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

Mark O'Leary, JJR

mark.oleary@jjr-us.com

Engineering with Nature: Designing Navigation Infrastructure for Greater Environmental Sustainability

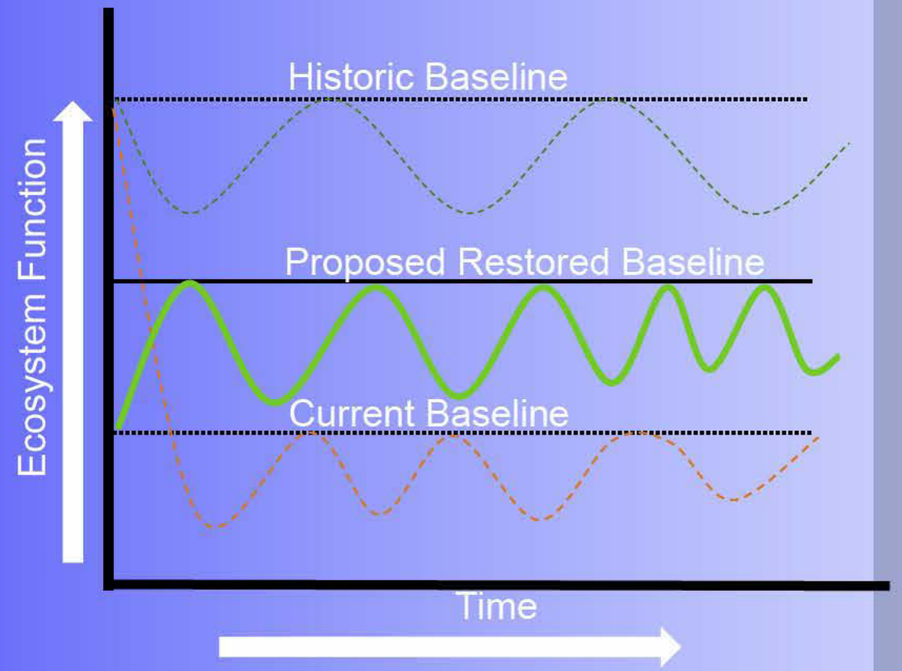
September 7-8, 2011

Presentation Framework

- Background
- Process
- Projects
- Conclusion

Sustainable, Functioning Landscapes

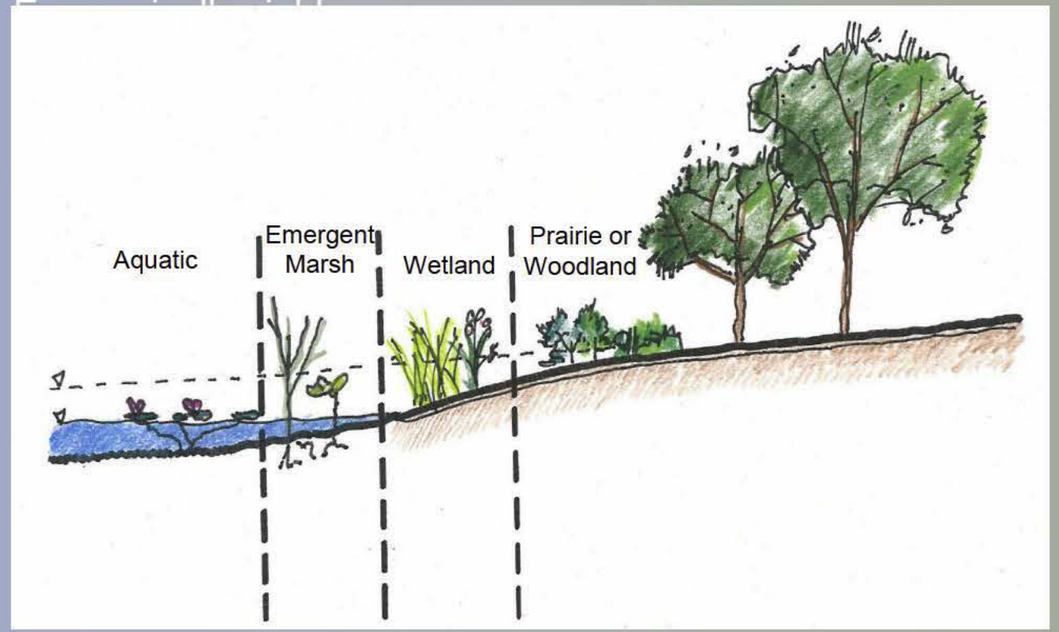
- Flood Control
- SW Conveyance
- Water Quality
- Nutrient Cycling
- Habitat
- Biodiversity
- Soil Stability
- Food Production
- Spiritual
- Recreational
- Educational

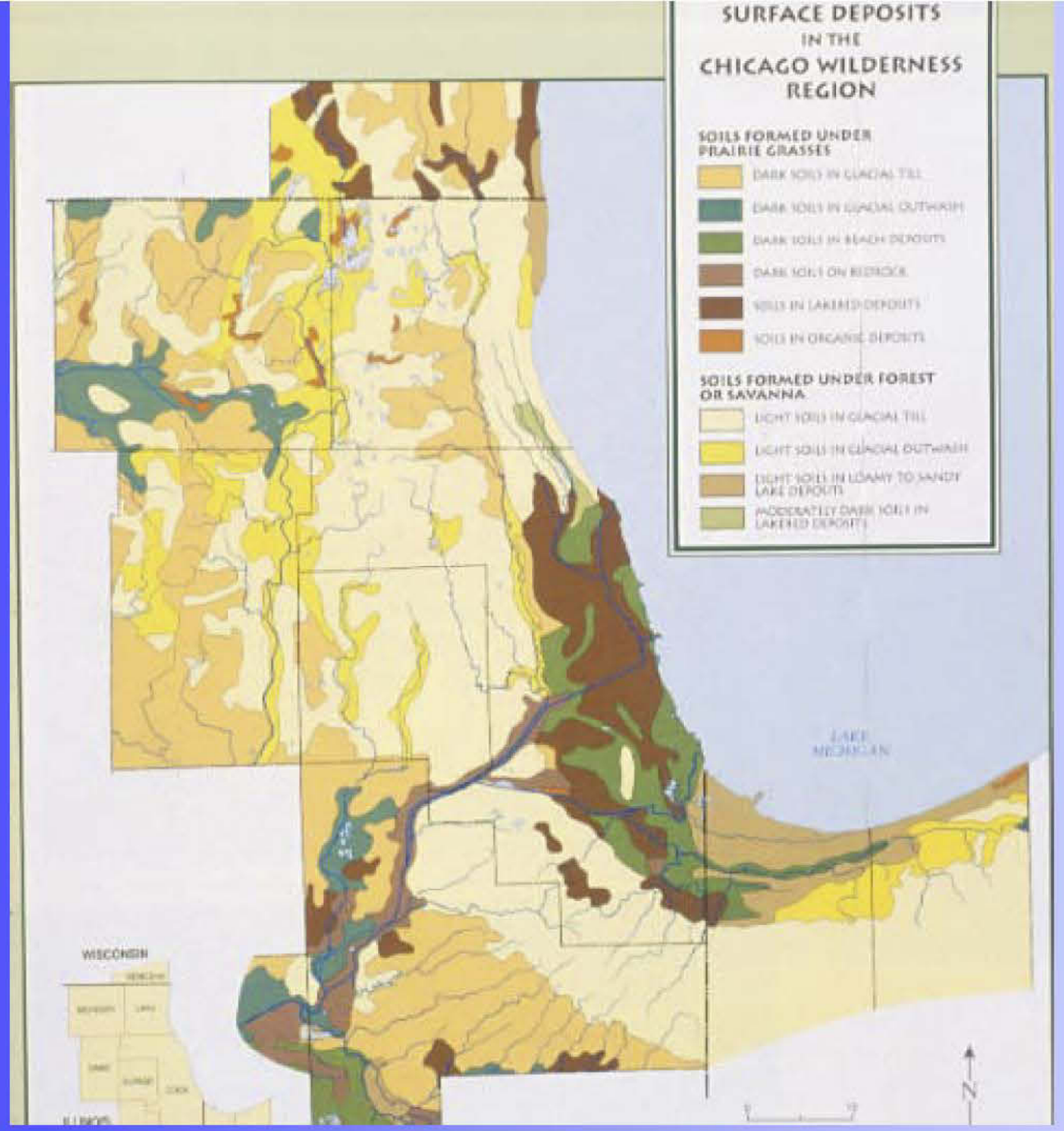


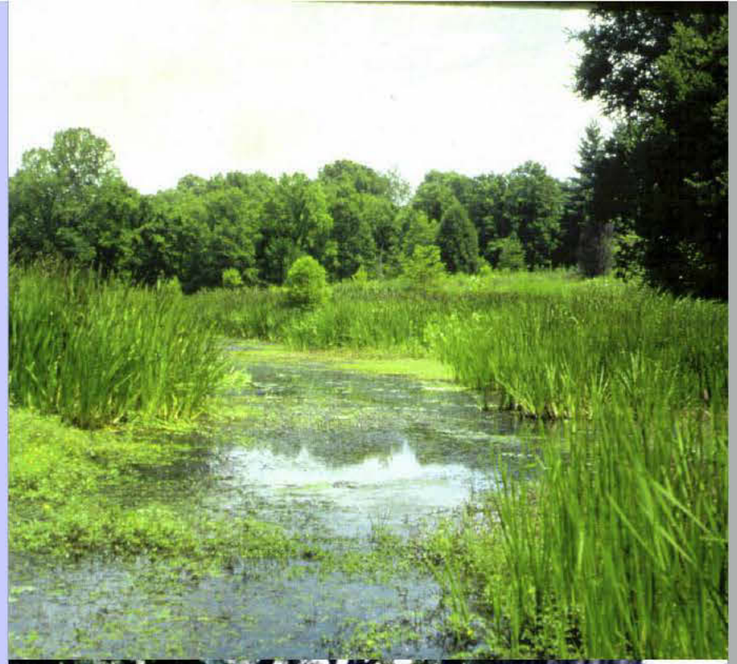
…Are Landscapes that Work . . .

