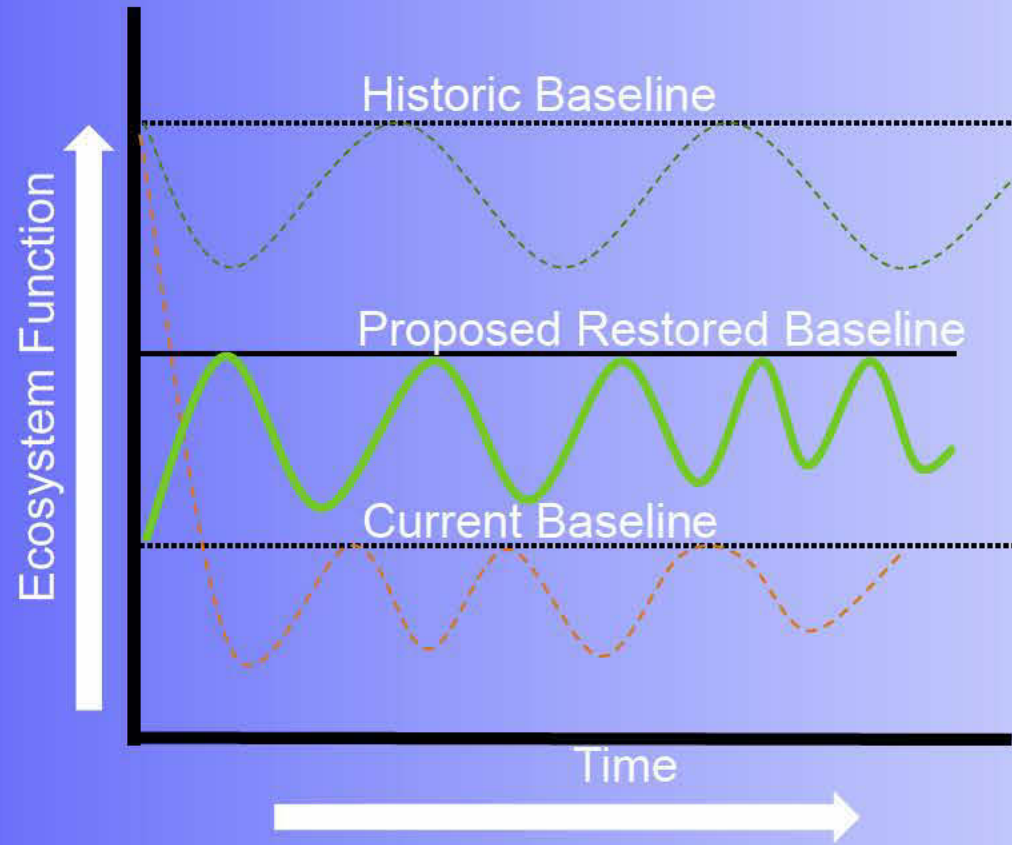
How does the Milwaukee Inner Harbor size up?

- Active, working harbor
- Contaminated soils (our site is an AOC)
- Sheet pile walls
- Dredging for maintenance and remediation
- Tributaries are mostly hardened and channelized
- Wave action through port traffic and seiche
- One wetland
- CDF used by birds



What can we do here?

- Flood Control
- SW Conveyance
- Water Quality
- Nutrient Cycling
- Habitat
- Biodiversity
- Soil Stability
- Food Production
- Spiritual
- Recreational
- Educational



William G. Milliken State Park and Harbo



Recycling on a 476-acre scale.

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From a Great Lakes Marsh
to Farmland Back to Natural,
Self-Sustaining Wetlands



Beauty is in the Eye of...the Jury.

JJR

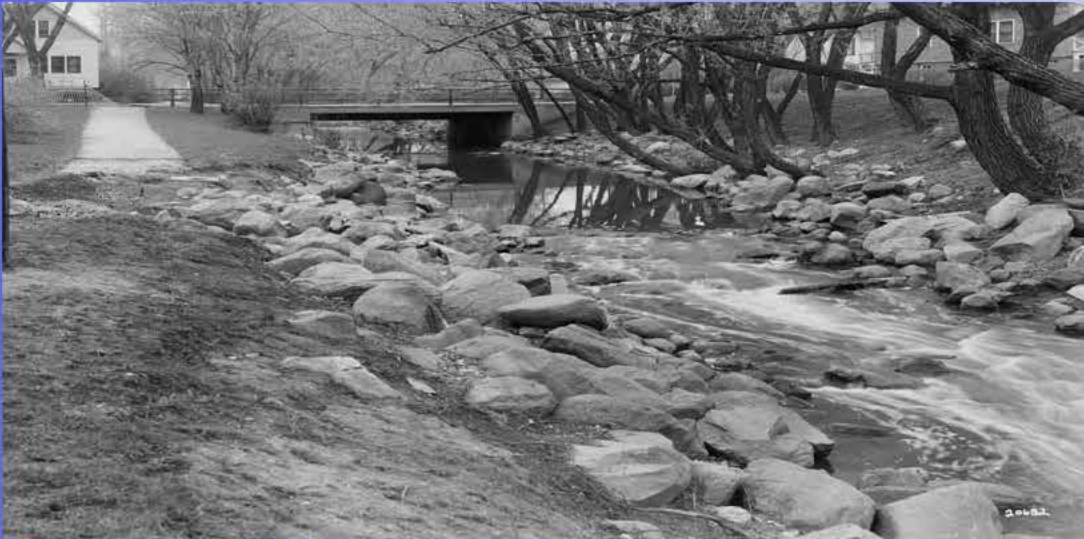
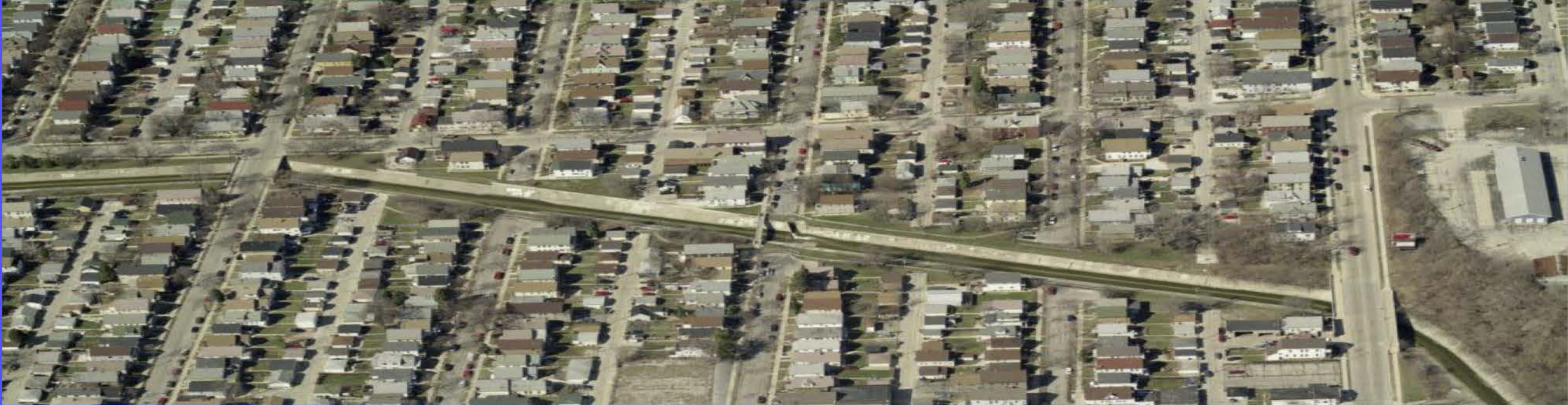
.....
“Crosswinds Marsh is a living demonstration that landscape architecture can reconcile the seemingly competing goals of economic development and ecological integrity.”

