



**Where Traditional Knowledge and
Western Science Meet:**

**Wetland Program Planning for Tribal
Community Management Objectives**

EPA Region 8
Tribal Awareness Building Meeting
September 27, 2021

Who Are We...

“A culture that is intertwined with its natural surroundings”

“Dating back to the tribe’s earliest years, environmental stewardship included wide-ranging efforts to protect, preserve, and conserve groundwater and surface water resources.”

“Our lives are aligned with the changing seasons”

Where Are We...

- Many historic territories along or tied to rivers and lakes
- Hunted wild game, fished in the rivers and lakes, gathered functional and medicinal plants
- Focused on the values of living in harmony with their surroundings and sharing natural and material resources with others.
- Longstanding community values focused on protecting and restoring wetlands, aquifers, prairies, and forests.

Tribal Wetland Importance

A long history of wetland/water interactions:

- Tribal origin stories center on wetland plants and animals
- Fresh water supply for various activities
- Numerous tribal medicinal plants and building materials are hydrophytic
- Floodplains of rivers, streams and lake margins are often traditional agricultural areas
- Fishing from rivers, lakes and streams is a primary subsistence activity



EPA Core Elements Framework

“Meeting States and Tribes where they are”

- EPA - financial support and guidance for developing tribal wetland programs
- Published a common set of guidelines and program objectives
- Core Elements of State and Tribal Wetland Programs (2009) or the Core Elements Framework (CEF)
- Guidelines plus specific tribal goals and objectives = Tribal Wetland Program Plan



EPA Core Elements Framework

“The Foundation of Wetland Management and Protection”



1. Regulatory
2. Monitoring and Assessment
3. Water Quality Standards for Wetlands
4. Voluntary Restoration and Protection
5. *Tribal Ecological Knowledge*

Wetland Management Issues

Preservation:

- Focused on traditional uses:
 - Hunting and gathering
 - Medicinal plants
 - Cultural traditions



Restoration:

- Loss of historic floodplain
- Degradation through current activities
- Competing land use (e.g. agriculture, oil and gas)

Enhancement:

- Water quality, vegetation, groundwater recharge

Wetland Program Plan

- Funding: Wetland Program Development Grants, BIA grants, Tribal community funds
- Focus of specific Core Elements e.g. Monitoring and Assessment or Voluntary Restoration and Protection etc.
- Primary objective: assess, monitor, control, and protect the health, of tribal land wetlands and adjacent waters

Tasks:

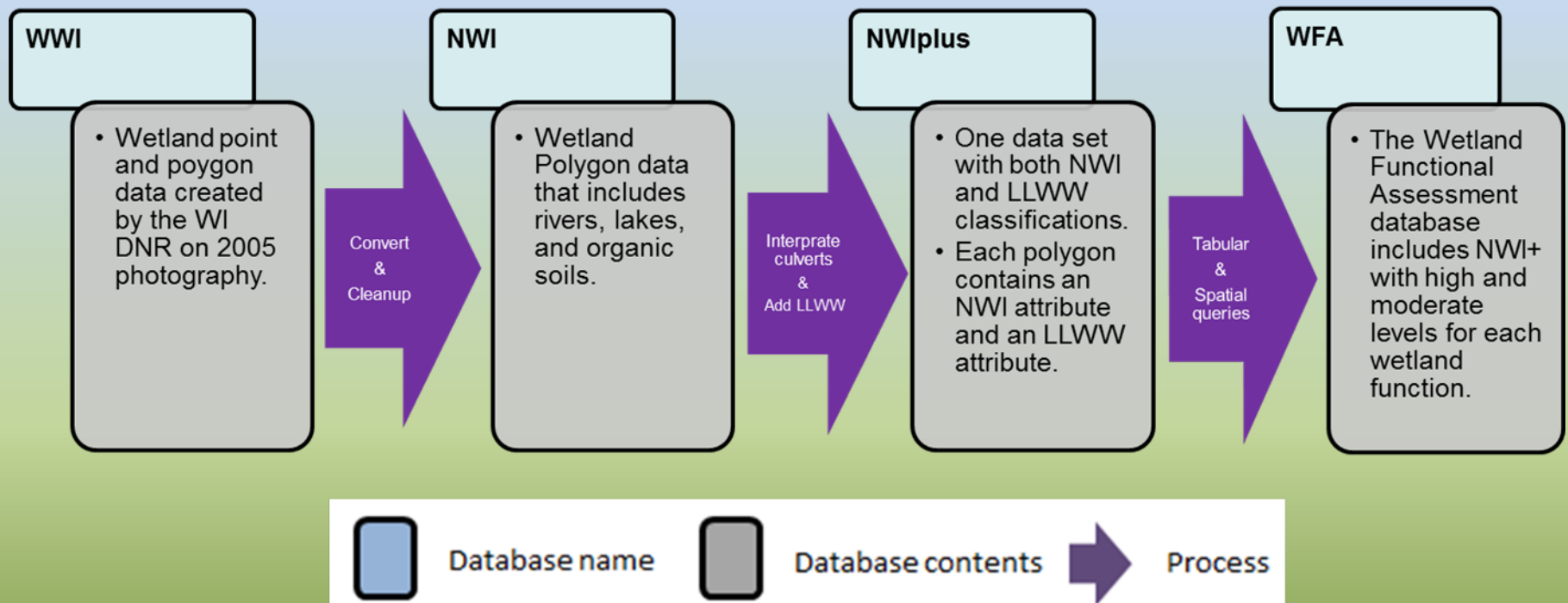
1. Wetland inventory (NWI)
2. Hydrogeomorphic Classes
3. Wetland Functional Assessment
4. Potentially Restorable Wetlands
5. Identify Candidate Sites
6. Site Monitoring and Assessment
7. Improve Tribal Awareness
8. Engage Local Stakeholders