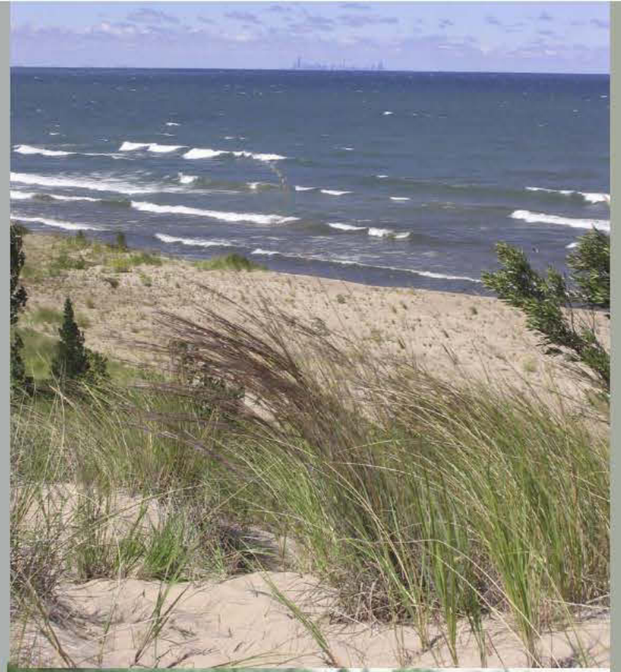
At least maintain (hopefully improve) the ecosystem functions (or work) of the landscape relative to a specific baseline

Provide for the needs of the human community

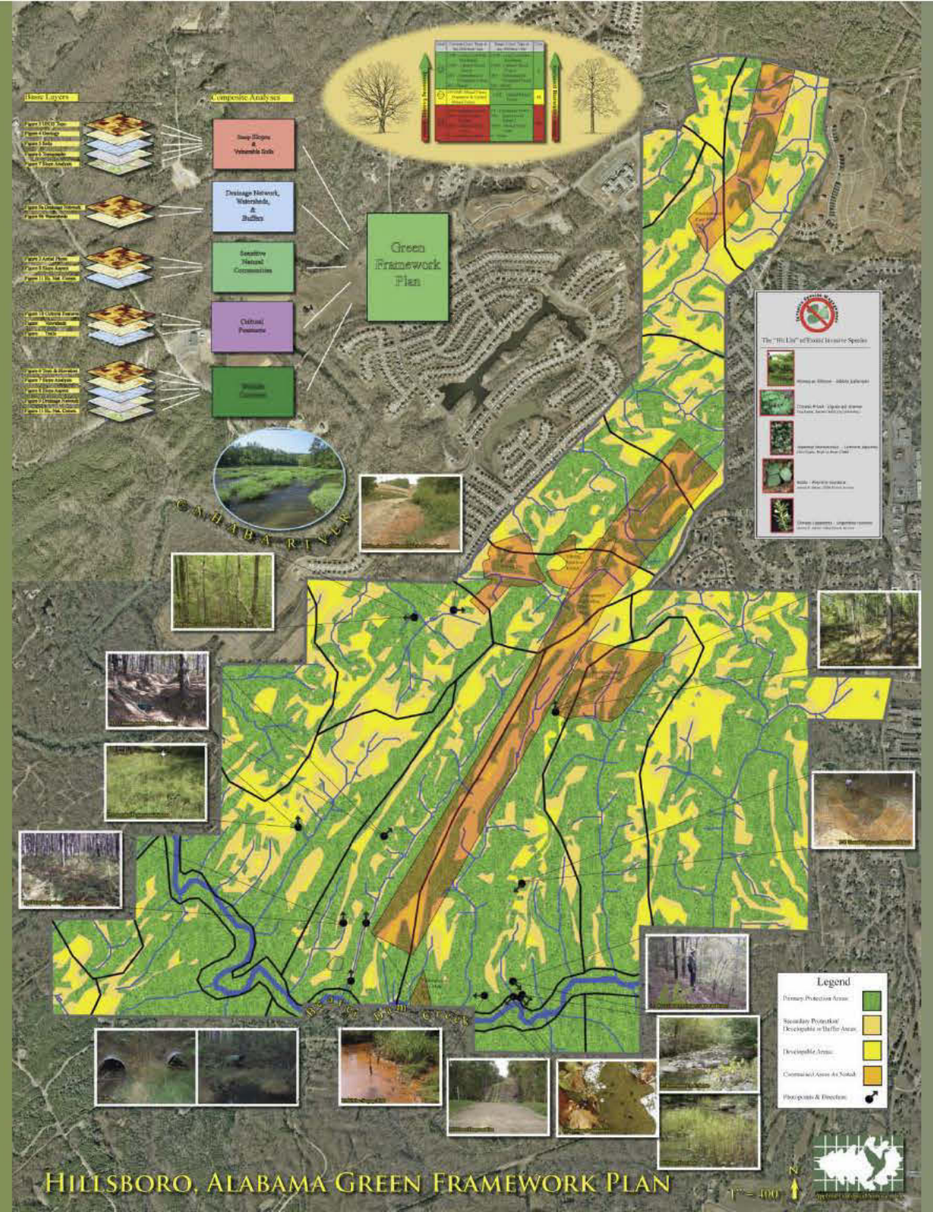








Chicago Wilderness. Atlas of Biodiversity


Base Layers
Composite Analyses
Green Framework Plan
Legend
HILLSBORO, ALABAMA GREEN FRAMEWORK PLAN

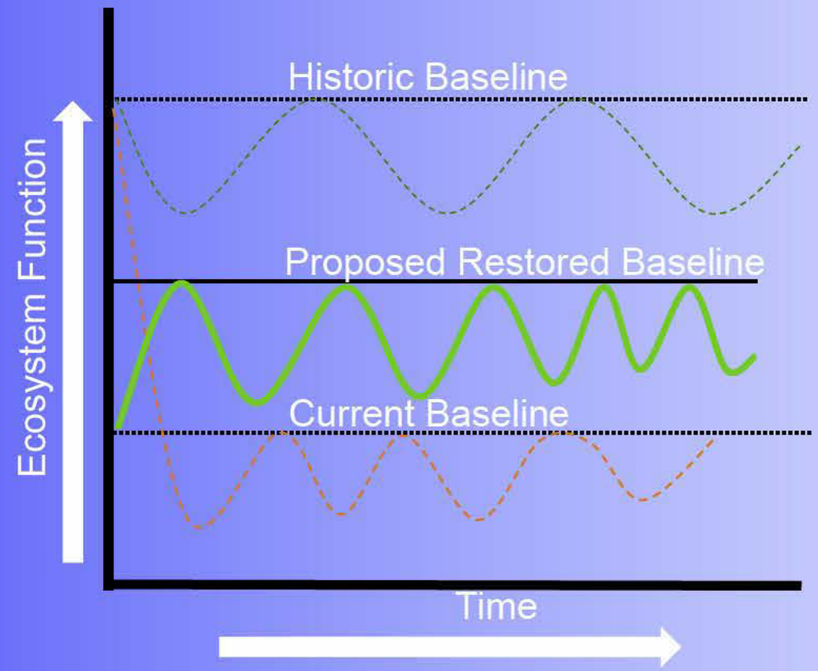
JJR

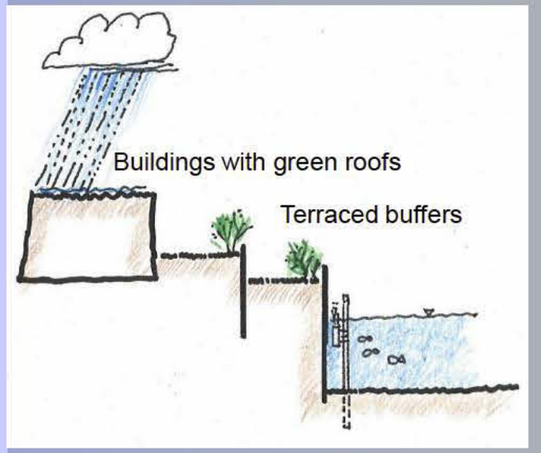
How does the Milwaukee Inner Harbor size up?

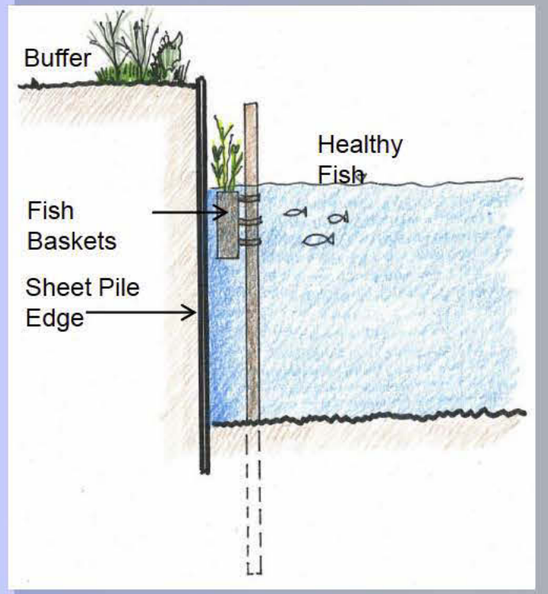
- Active, working harbor
- Contaminated soils (our site is an AOC)
- Sheet pile walls
- Dredging for maintenance and remediation
- Tributaries are mostly hardened and channelized
- Wave action through port traffic and seiche
- One wetland
- CDF used by birds

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

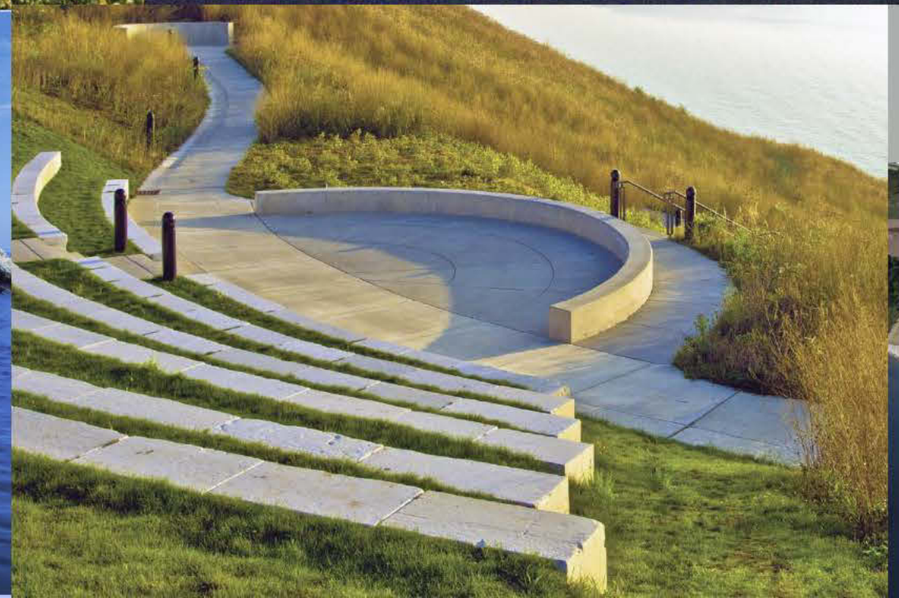
Recycling on a 476-acre scale.