ASLA President's Award
Jury Comments





The Kinnickinnic River Restoration, Milwaukee's "Lost River"



Pre-concrete: 1960



Today

The Neighborhood: An Historical Melting Pot



Kinnickinnic River Corridor Neighborhood Plan





Northerly Island

Team Northerly

Chicago Park District

JJR

Studio Gang

AES

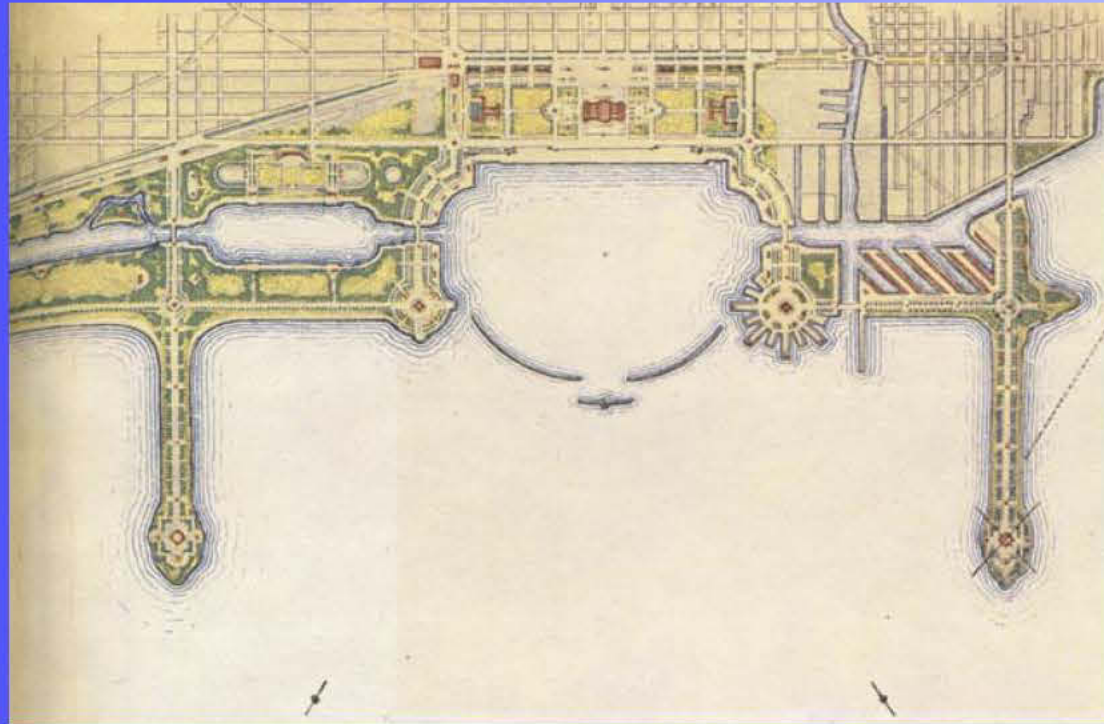
AREA

Fish Transportation Group

Studio V



History



Plan of Chicago (Burnham-Bennett) - 1909



Northerly Island - 1923



Northerly Island - 1929

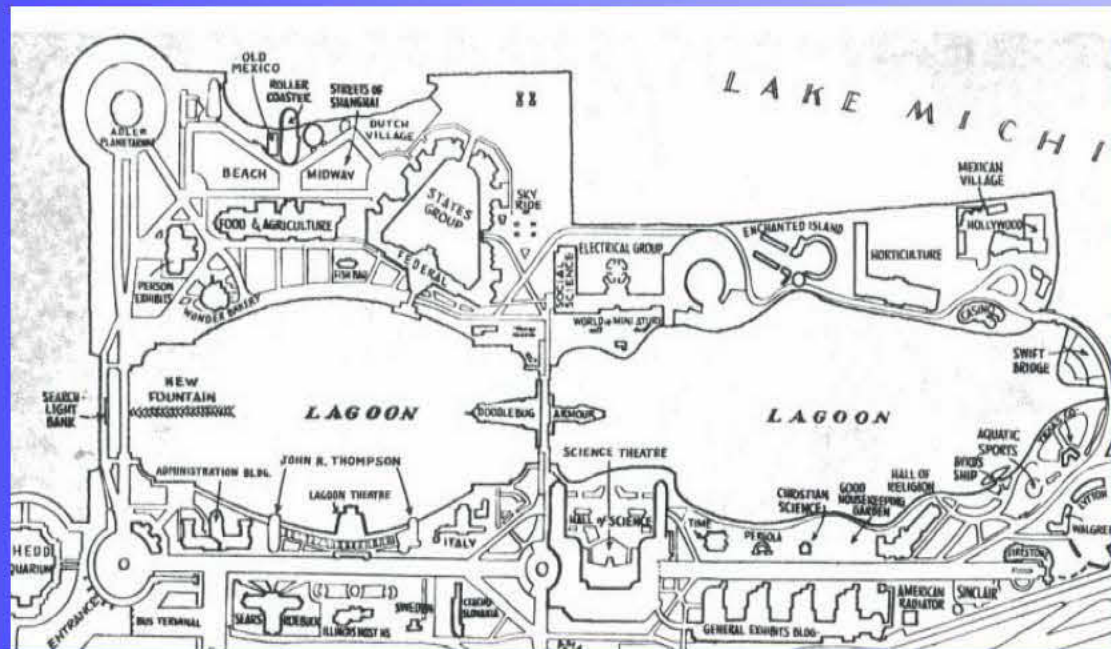


World's Fair - 1933

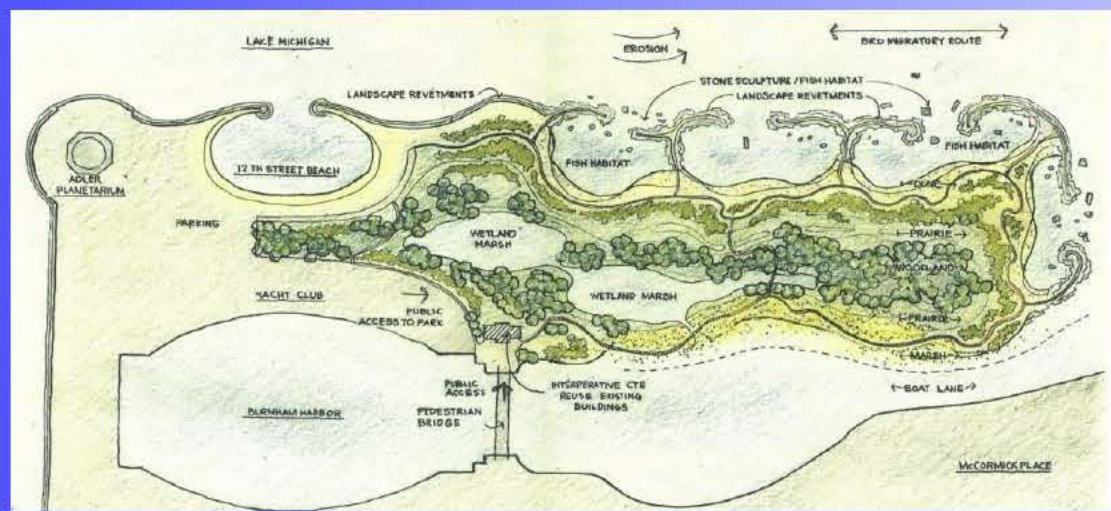


Meigs Field

Dreams



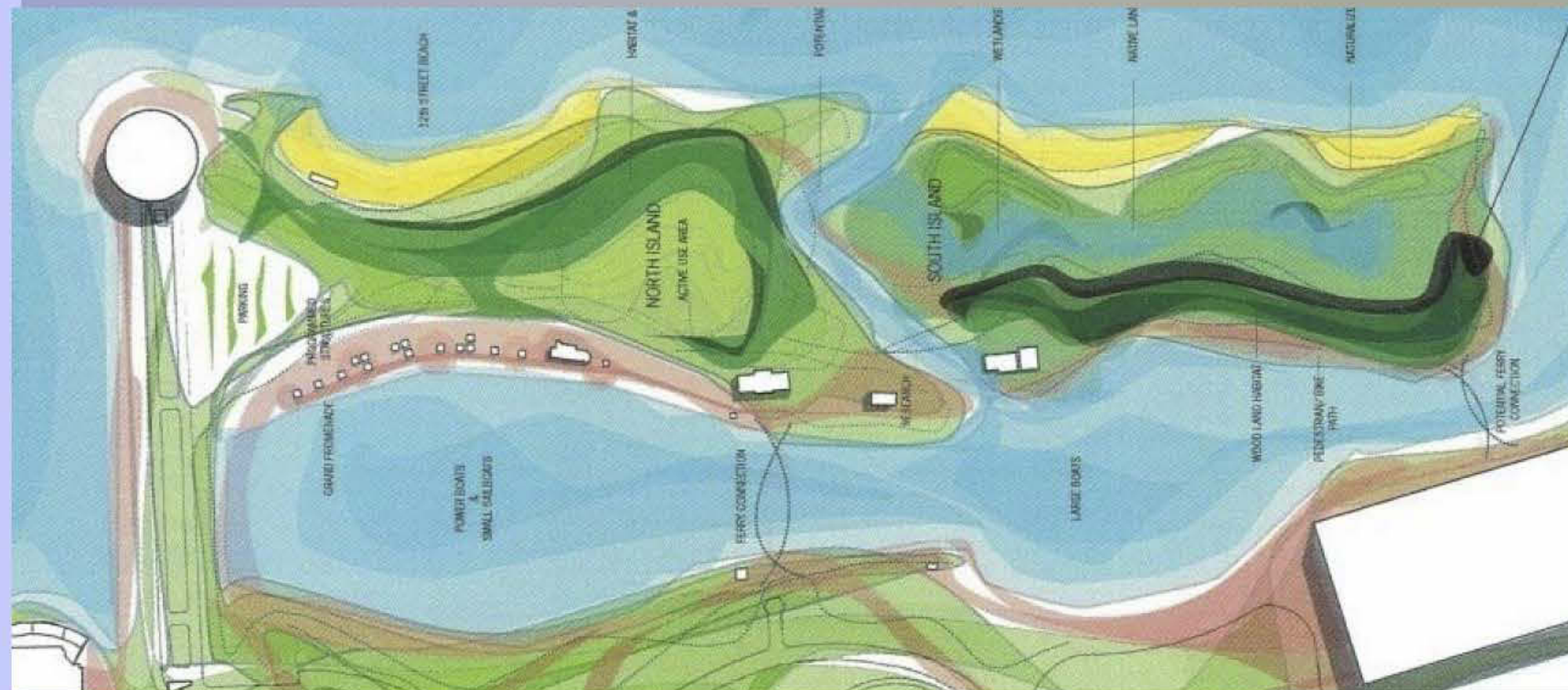
1933 World's Fair Plan



Lake Michigan Federation proposal 2004



Teng proposal, 1996



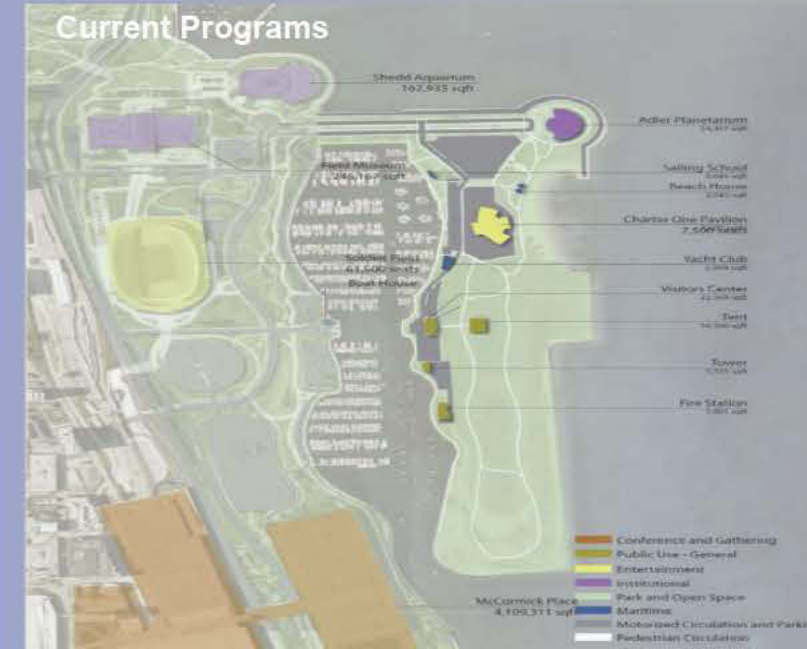
Alliance for the Great Lakes proposal 2005

