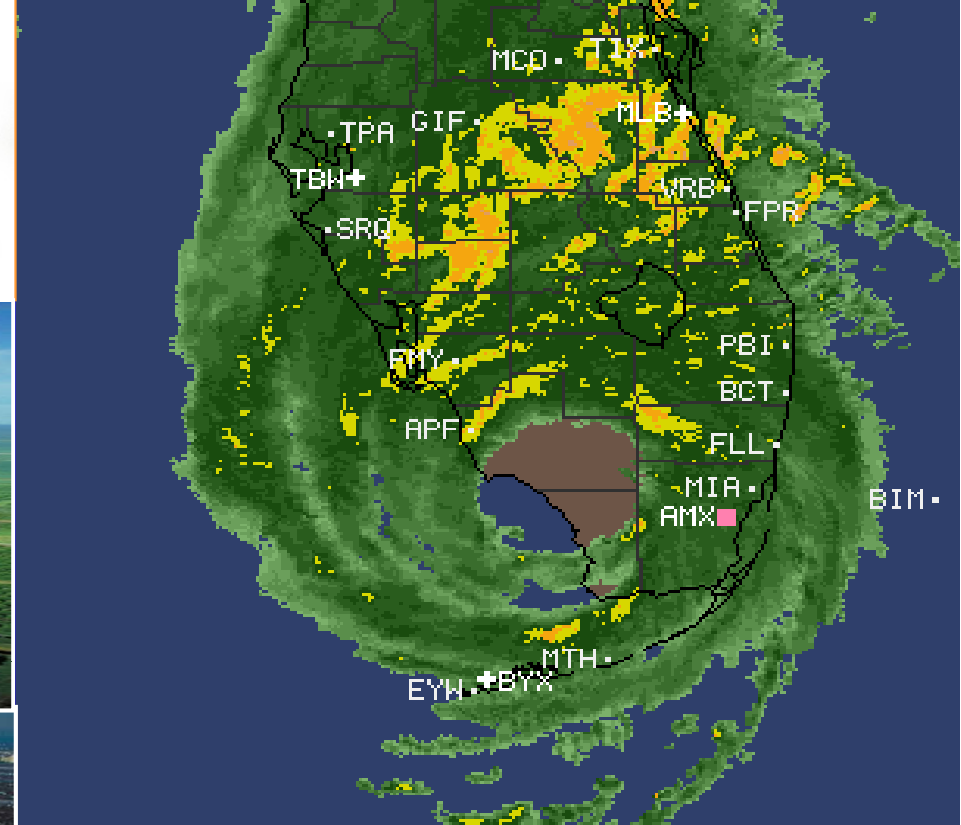
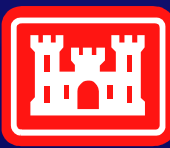




t HSI Corporation <http://www.usi.com>



Challenges in Benefit Analysis



Topics

- Fundamental Challenges
- Observations
- Research Ongoing for Benefit Analysis
- Accomplishments despite the challenges
- Don't Forget the Why's



Fundamental Challenges of Ecosystem Restoration Benefit Analysis

- Physical Attributes of an Ecosystem
- Complexity of Analysis
- Development and Use of Models
- Methods of Analysis
- New Science
- Support and Funding





Challenges due to Physical Attributes of an Ecosystem

- Type of ecosystem – coastal, estuary, lake, river, wetland, prairie, forest
- Size of Area – may cover 100's or even 1000's of square miles
- Scope of Analysis – may include dozens of management measures and require addressing a like number or more of ecosystem attributes
- Quantification of Effects – May have no or limited information on projected biological response
- Actual response time likely will be measured in years