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

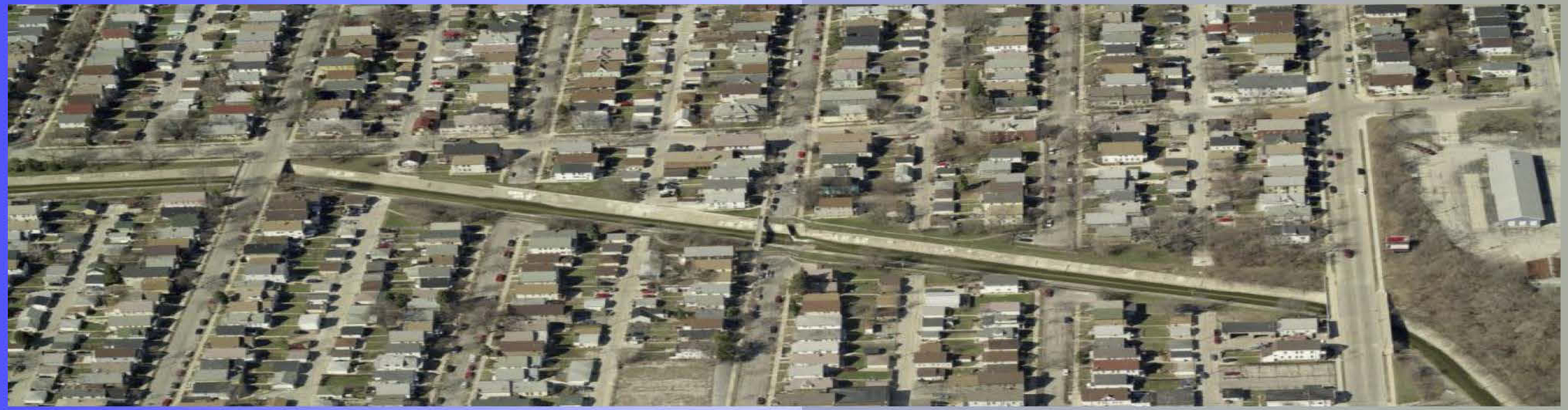
Beauty is in the Eye of…the Jury.

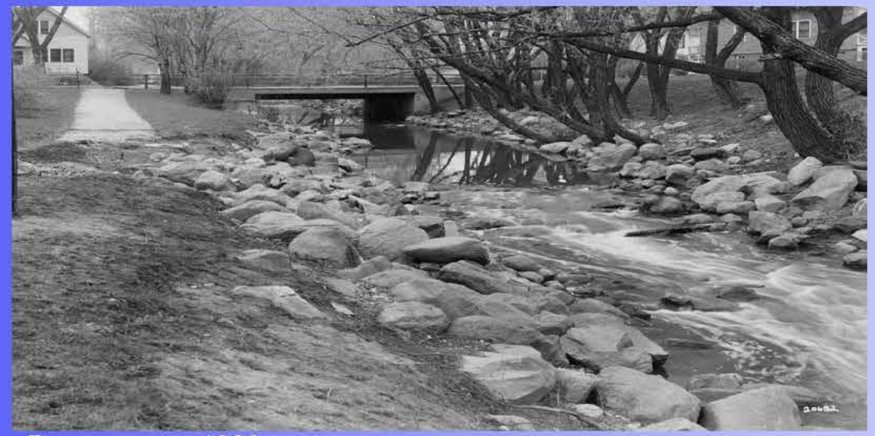
"Crosswinds Marsh is a living demonstration that landscape architecture can reconcile the seemingly competing goals of economic development and ecological integrity."

ASLA President's Award
Jury Comments



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



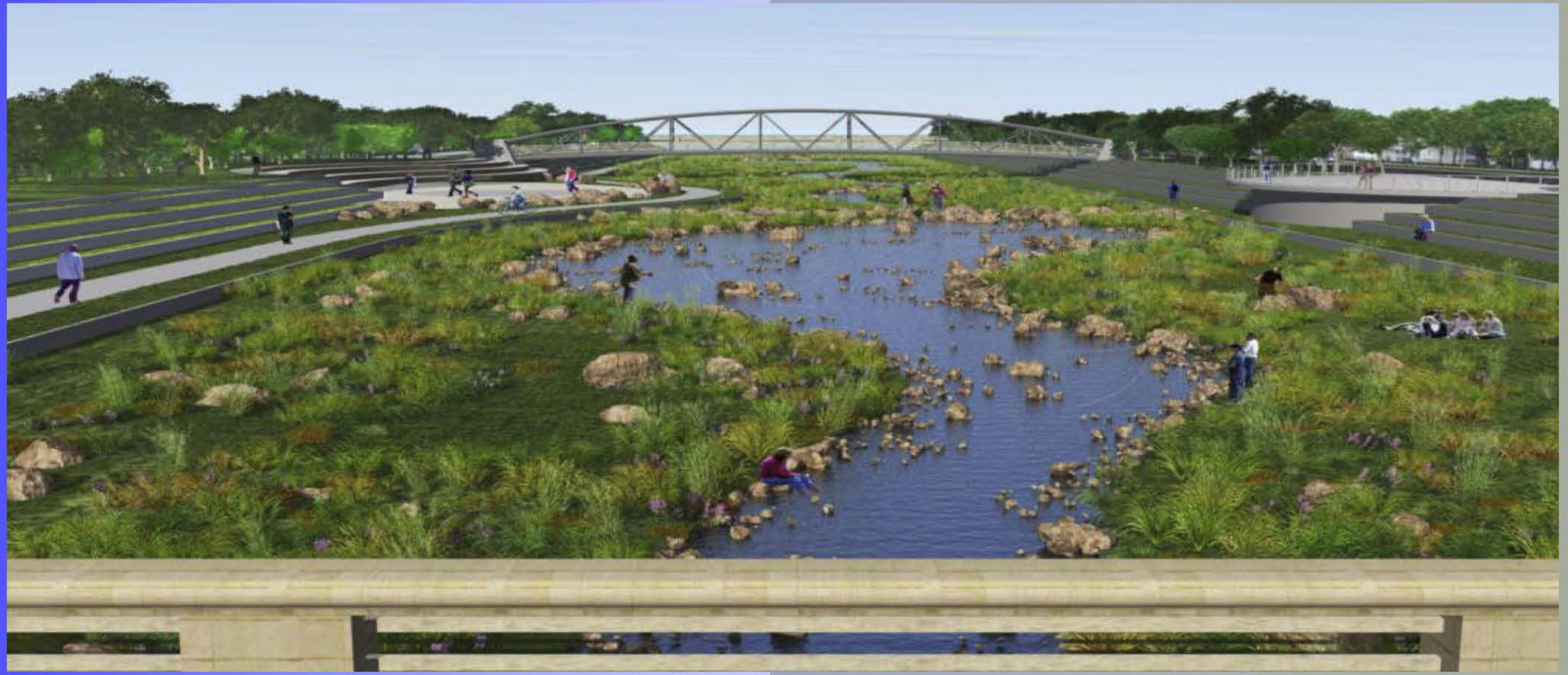


Pre-concrete: 1960

Today

The Neighborhood: An Historical Melting Pot

Kinnickinnic River Corridor Neighborhood Plan

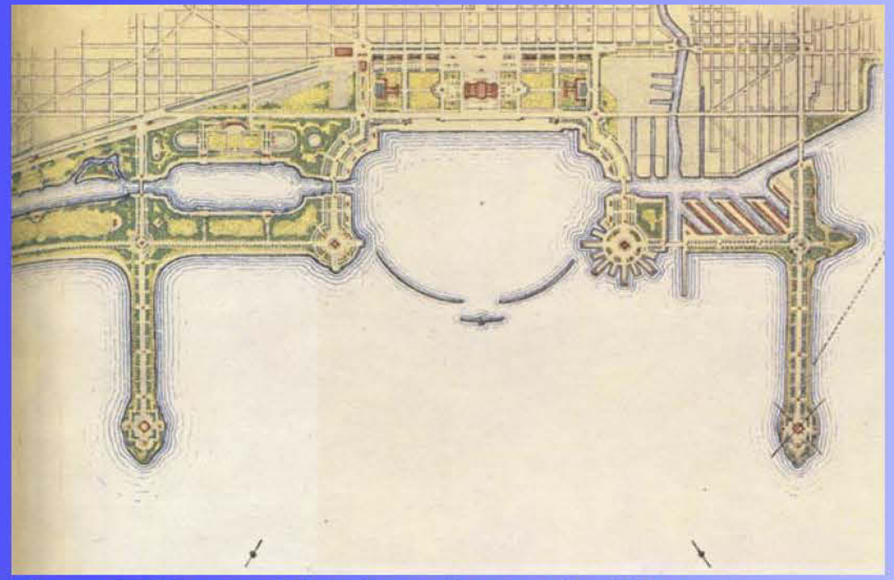


Northerly Island

Team Northerly

Chicago Park District
JJR
Studio Gang
AES
AREA
Fish Transportation Group
Studio V

History . . . .