Analysis

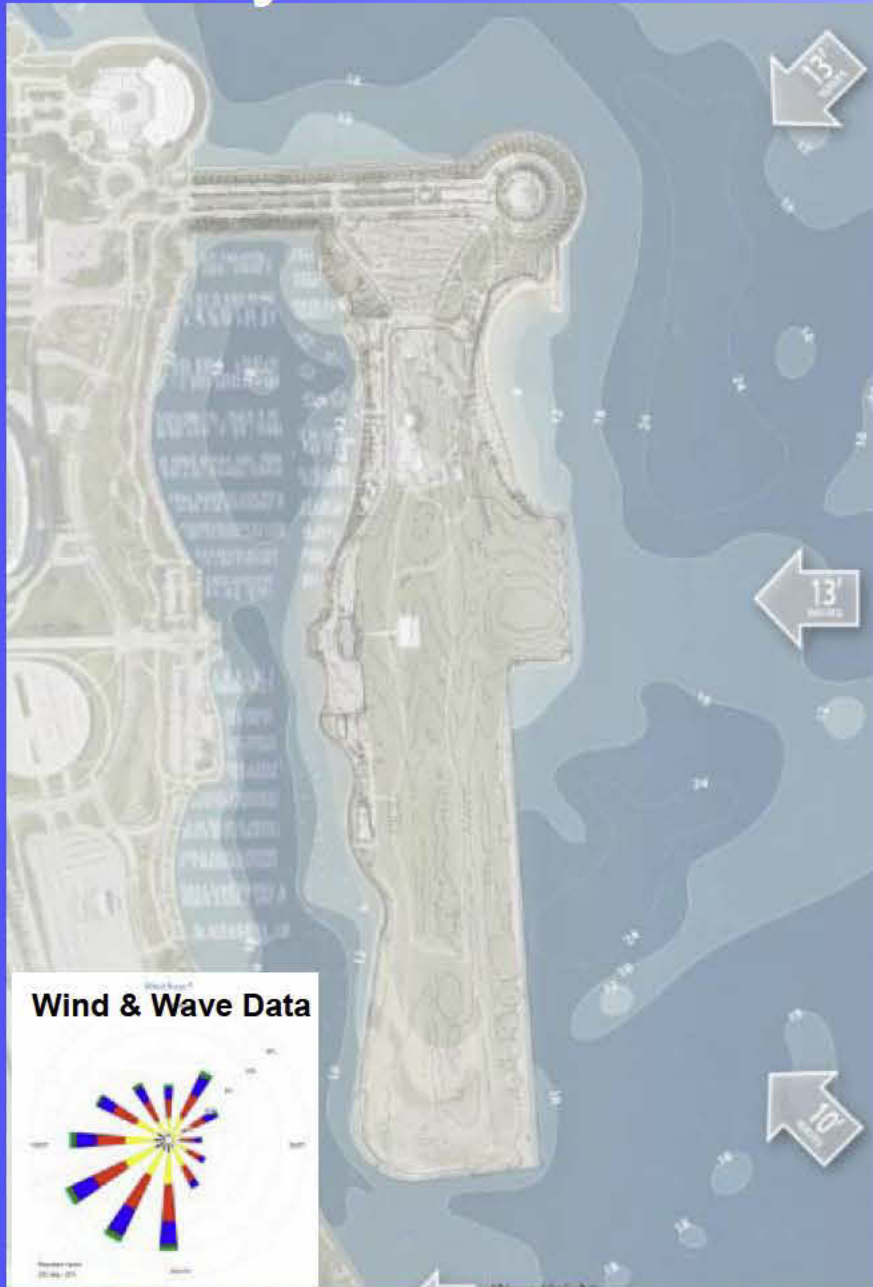
Built Environment



Natural Environment



Analysis



Coastal Environment



Shoreline Condition



Buildings and Infrastructure

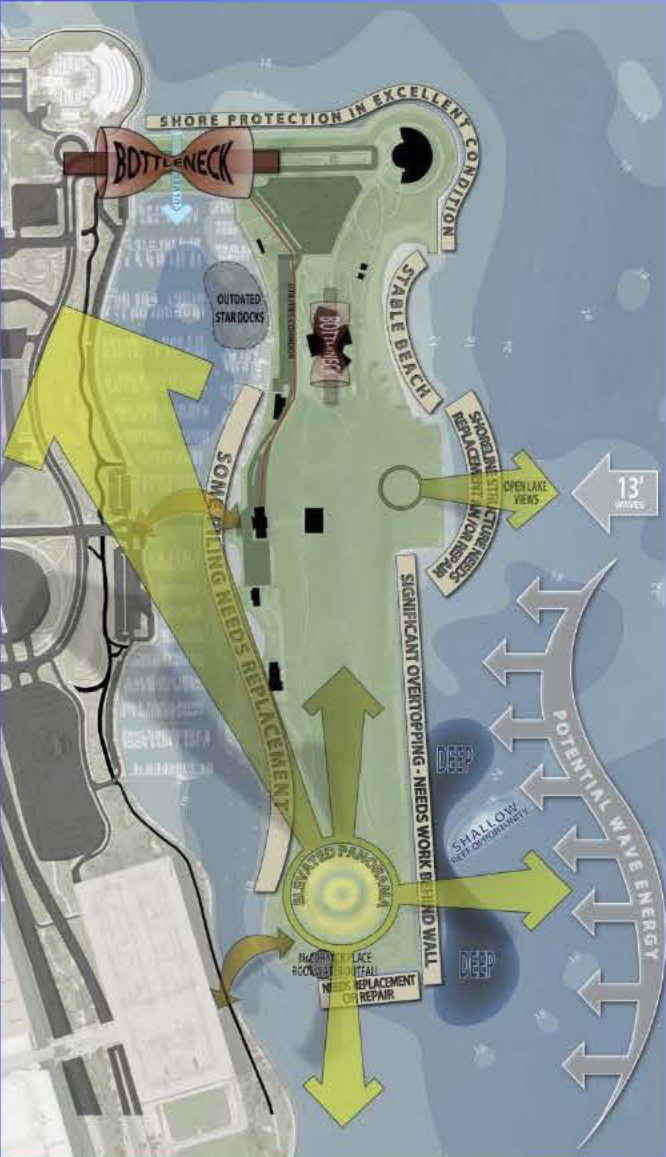


Trails



Access, Circulation & Parking

Analysis

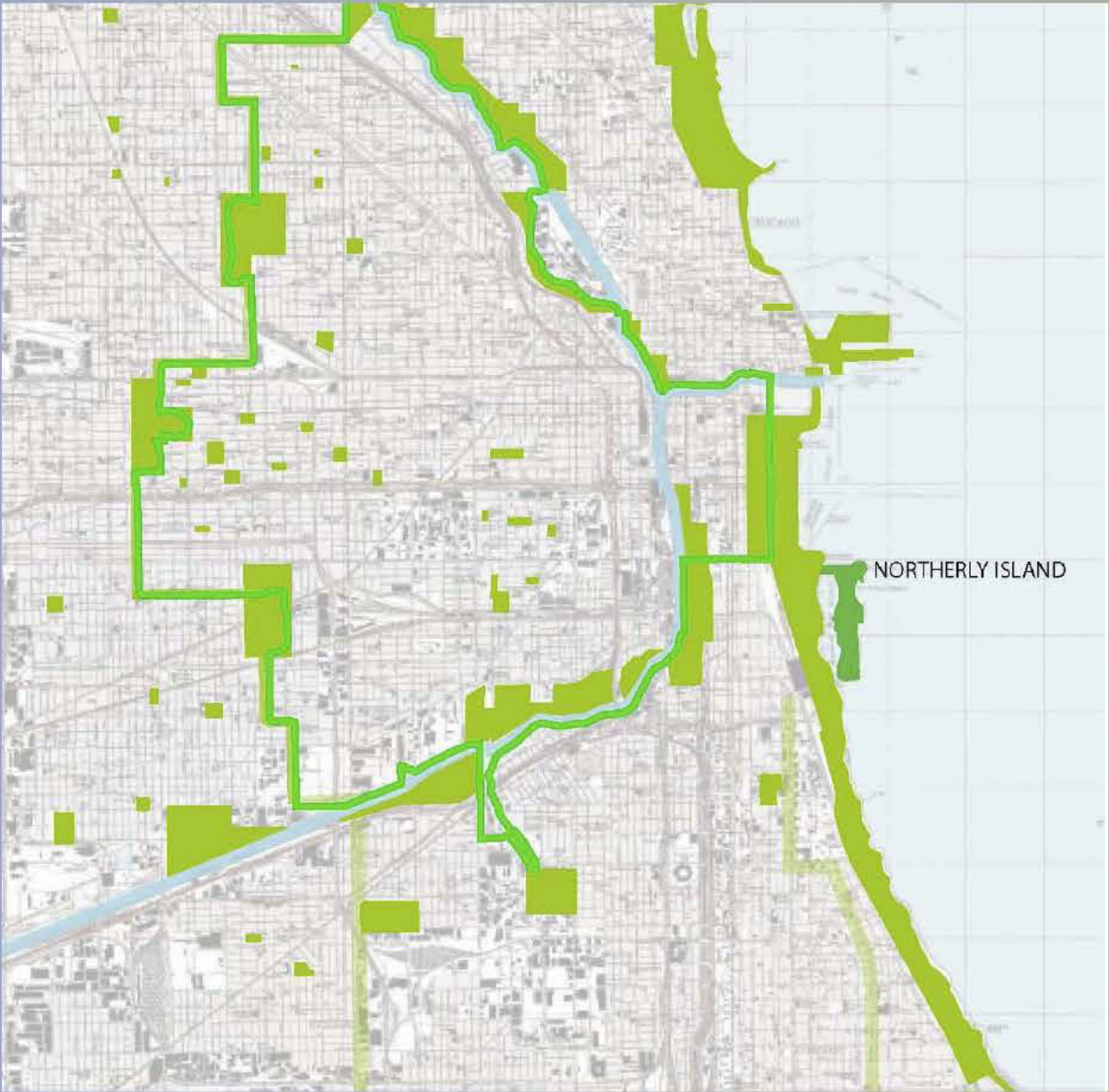


Influences, Opportunities & Constraints

Analysis



Natural and Urban Influences



NORTHERLY ISLAND

Basic Elements

topography



edges



habitats



sustainability



Basic Elements



discovery



activities

Opportunities For New....



connections



attractions

Ideas and Inspirations

inspiration: spirial motion of natural systems ▼



inspiration: barrier islands and protected habitat ▼



Clocks



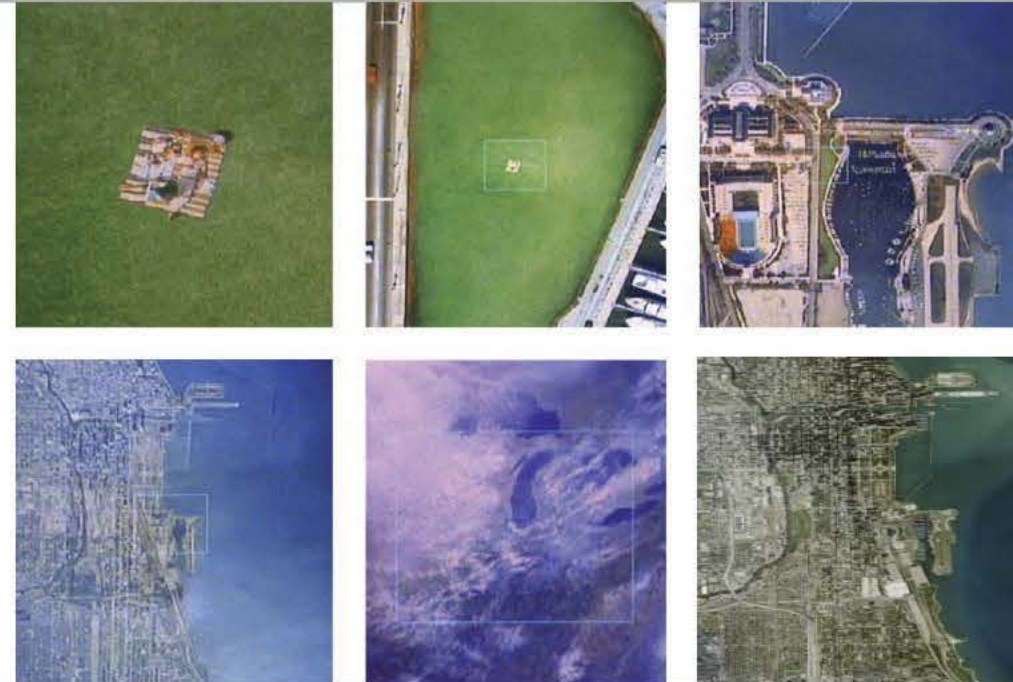
inspiration: landforms shape views and create habitat



Viewfinder

Reef

inspiration: different scales of nature from 'Powers of Ten' ▼



Chicago

Ideas and Inspirations

Clocks



Reef



Viewfinder



Chicago



Community Input

Summary of Findings

A significant preference for the “**Reef**” diagram in all exercises.

A strong preference towards a high-quality and **unique habitat** and a generally passive and natural focus for the park.

Significant **negative feedback on the “Chicago”** diagram and overly “designed” elements.

A desire for **topography and landforms** as integral design elements.

Minimal support for new internal waterways, especially if used for active boating.

Minimal support for adding new cultural attractions or built facilities and minimal support for historic preservation or adaptive re-use of the former terminal building and other airport-related structures.

Significant support for clustering of the most active elements at the north end of the park, with a desire to keep the **southern portion more quiet and natural**.

Lack of support for **new or enhanced bridges**.

A general desire to **minimize parking on the island**. Equal feedback for and against concealed structured parking at the north end.

A desire for diversifying means of access with an emphasis for **non-motorized transportation**.