Wetland Program Plan

Key Goals and Objectives:

- Complete a baseline wetland and surface waters inventory
- Develop IBI based assessment of species guild and vegetation data
- Document reference sites or desired future conditions
- Identify/protect unique and high-quality wetlands
- Identify/protect culturally significant or important wetlands and waters
- Identify degraded or imperiled wetlands
- Return as much vegetation as possible to native species
- Protect specific species with cultural significance and RTE status:
Field mint, Sweetgrass, Native turtles, Whooping crane
- Understand land-use and land-cover change impacts on wetland loss

Landscape Level Wetland Inventory



Potentially Restorable Wetlands

$$PRW = (A + B) - (W + U)$$

A = CTI values > 9.5* (*raster cells*)

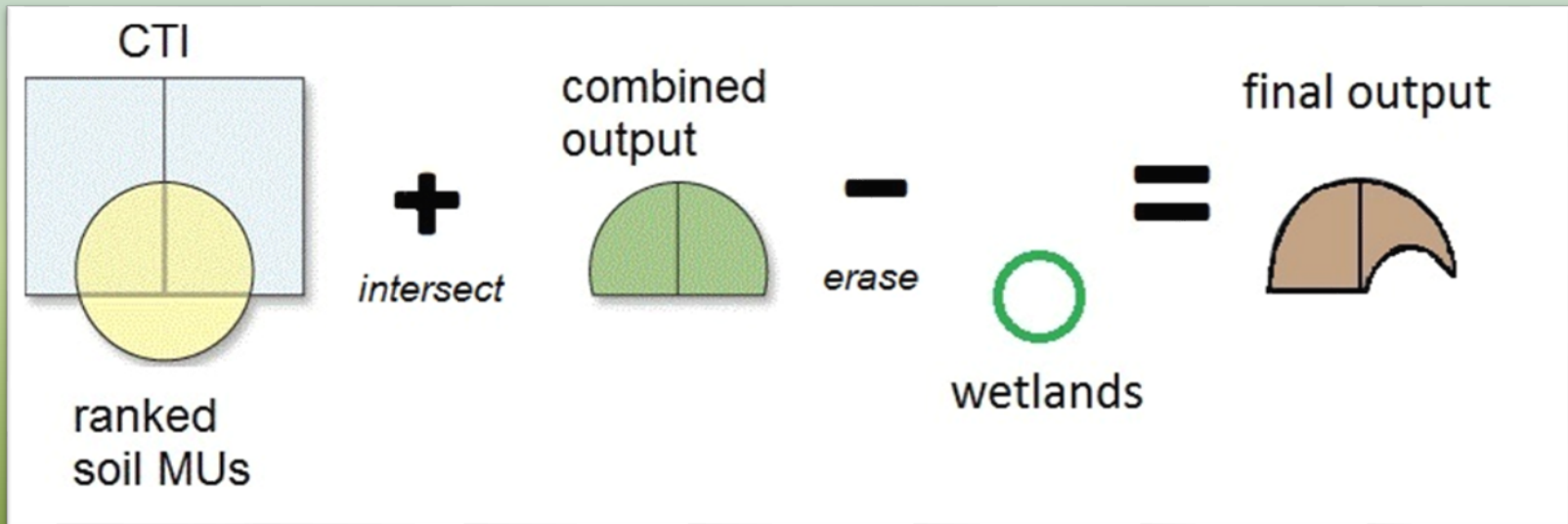
B = hydric soils (*polygons*)

W = current wetland boundaries (*polygons*)