Plan of Chicago (Burnham-Bennett) - 1909

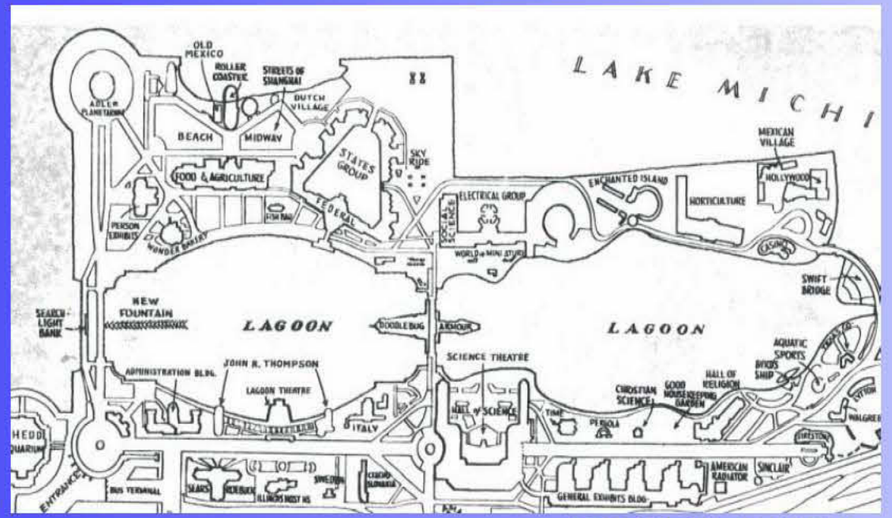
Northerly Island - 1923

Northerly Island - 1929

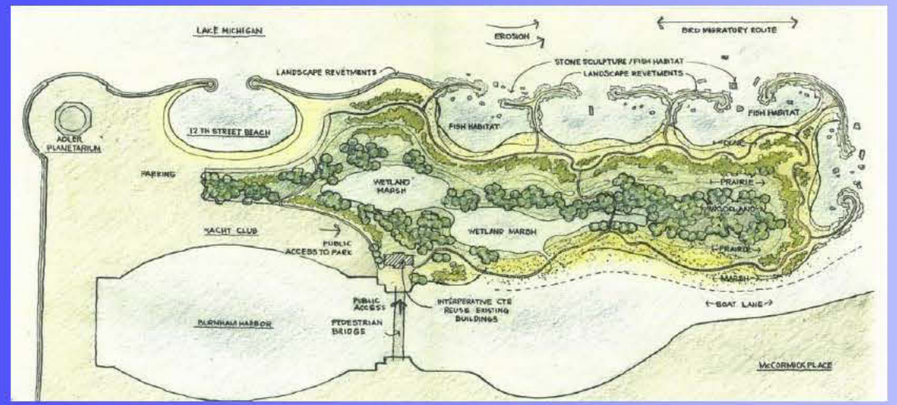
World's Fair- 1933

Meigs Field

Dreams . . . .

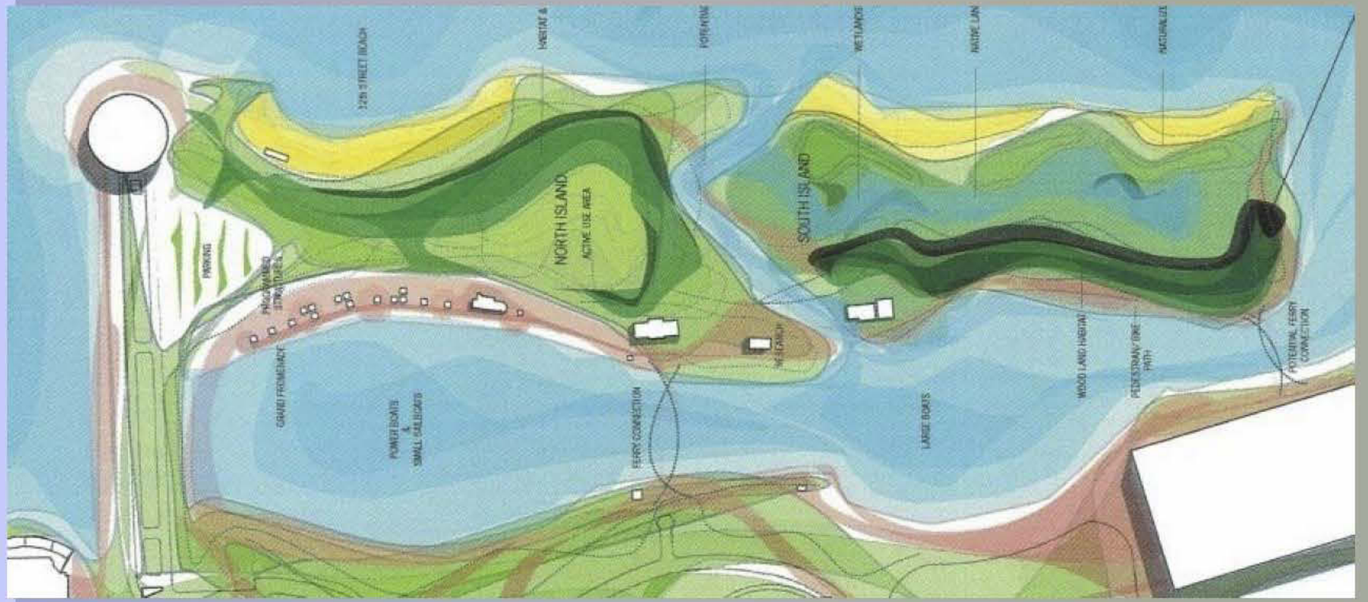


1933 World's Fair Plan



Lake Michigan Federation proposal 2004

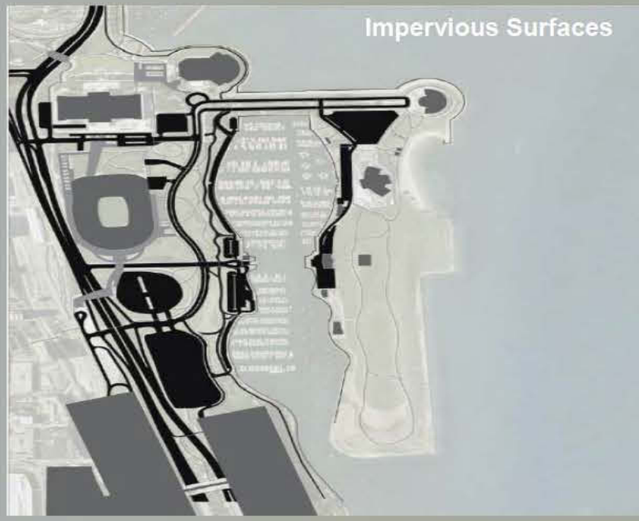
Teng proposal, 1996



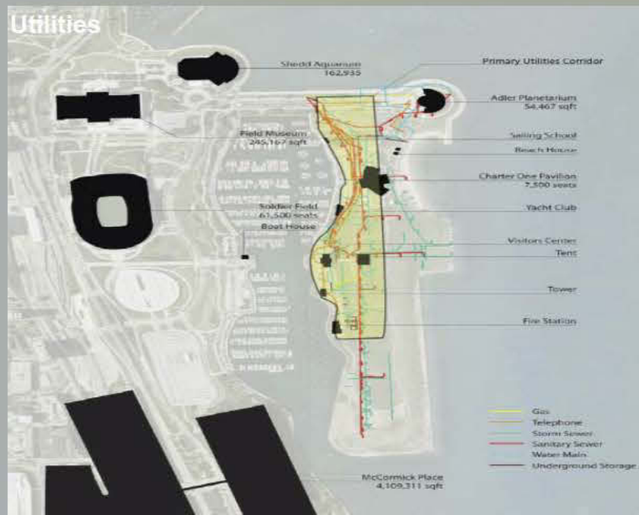
Alliance for the Great Lakes proposal 2005

