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

Mark O'Leary, JJR
mark.oleary@jjr-us.com
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.

Economically viable.

Sustainable, Functioning Landscapes

Time

Ecosystem Function

Historic Baseline
Proposed Restored Baseline
Current Baseline

Aquatic
Emergent Marsh
Wetland
Prairie or Woodland
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

Ecosystem Function

- Historic Baseline
- Current Baseline
- Proposed Restored Baseline

Time

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

Fish habitat baskets
- Fish passage
- Upland buffers
- Education
- Wetland Restoration
- Redevelopment BMPs
- Manage CDF for bird habitat

Buildings with green roofs
Terraced buffers

Buffer
Sheet Pile Edge

Fish Baskets
Healthy Fish
William G. Milliken State Park and Harbor
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”
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
Dreams . . . .

1933 World’s Fair Plan

Lake Michigan Federation proposal 2004

Teng proposal, 1996

Alliance for the Great Lakes proposal 2005
Influences, Opportunities & Constraints
Analysis

Natural and Urban Influences
Basic Elements
Ideas and Inspirations

Clocks

Idea: Spiral motion of natural systems

Reef

Idea: Barrier islands and protected habitats

Viewfinder

Idea: Landforms, shape, space, and create habitat

Chicago

Idea: Different scales of nature from 'Powers of Ten'
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
Natural Resource Framework

Despite close proximity and fluid boundaries between habitats, they are each characterized by distinct plant and animal species and topographic features.
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 . . . .