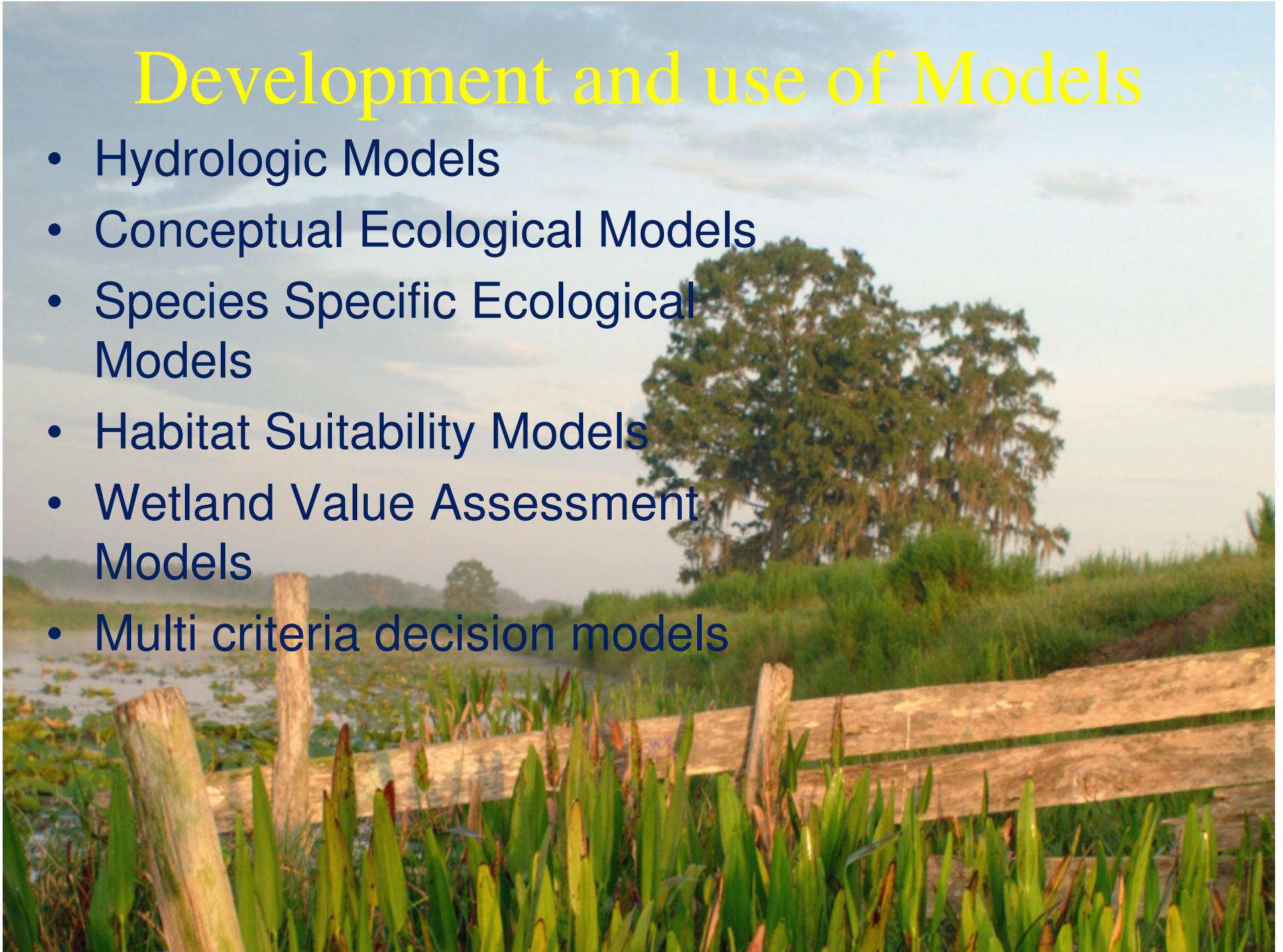
Complexity of Analysis

- Correctly defining historical conditions to determine goals and objectives
- Non monetary nature of many benefits
- Several models may be required to just predict physical changes
- Conceptual Ecological Models needed to develop correlations between physical and biological systems.
- Determining and developing the appropriate Environmental Indicators
- Determining and developing the appropriate Environmental stressors



Development and use of Models

- Hydrologic Models
- Conceptual Ecological Models
- Species Specific Ecological Models
- Habitat Suitability Models
- Wetland Value Assessment Models
- Multi criteria decision models



Integral Incorporation of Science in Plan



- Development of new science takes time likely measured in years
- Ecosystems are not an Exact Science and subject to much variability
- Good Science Requires Solid Foundation
- The desired goal is not always a direct Path
- Incorporating New Science may create new issues

Methods of Analysis

- Habitat Suitability Indices
- Wetlands Rapid Assessment Procedure
- Average Annual Habitat Units
- Choosing by Advantages
- Best Professional Judgment
- Ecosystem Services
- IWR-Plan for CE/ICA
- Risk and Uncertainty