Analysis

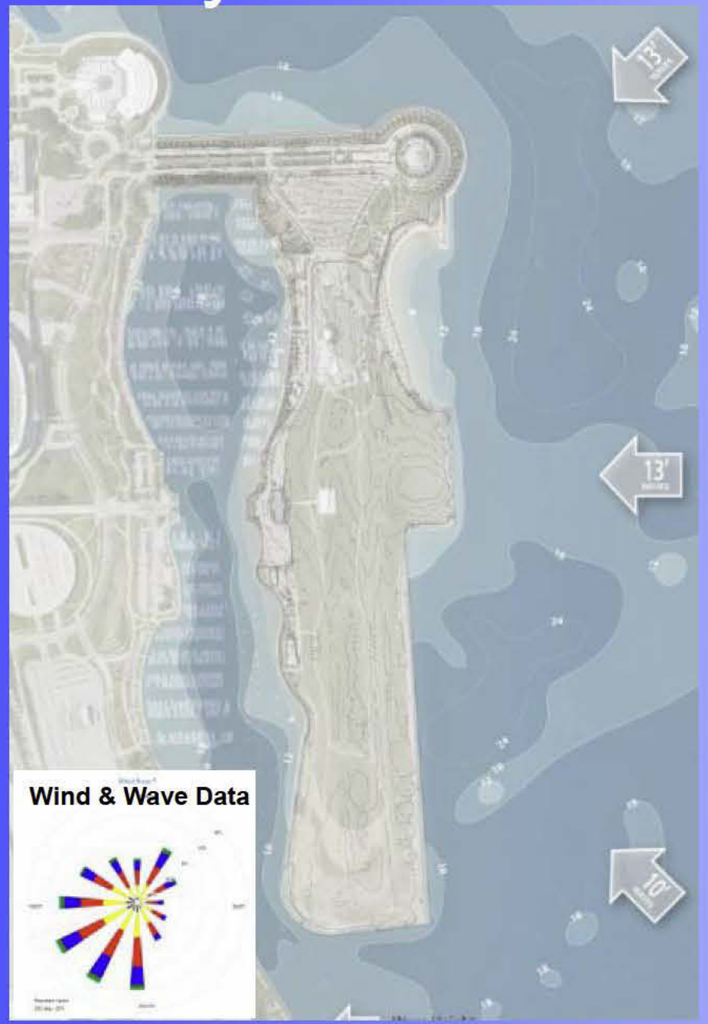
Built Environment



Natural Environment



Analysis



Coastal Environment

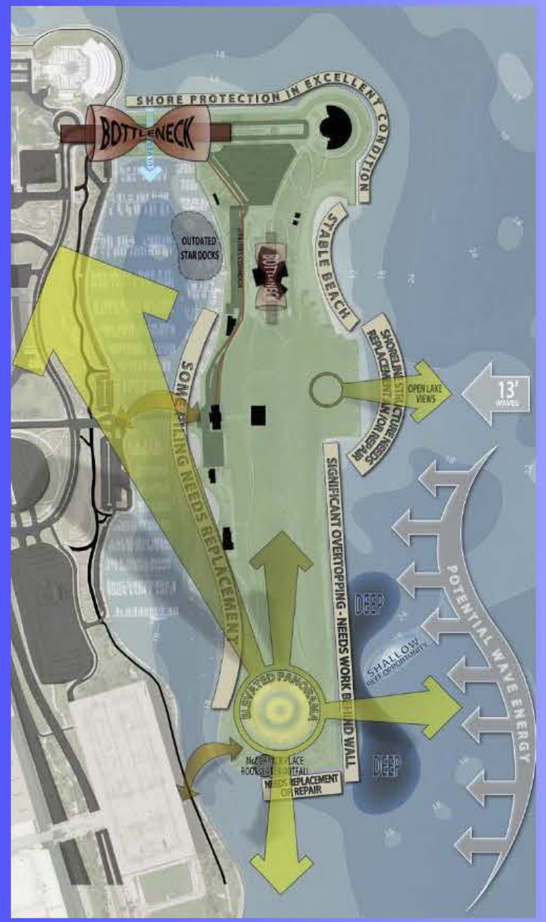
Shoreline Condition

Buildings and Infrastructure

Trails

Access, Circulation & Parking

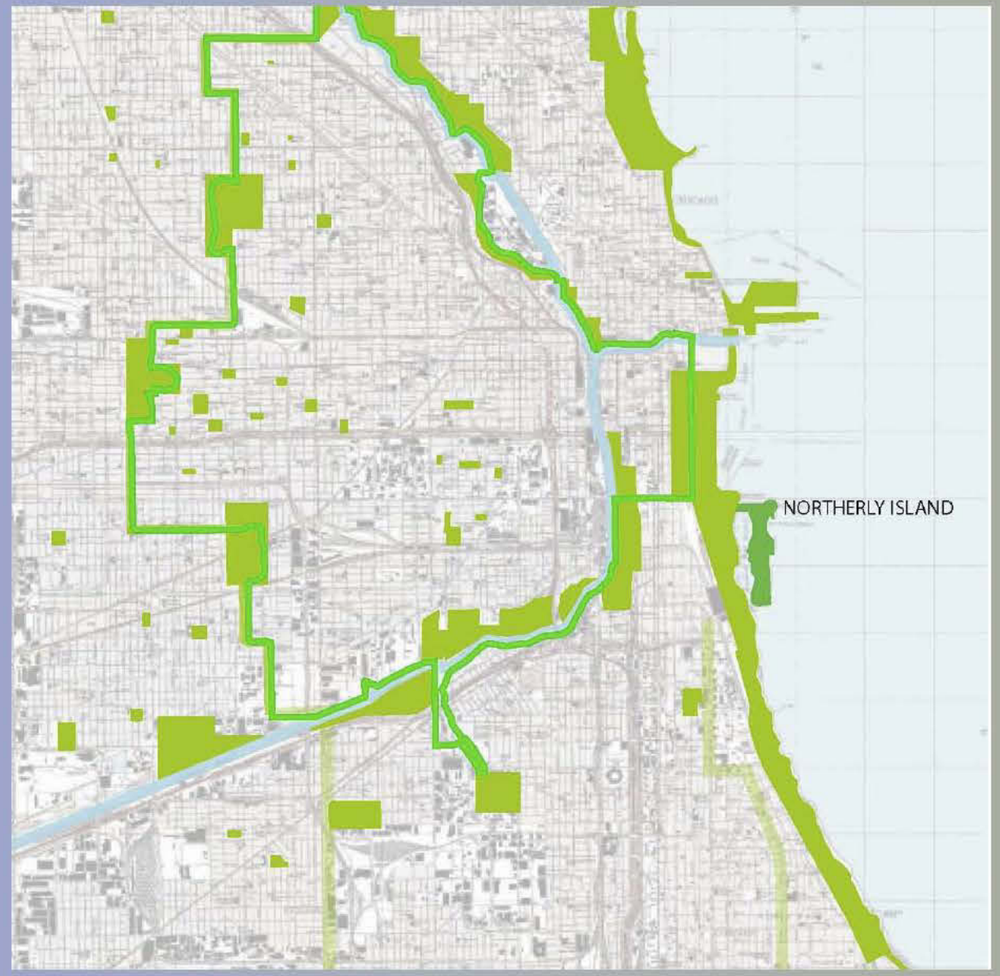
Analysis



Influences, Opportunities & Constraints

Analysis

Natural and Urban Influences



Basic Elements

topography

edges

habitats

sustainability

Basic Elements

Ideas and Inspirations

inspiration: sprial motion of natural systems

Clocks

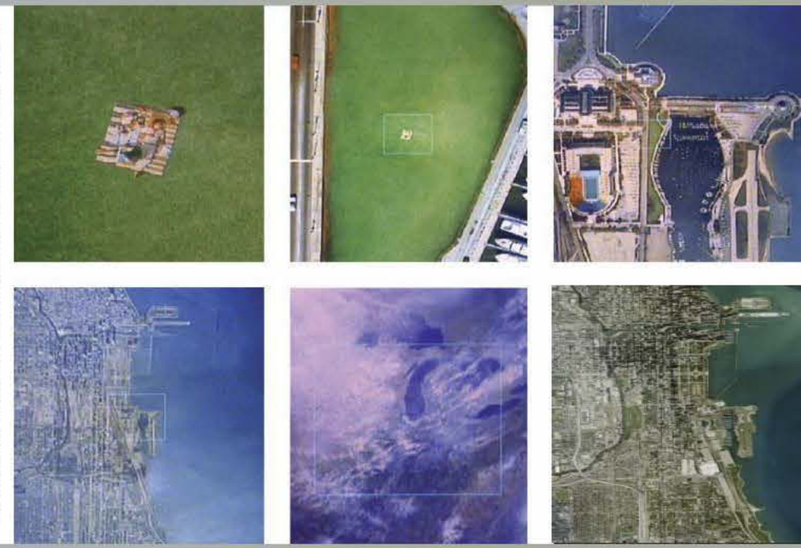
inspiration: barrier islands and protected habitat

Reef

spiration: landforms shape views and create habitat

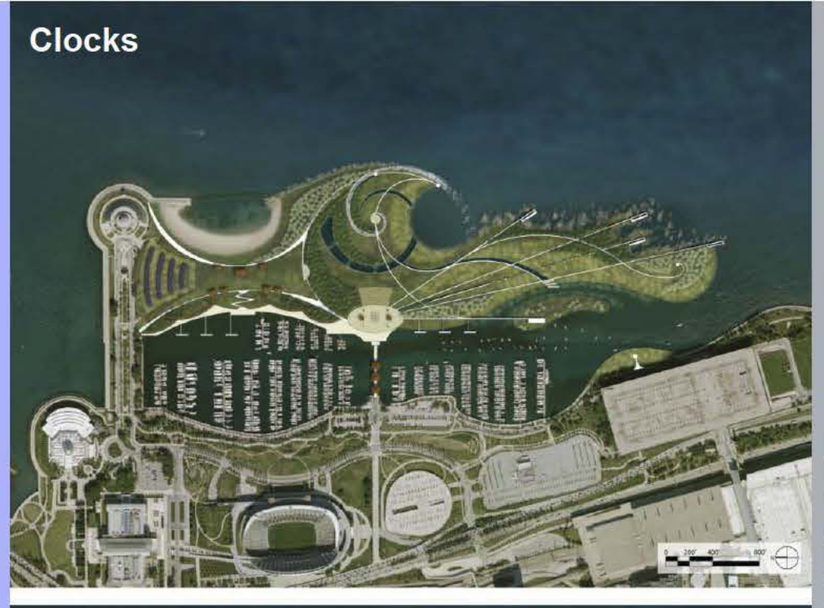
Viewfinder

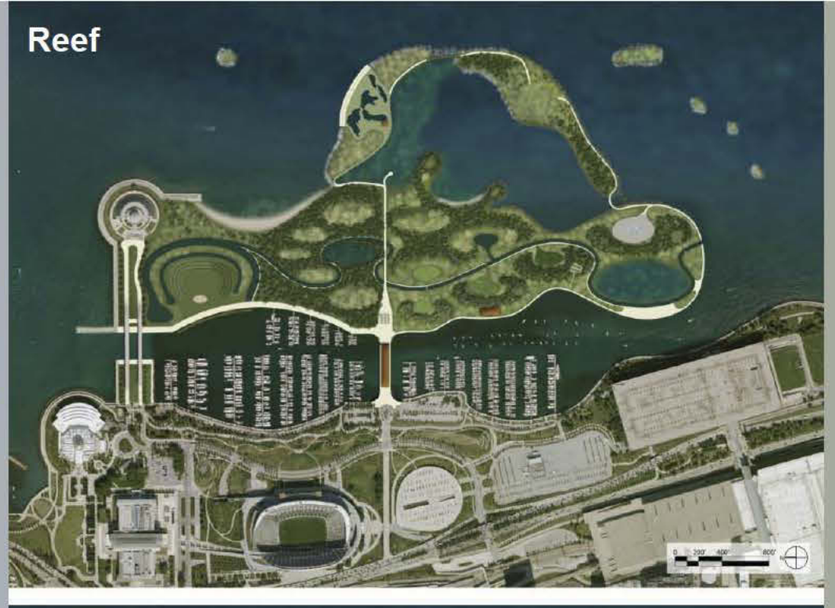
inspiration: different scales of nature from 'Powers of Ten'

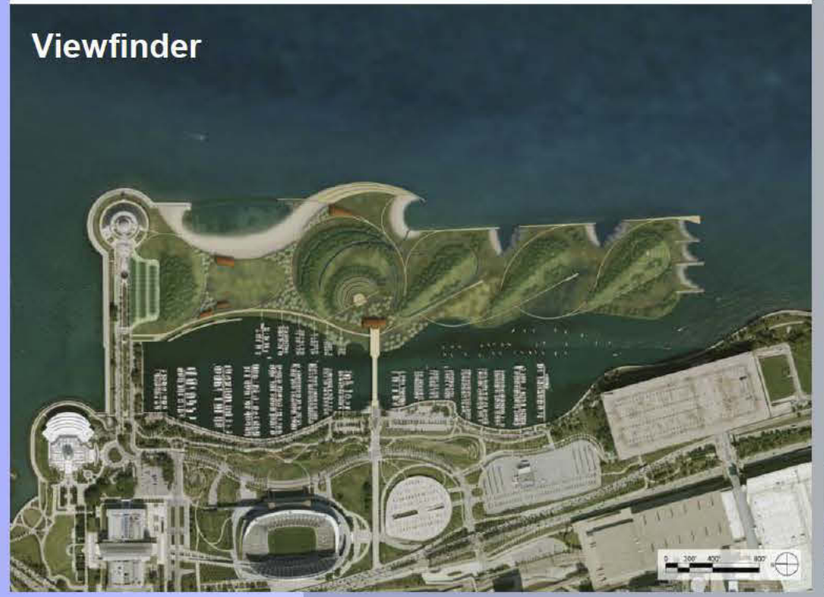


Chicago

Ideas and Inspirations







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.