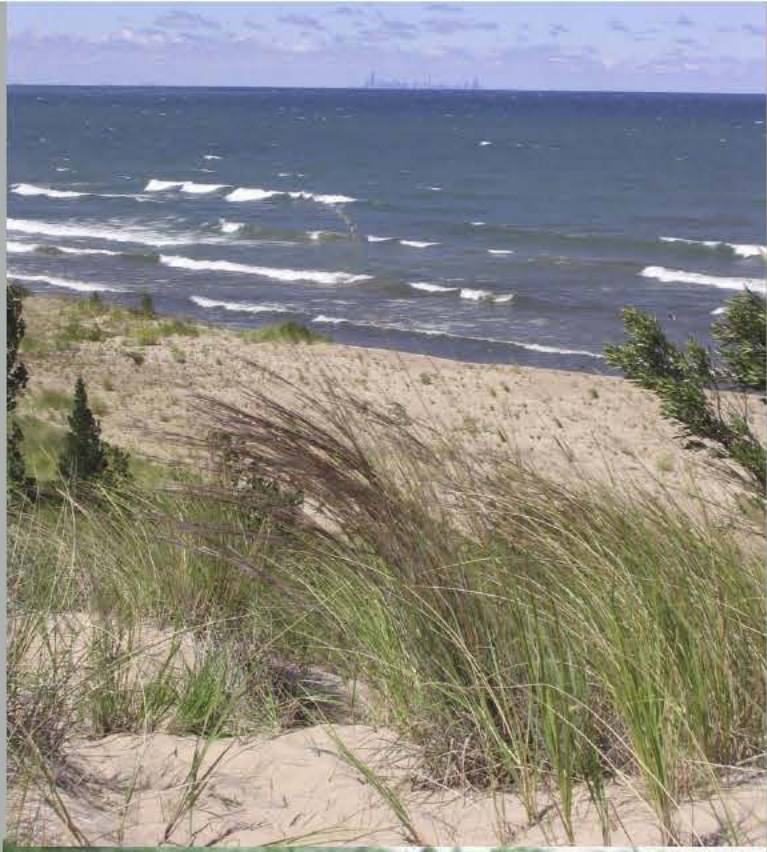
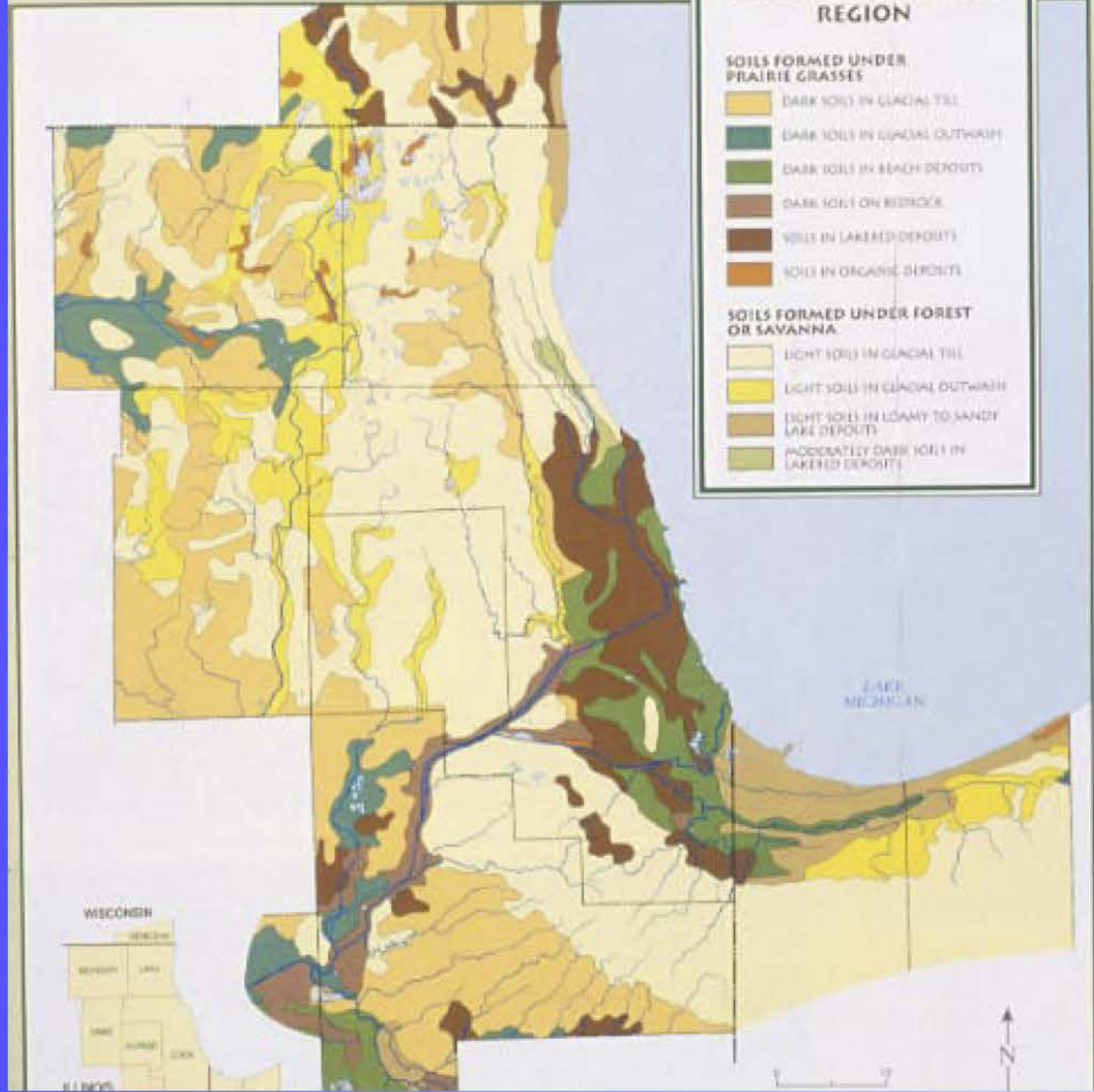
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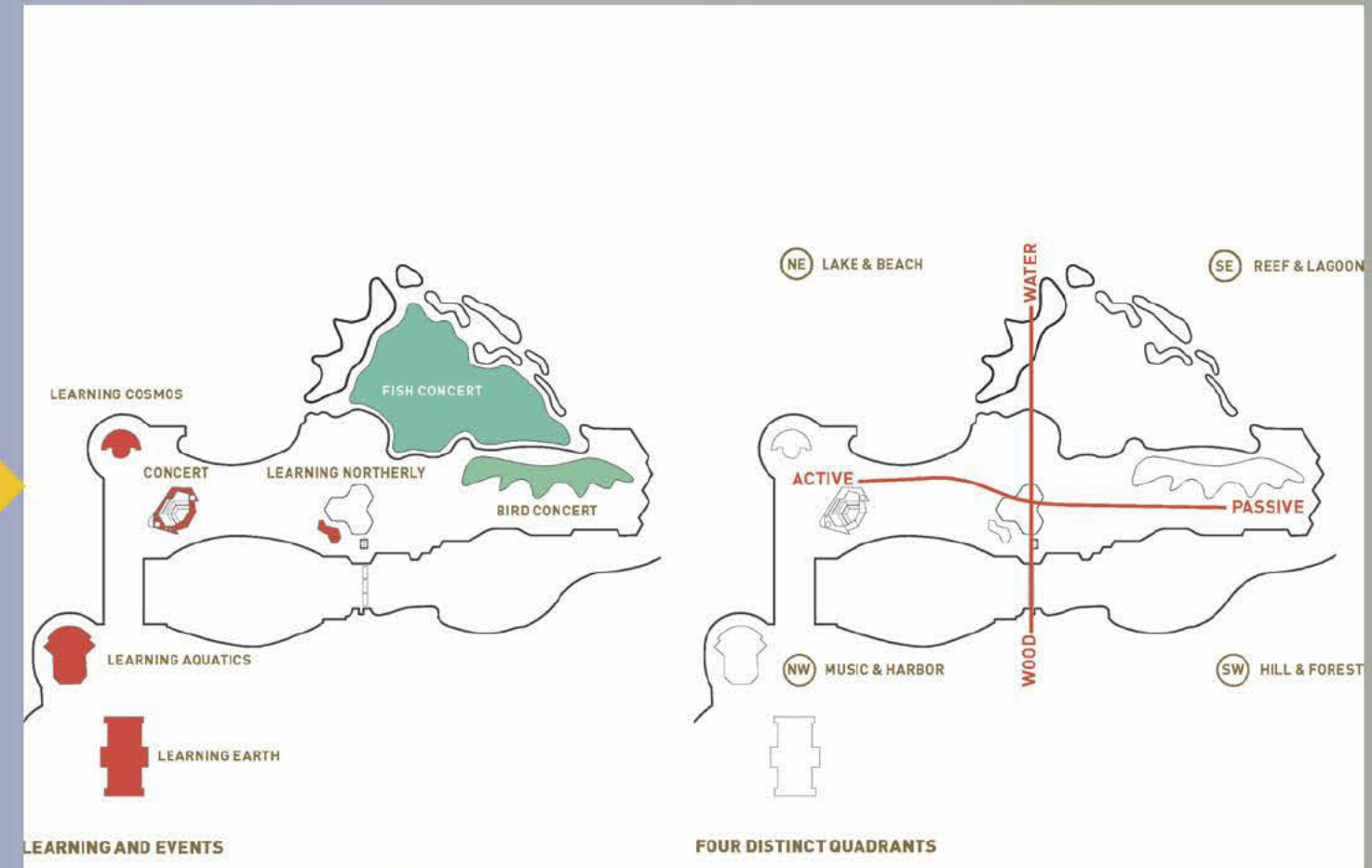
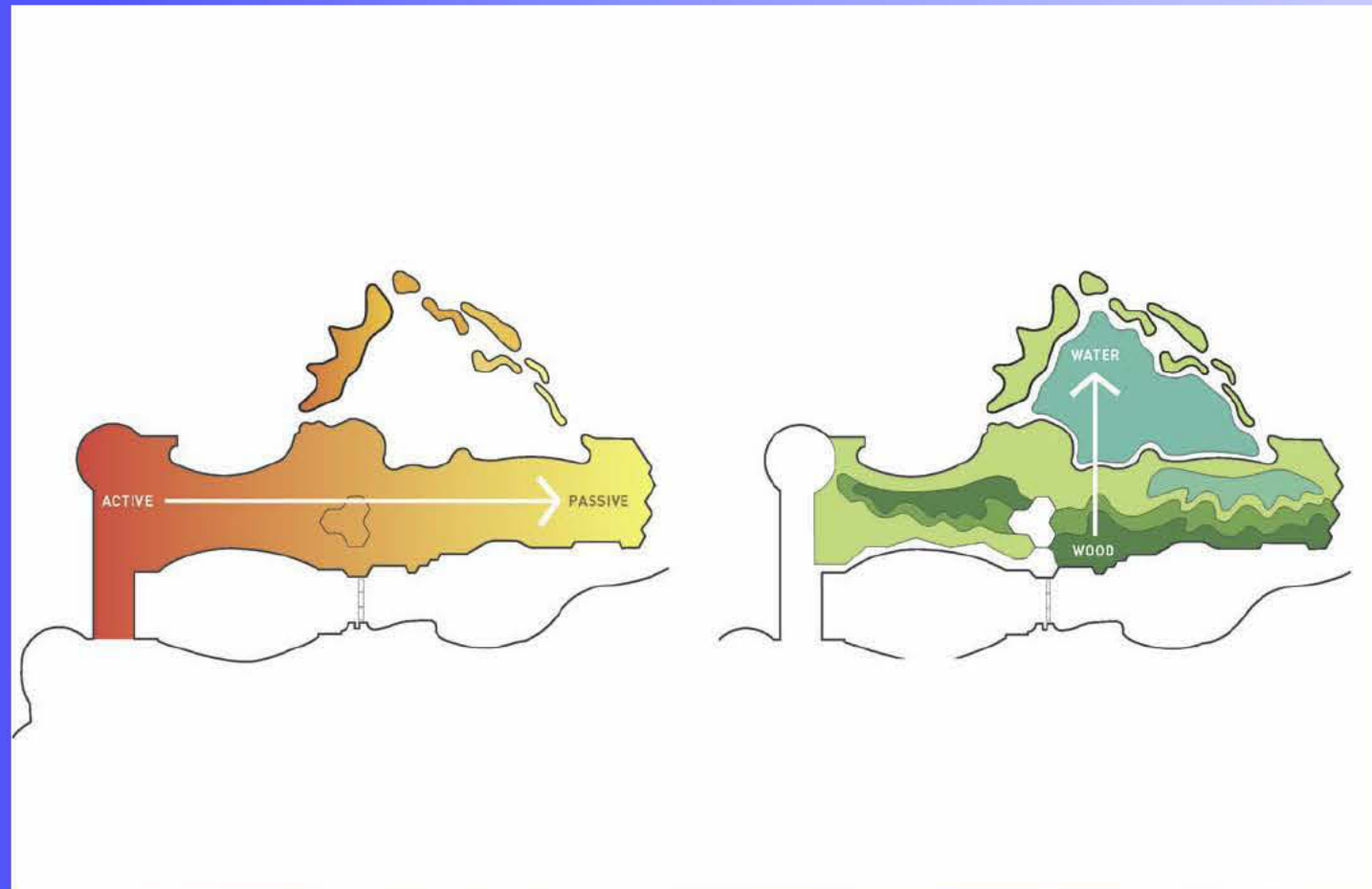