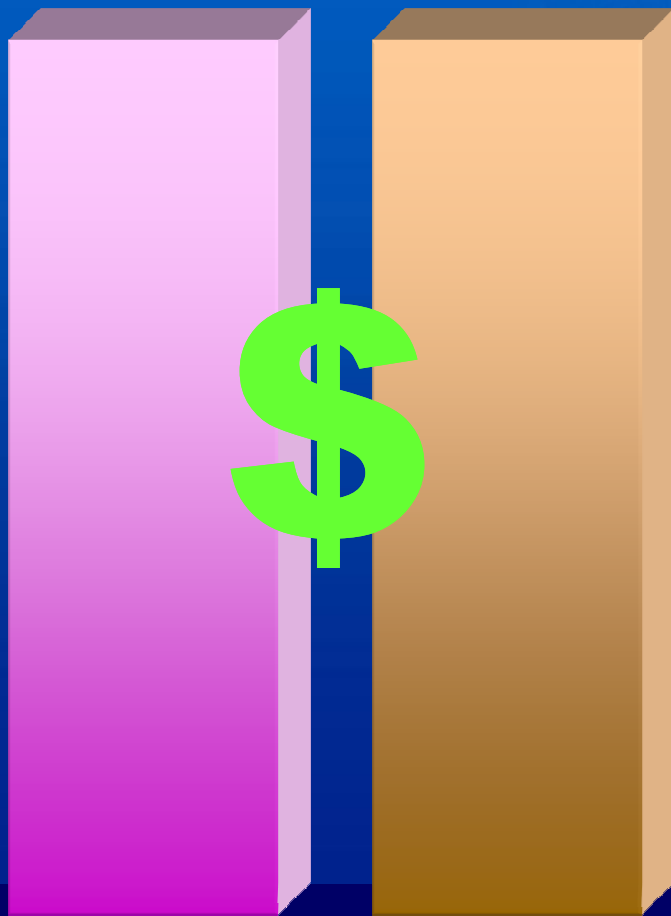
Ecosystem Services

- Big Plus to CEQ for planning to incorporate Ecosystem Services into new Principles and Requirements.
 - Example - Ecosystem Services value based on report by Mather Economics prepared for the Everglades Foundation:
 - Groundwater purification, Water Quality enhancement - \$13.15 Bil
 - Real Estate - \$16.11 Bil
 - Park Visitation - \$1.32 Bil
 - Open Space - \$831 Mil
 - Fishing - \$2.56 Bil
 - Wildlife Habitat and Hunting - \$12.54 Bil
- Total - \$46.5 Billion