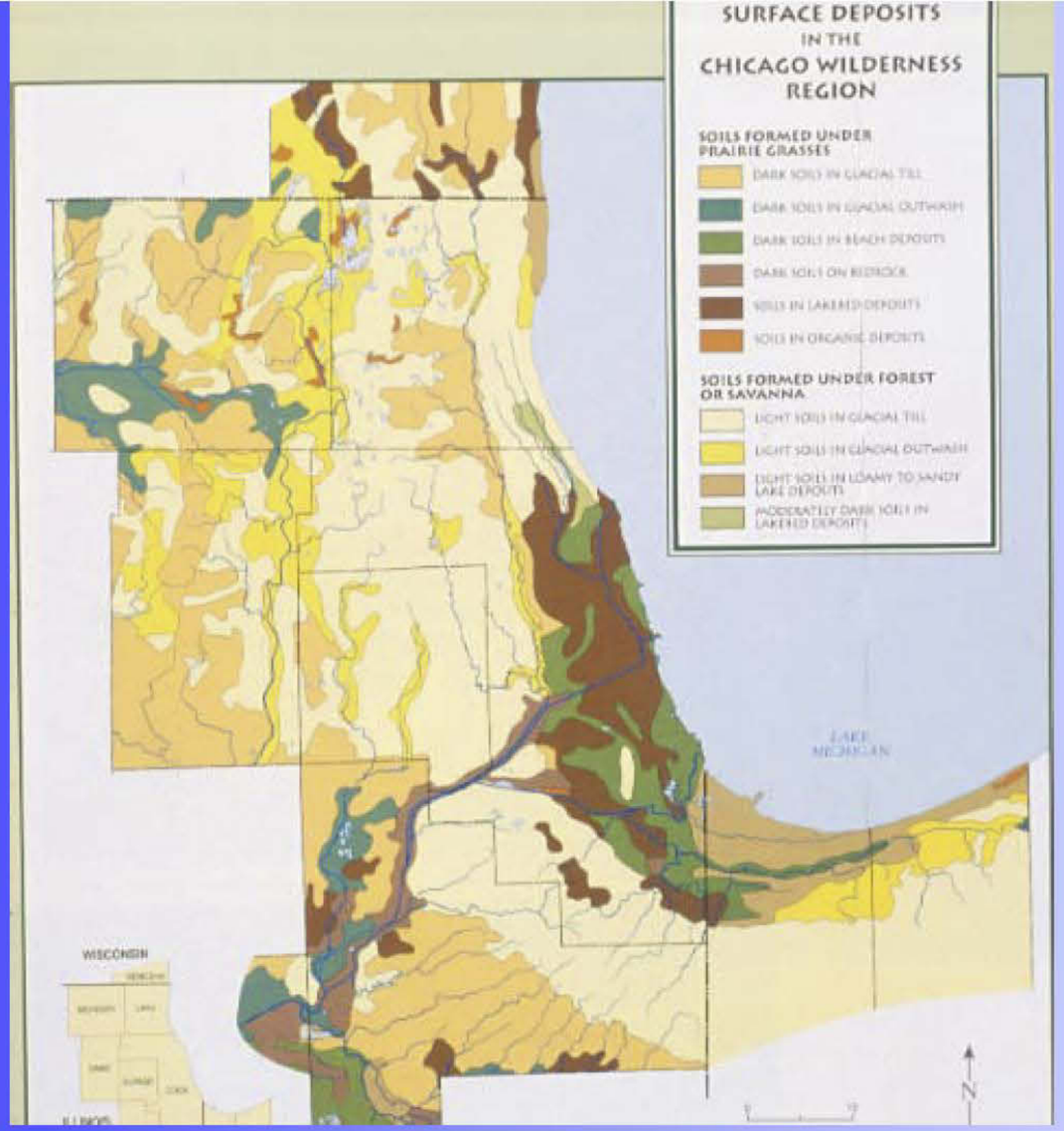
Minimal support for adding new cultural attractions or built facilities and minimal support for historic preservation or adaptive re-use of the former terminal building and other airport-related structures.

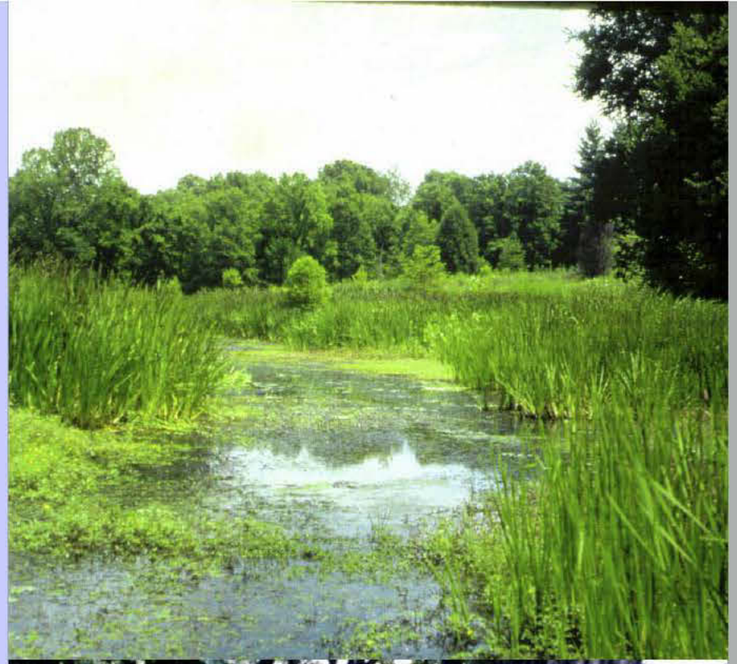
Significant support for clustering of the most active elements at the north end of the park, with a desire to keep the **southern portion more quiet and natural**.

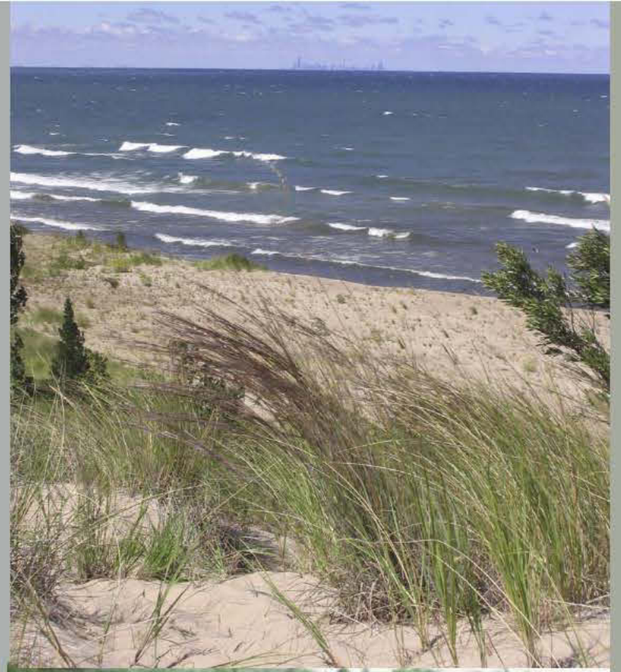
Lack of support for **new or enhanced bridges**.

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**.