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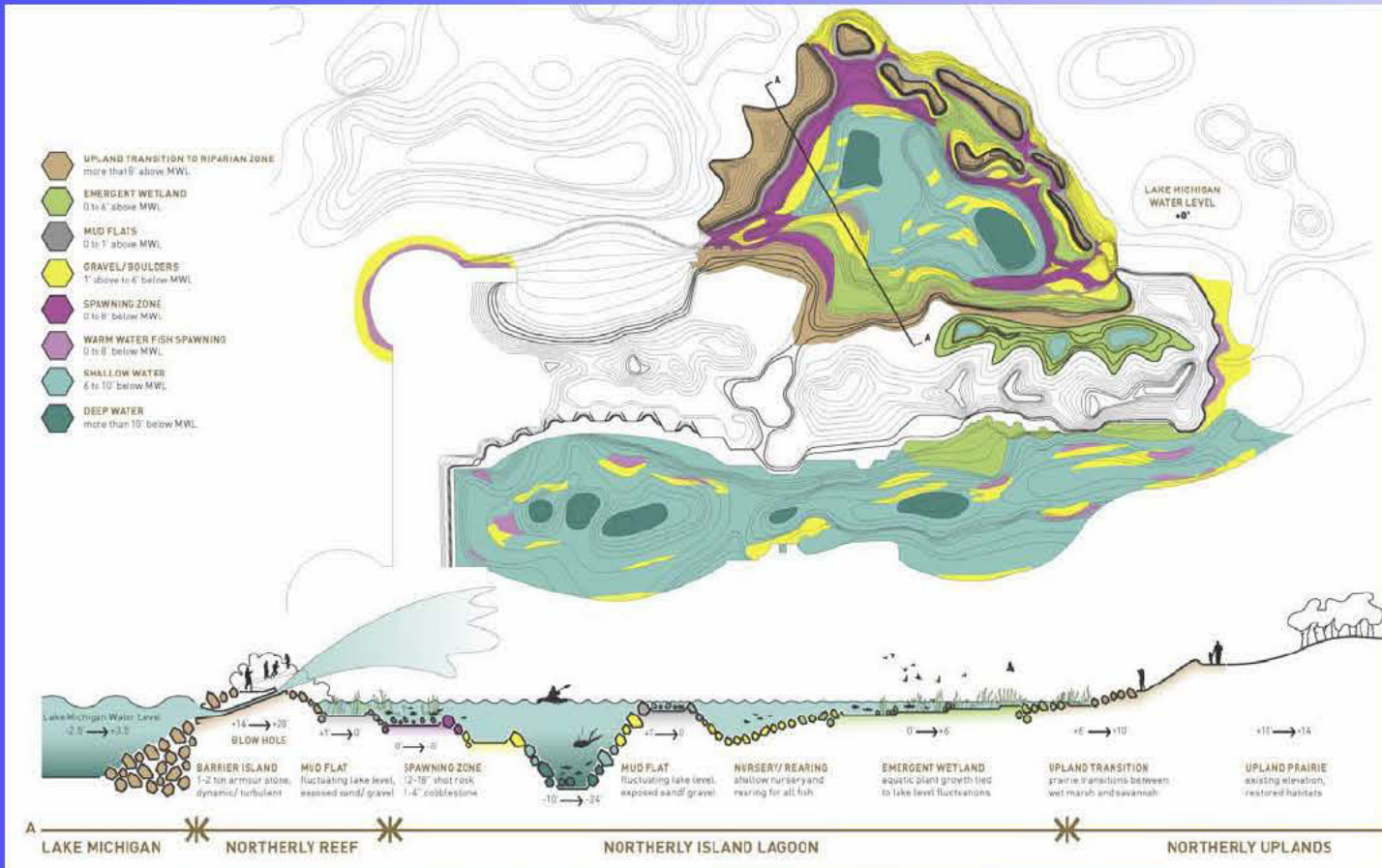
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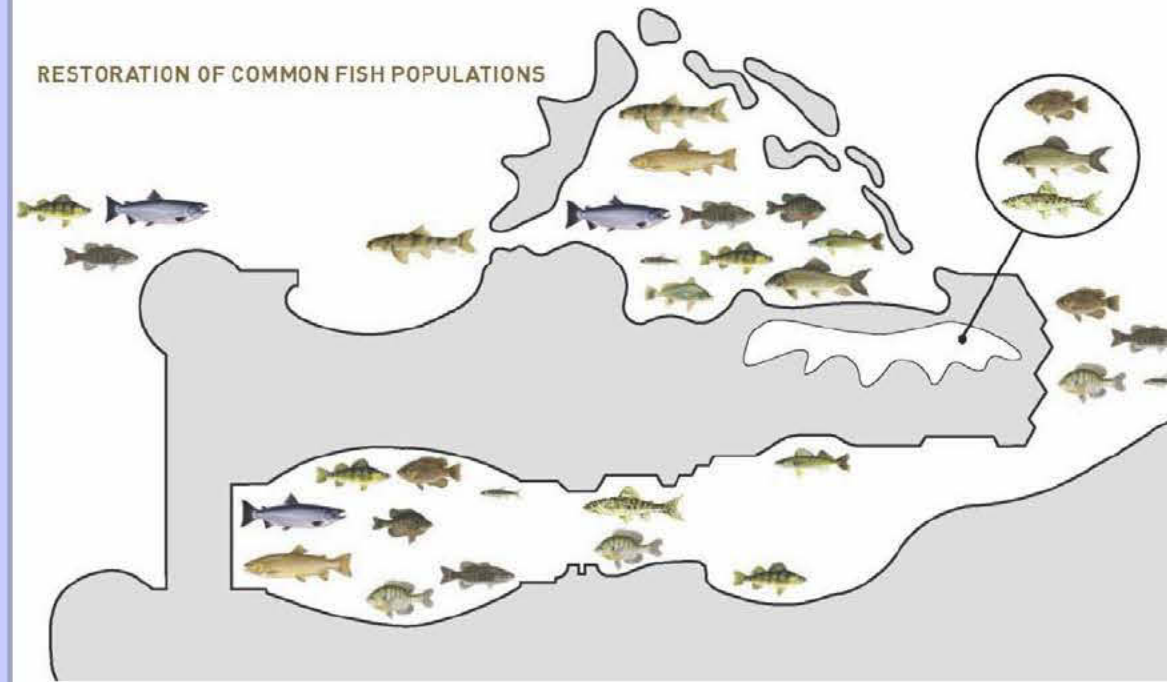
Natural Resource Framework