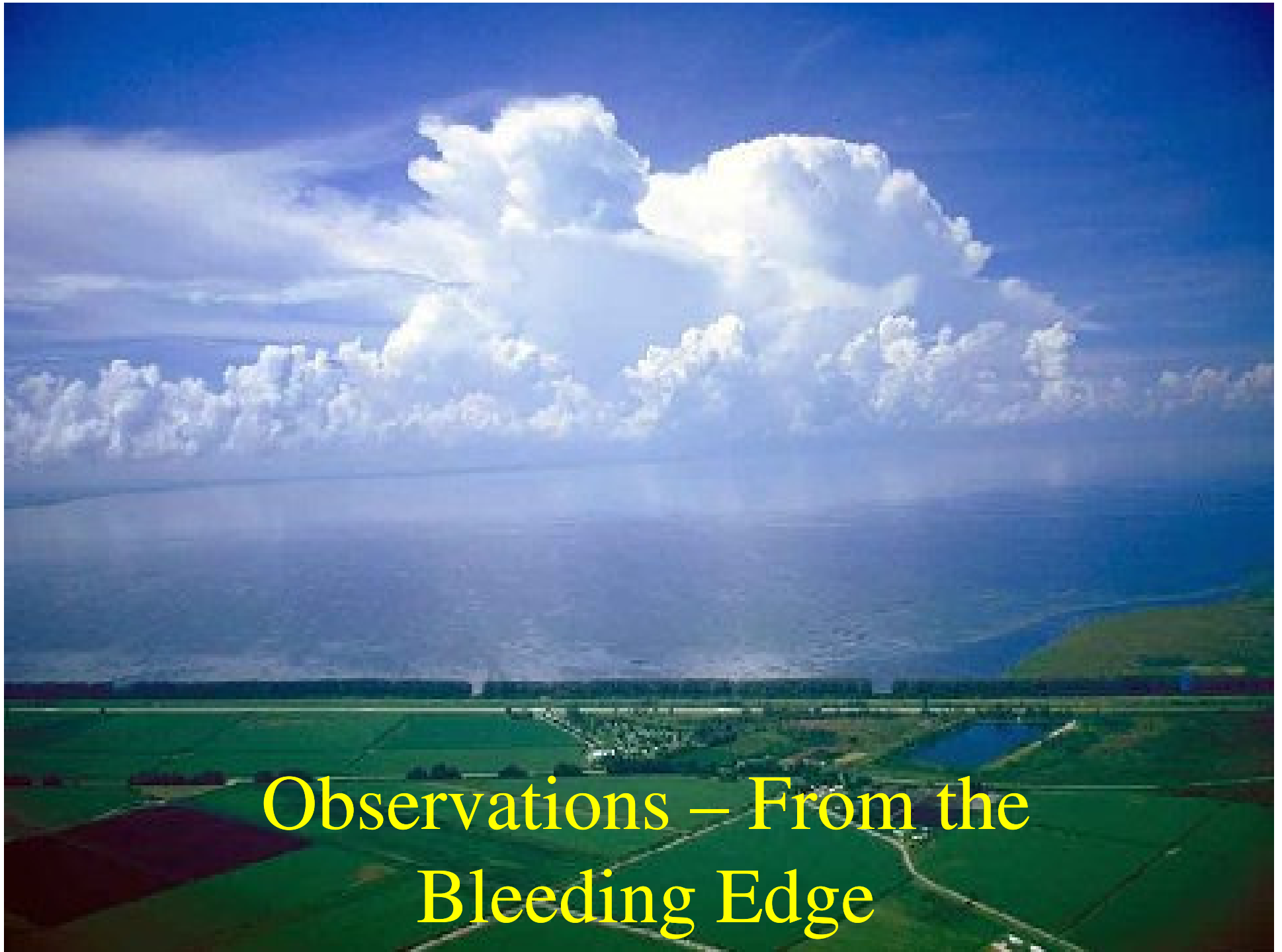
Funding and Support

**Federal
Share**

**Non Federal
Share**



- Regardless of Source, Funding depends on strong support base for program
- Strong Support Base depends on strategic, comprehensive, and effective public and stakeholder involvement program
- Sustainability for multi year program is absolutely dependent on these



Observations – From the
Bleeding Edge

Habitat Units – Lack Soul



If we must use them to compare alternatives, Ok,
But NEVER forget to describe the true benefits of the
project!!

Path to Short Term Failure

- Trying to analyze all benefits and impacts - Over Analysis – Paralysis by analysis
- True goals or objectives not clearly defined – Yes, it is Environmental Restoration (aka apple pie), but what are we really trying to achieve?
- The desire for perfect solution before decision – Compelling desire to answer all the questions before recommending or approving solution, or, need to eliminate all unknowns – even though the Truth is - you generally cannot.
- Forgetting to tell the bigger story

Key to long term success

- Strong proponent/champion
- Strong, Strategic communication plan and program focused on goals and objectives
- Fully Integrated Stakeholder involvement
- Strategic Plan for Incorporating Science and Monitoring
- Integrating Adaptive Management upfront, even for plan development process to define the what's, the why's, and the how's.

Are you Feeling All Alone and
Adrift?
Need Help?



Sacramento-San Joaquin Delta

The Goal of Environmental Benefits R & D

“Improvements in benefit/output evaluation techniques with emphasis on scientifically based and peer-recognized metrics for the analysis of ecosystem restoration projects and alternatives with the goal of comparing projects and alternatives on a national basis in support of the Federal investment.”

John Paul Woodley

Former Assistant Secretary of the Army for Civil Works

Environmental Benefits Analysis Research Program (ERDC)

- Efforts underway to improve benefits assessments using scientifically based metrics and peer reviewed methods in support of the Federal investment in ecosystem restoration
- Initial Draft report under review that provides a:
 - Compendium on all current analysis efforts underway
 - Primer on the why's, the what's, the how's for evaluating ecosystem restoration projects
 - Step by step guide correlated to the 6 Step planning process
- Strongly urge ERDC and Corps to release the draft and finalize the document.

Institute for Water Resources (IWR)

- *IWR-Planning Suite*
- Available on web
- Website: *www.pmcl.com/iwrplan*
 - Instructions
 - Student tutorial
 - User's Guide
- For on-line help, click on “?”

Despite the Challenges –
Real Progress!!



Kenilworth Marsh, Washington, DC



KENILWORTH MARSH RESTORATION, WASHINGTON, D.C.



Bolinas Lagoon, California



Town Pond, Rhode Island

Before



After



Kissimmee River Restoration

1950



1980



2005



Matilija Dam Removal, Ventura River California



Elwha River Dam Removal, Washington




2 Dams to be removed
By National Park Service
Starting This Fall!



Large scale Restoration Programs Underway



- Everglades
- Chesapeake Bay
- Louisiana Coastal Area
- Great Lakes
- California Bay Delta
- Missouri River Recovery
- Pudget Sound
- Hudson River
- Gulf Coast

A scenic view of a wetland with large trees and water. The trees have thick, buttressed trunks and dense green foliage. The water is dark blue and reflects the sky. In the foreground, a large tree trunk is prominent on the left. In the background, several white egrets are visible near the water's edge.

Lest we tire in our efforts
Remember –
Bold Steps of the Past,
Saved this for us
today!

restoration
restoration

Sunrise in New Mexico



Winter Morning in Yosemite



Summer Afternoon at Yellowstone Lower Falls



Late Afternoon in Big Cypress, Florida



Thank You