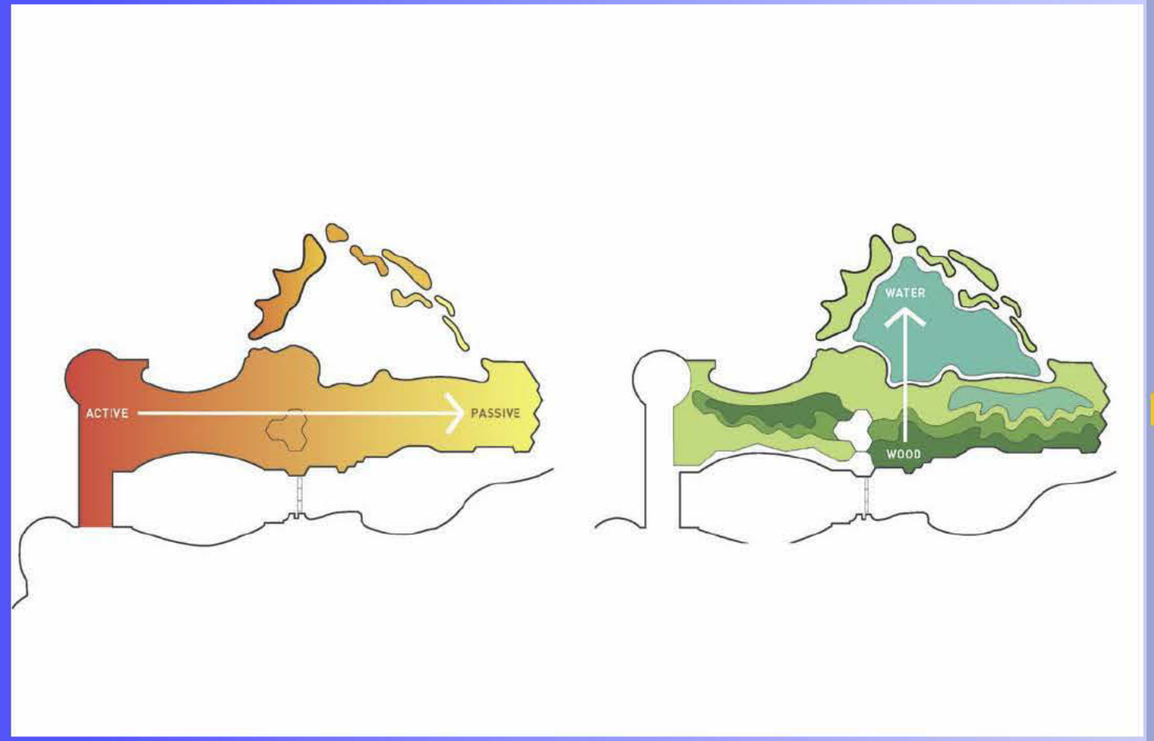


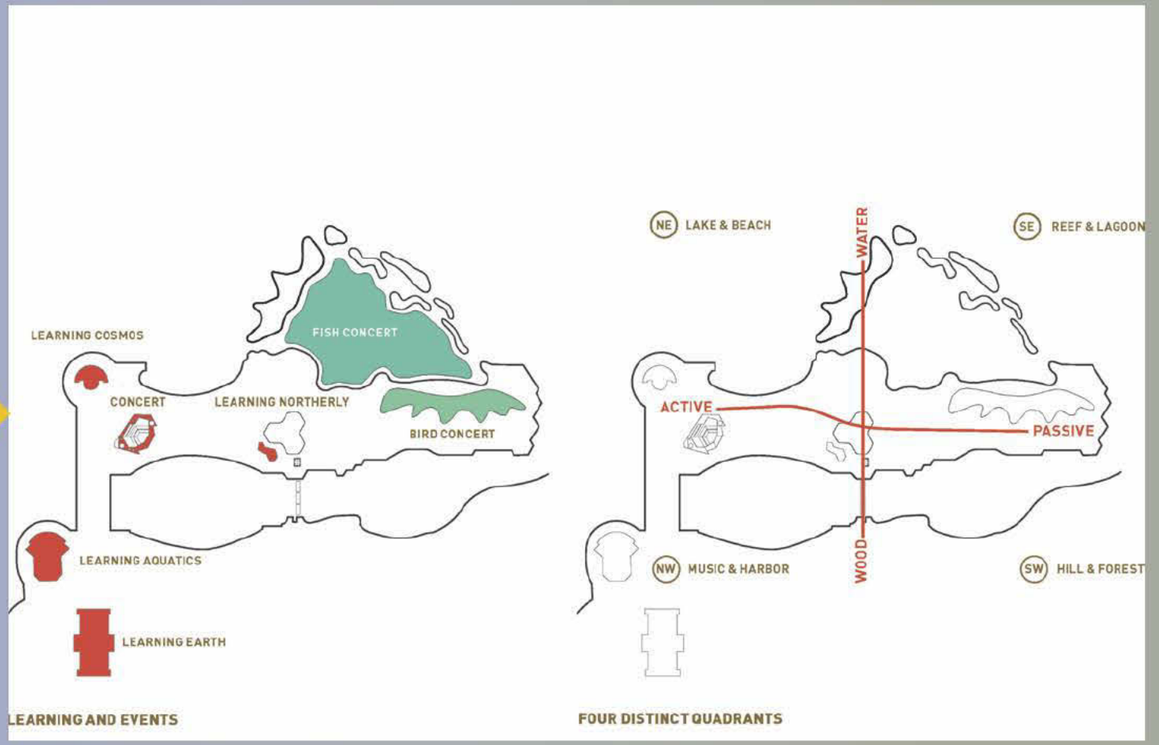




Chicago Wilderness. Atlas of Biodiversity

Natural Resource Framework





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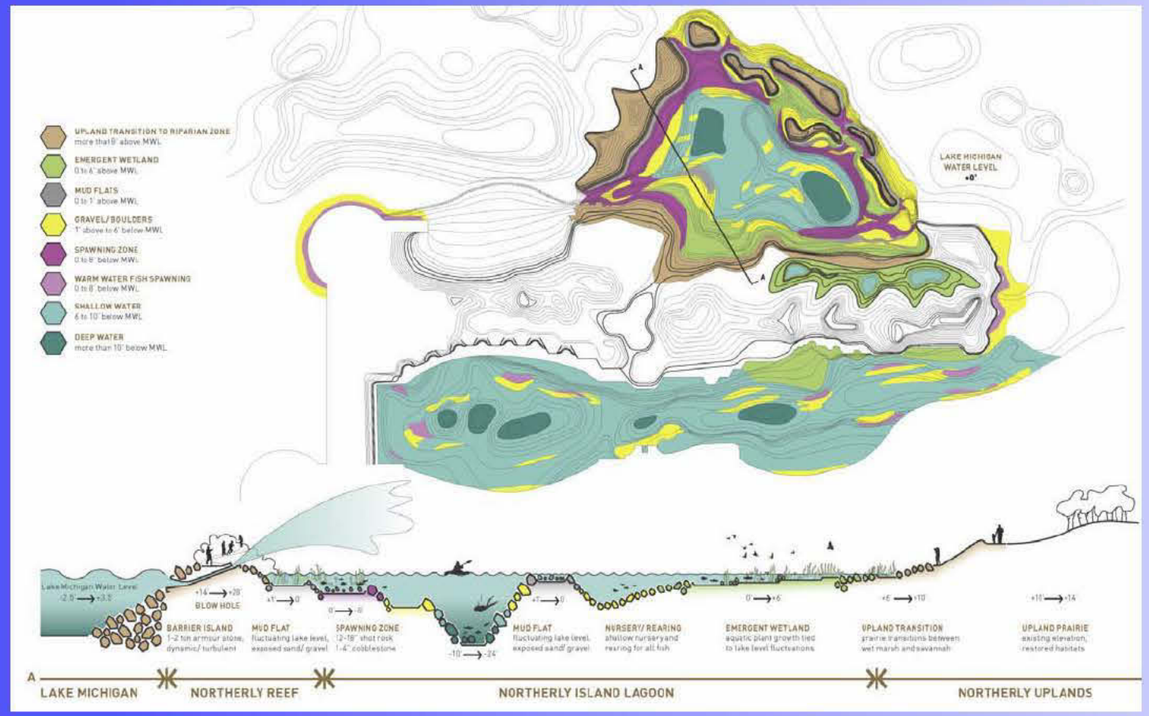