Natural Resource Framework

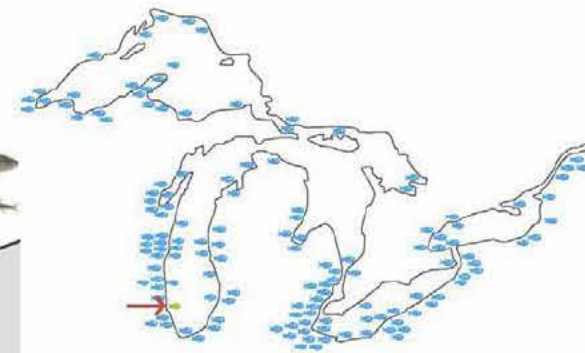


RESTORATION OF COMMON FISH POPULATIONS



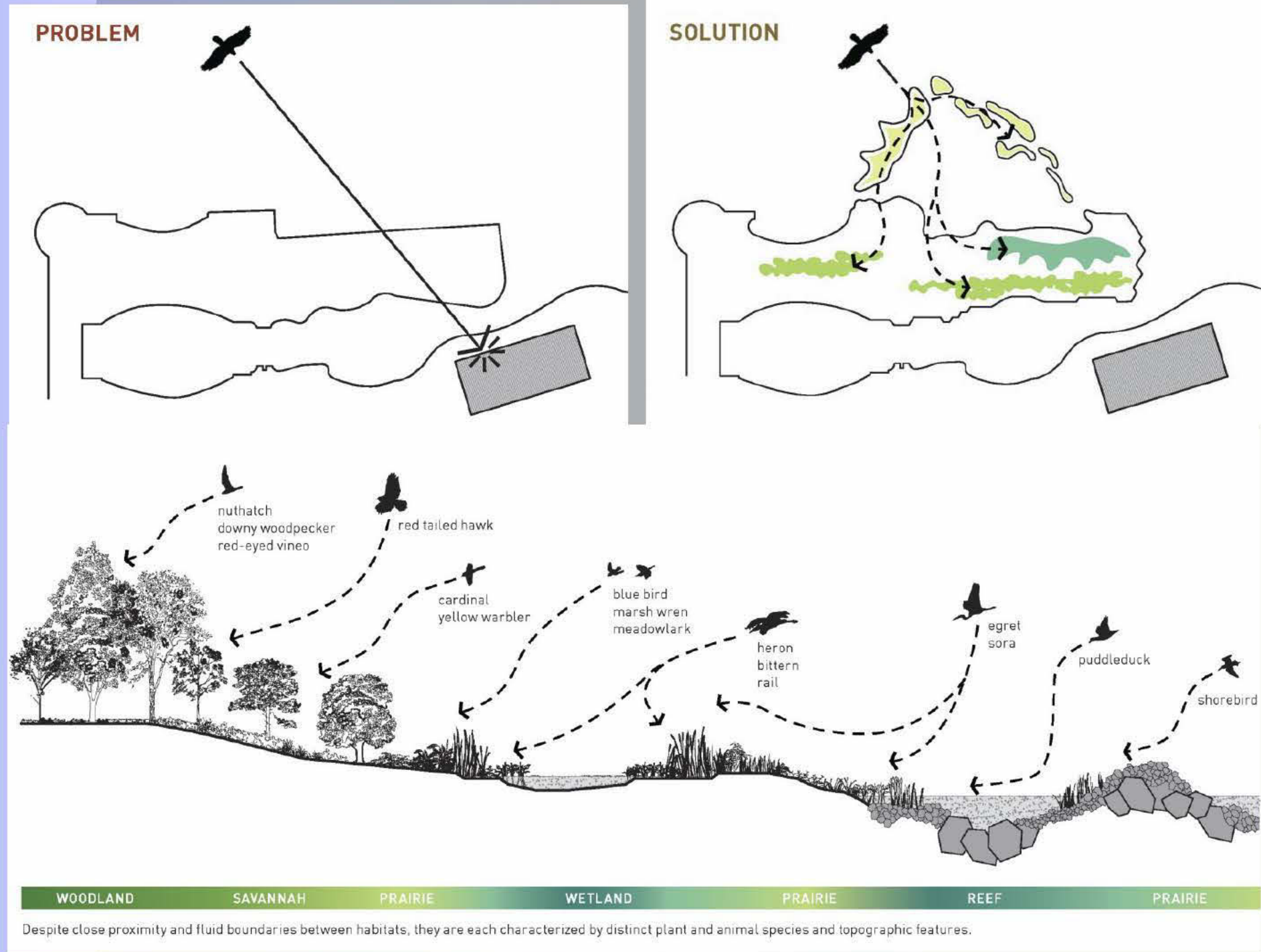
RESTORATION IN THE GREAT LAKES

Northerly Island is part of a larger effort to restore native fish population and habitat in the Great Lakes [fish in lake] and their watershed [fish on land].

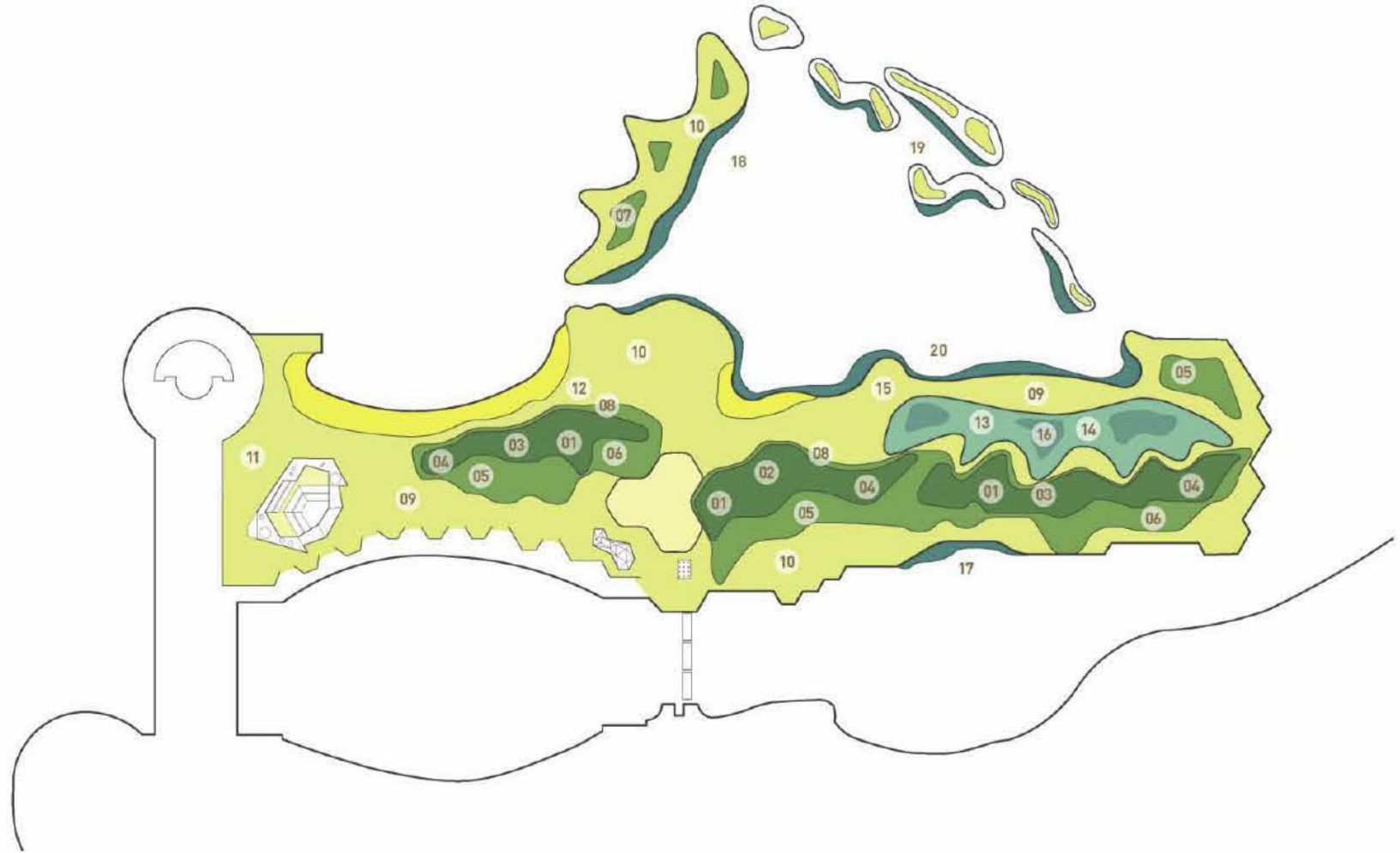


- Largemouth bass
- Drum
- Walleye
- Rockbass
- Bluegill
- Silver redhorse
- White sucker
- Emerald shiner
- Yellow perch
- Coho salmon
- Panfish
- Brown trout
- Smallmouth bass