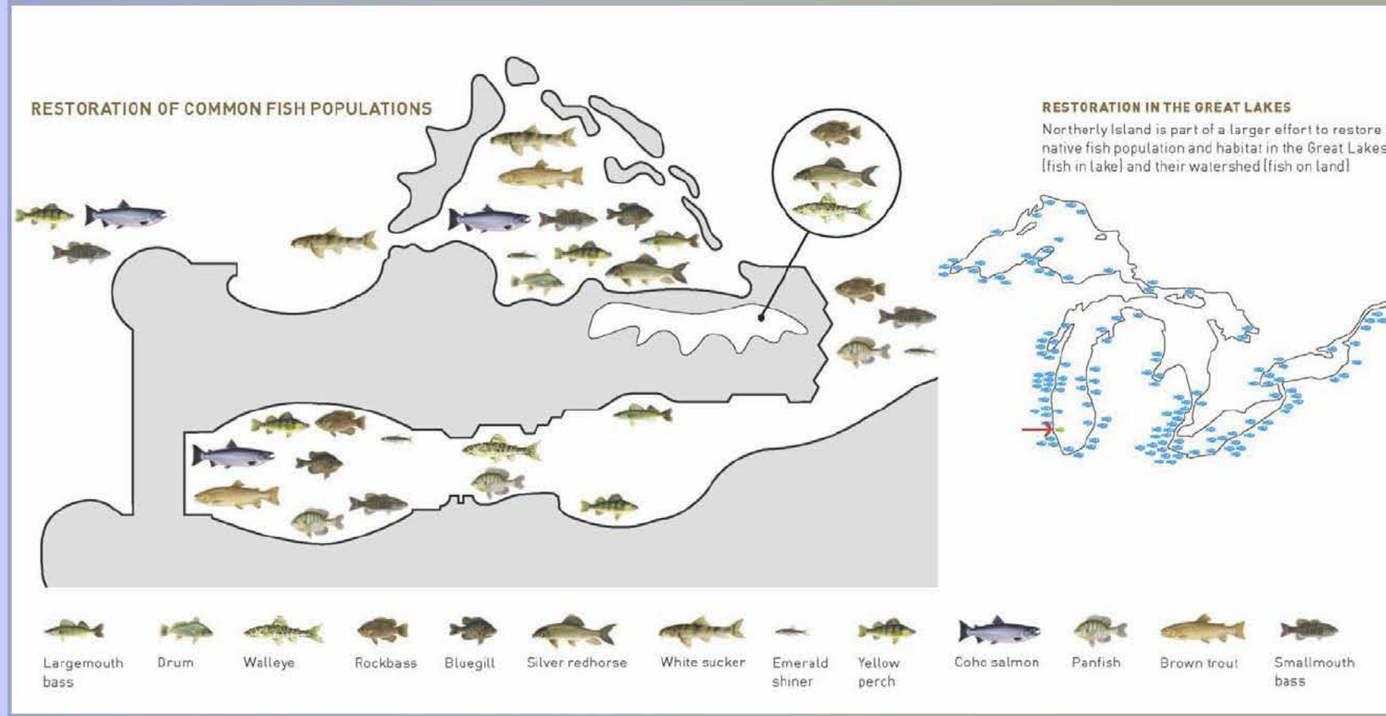

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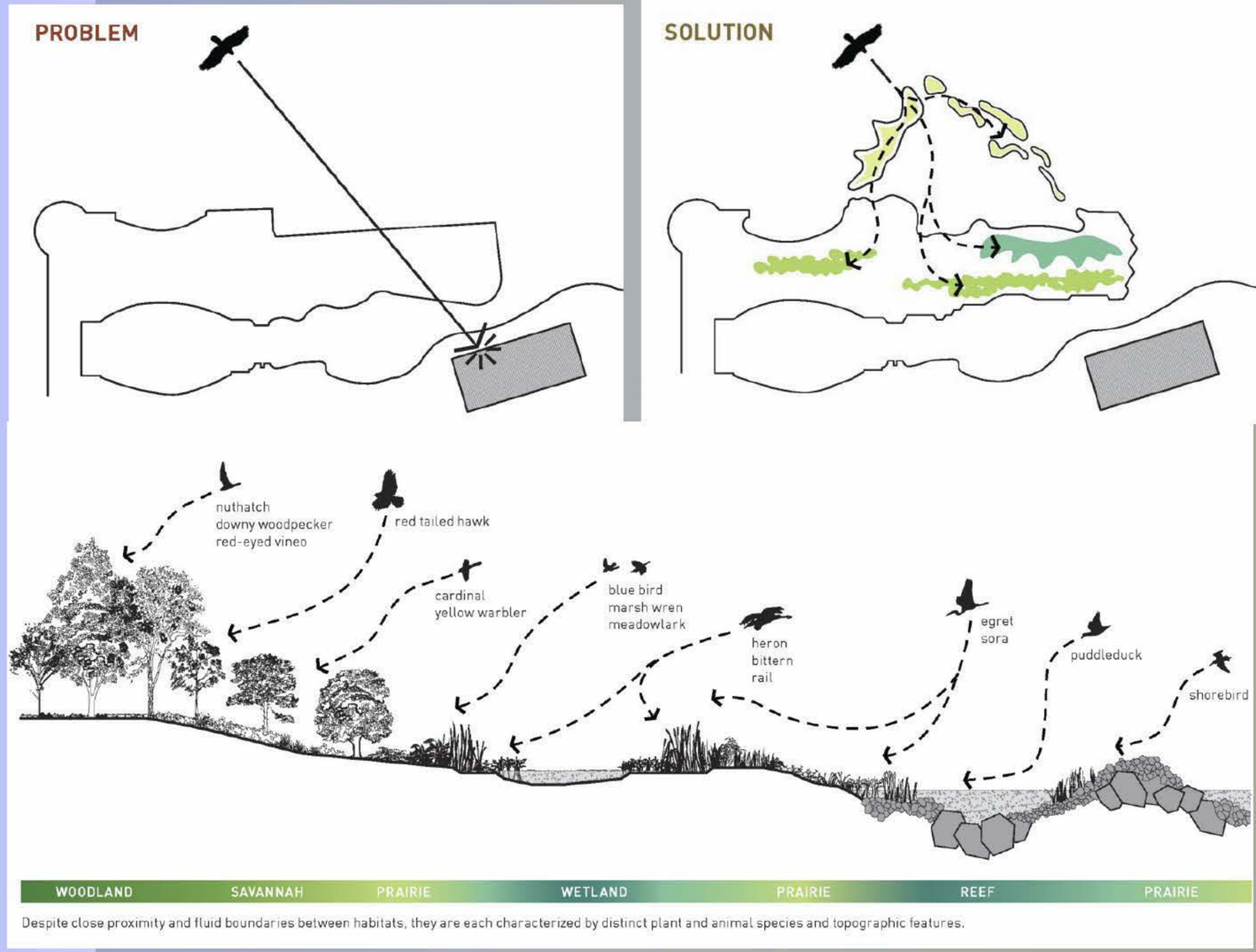

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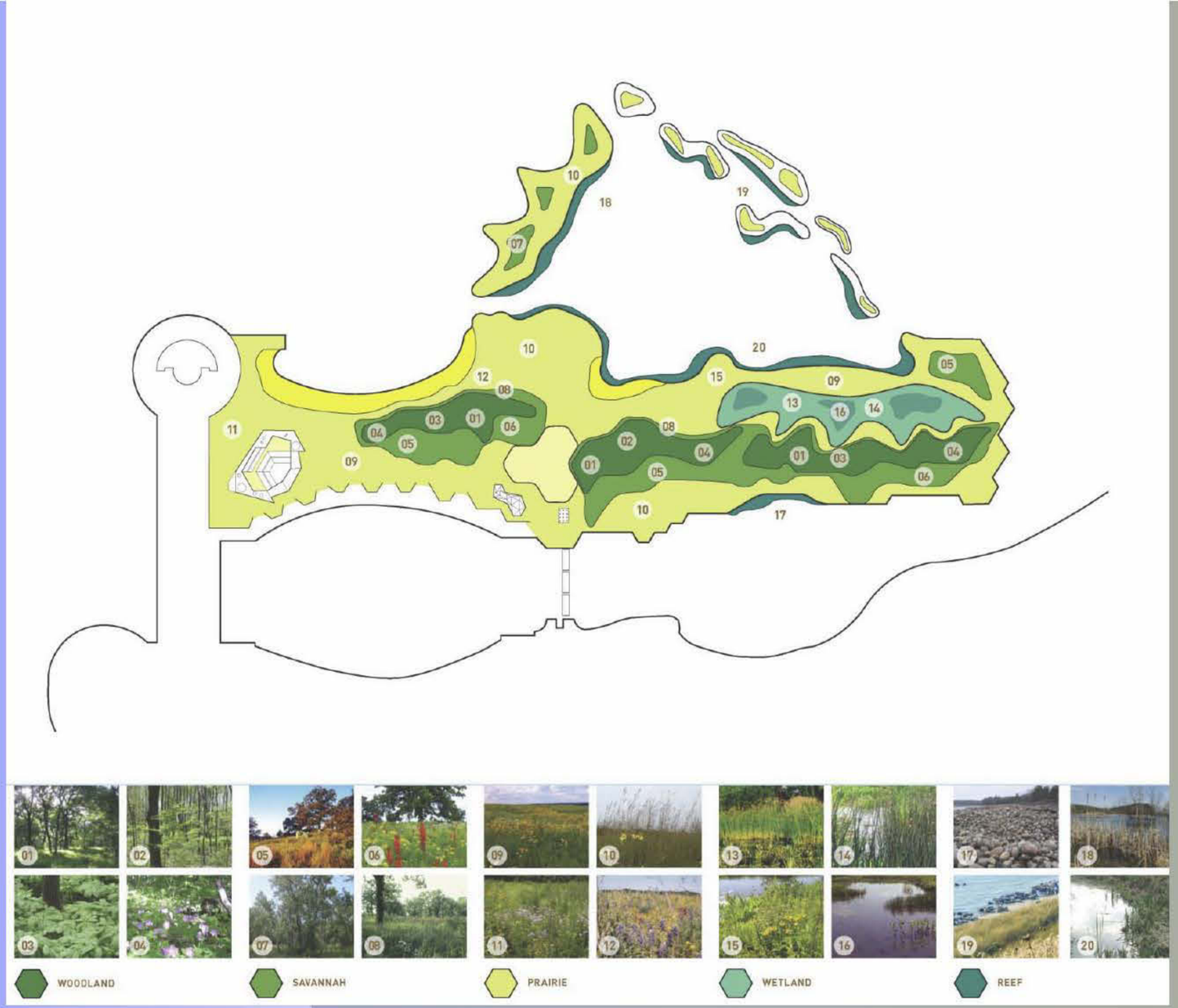


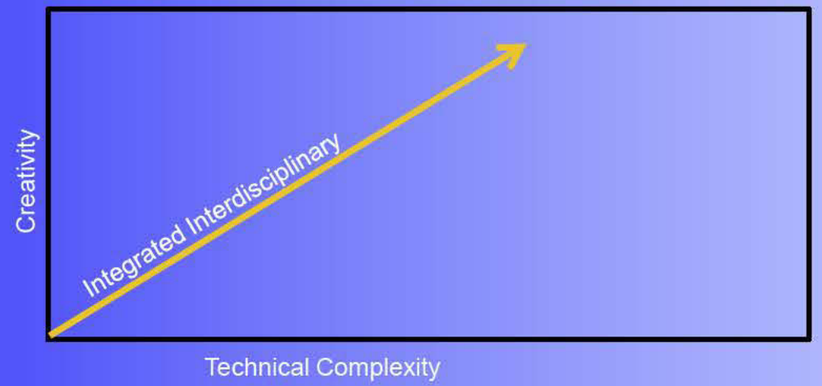
Amphitheatre

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
JJR
Studio Gang
AES
AREA
Fish Transportation Group
Studio V



At the end of the day . . . .

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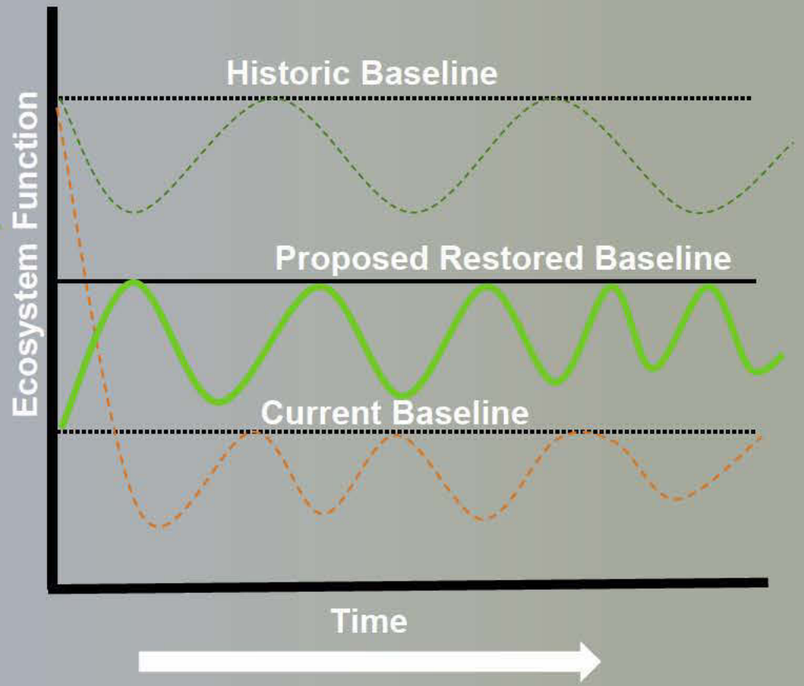

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