Natural Resource Framework



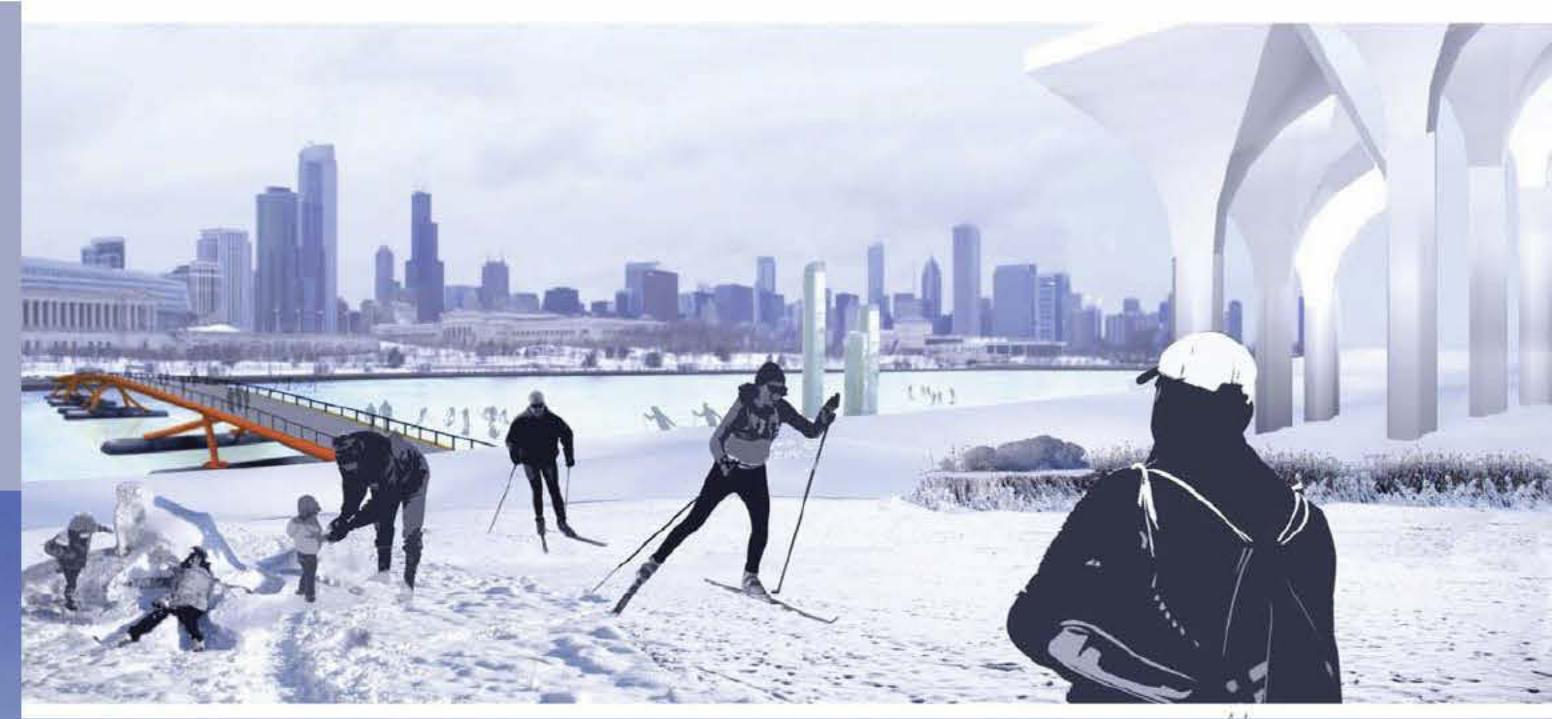
Natural Resource Framework







Amphitheatre



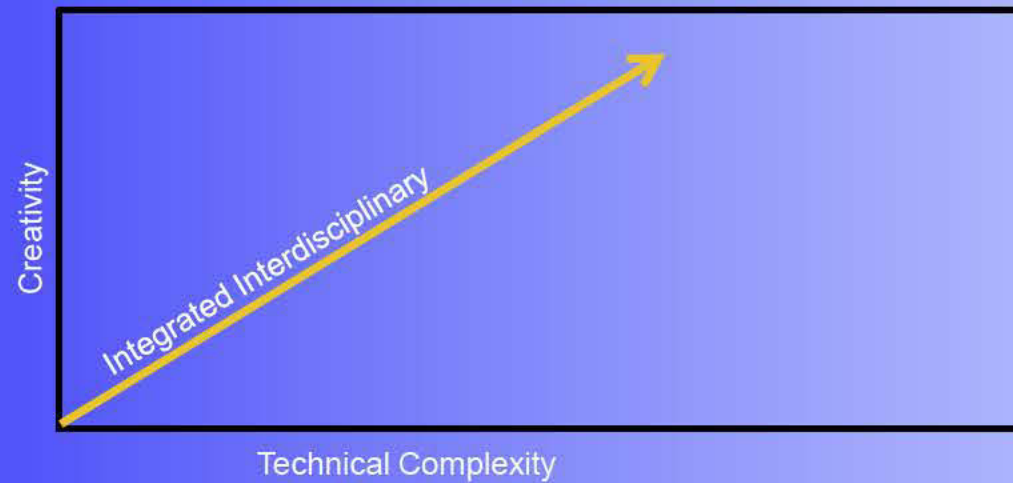
Ecological Design Guidance

- A functioning landscape is a landscape that works
- Let nature be your guide and inspiration
- Integrate ecology at the beginning, the middle, and the end
- Need an ecologist on the team
- Keep your boots in the water



Integrated Interdisciplinary Team

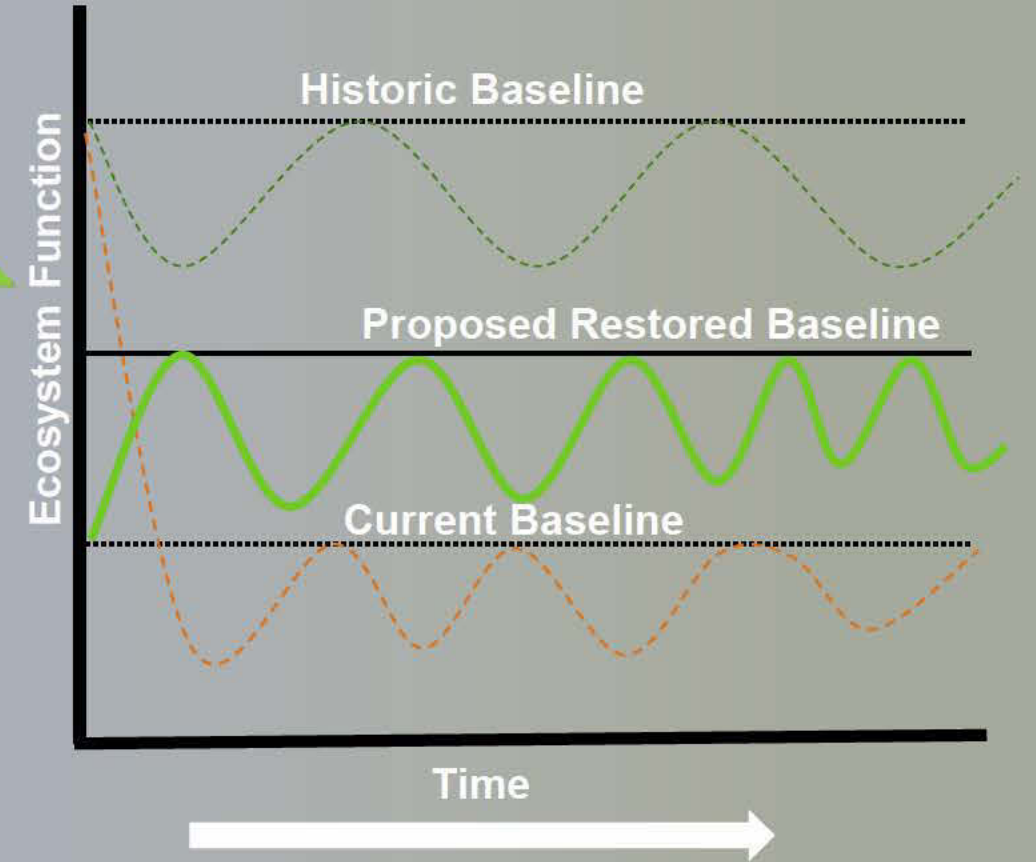
Chicago Park District
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At the end of the day



- Flood Control
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