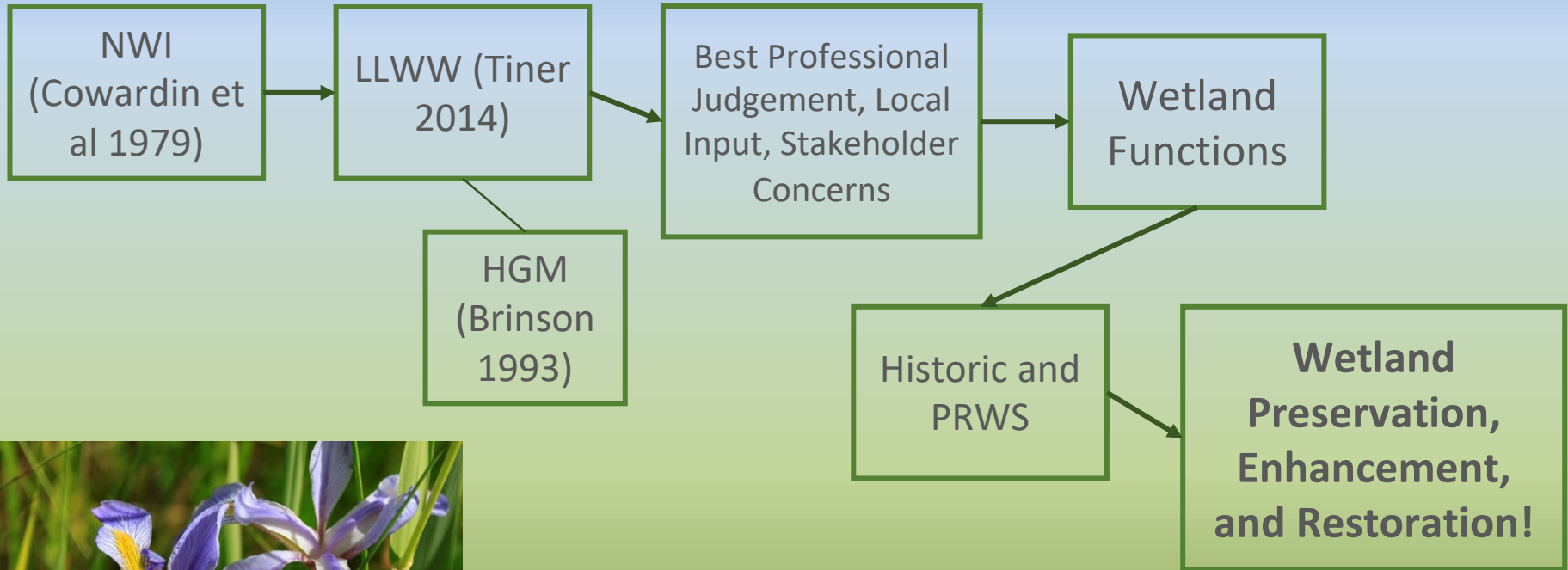
U = incompatible land uses (e.g., urban)

+ = Intersect ArcGIS tool

- = Erase ArcGIS tool



Wetland Functional Assessment

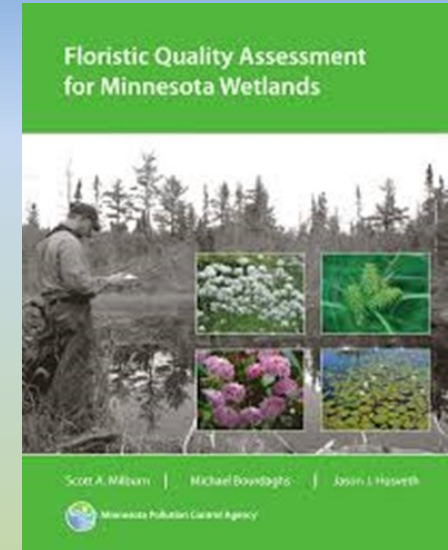
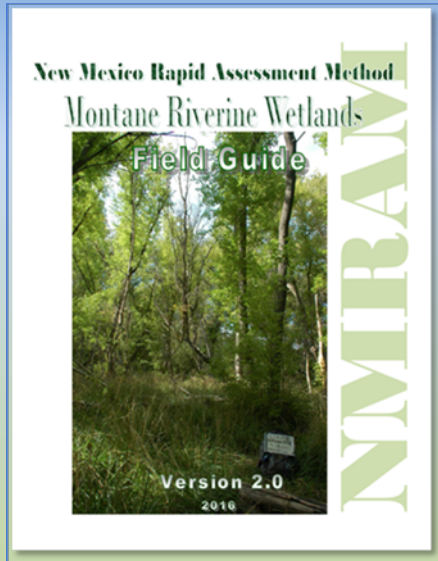


Ecological Functions Assessed

- Surface water detention
- Coastal storm surge detention
- Streamflow maintenance
- Nutrient transformation
- Sediment/pollutant storage
- Carbon sequestration
- Bank and shoreline stabilization
- Fish and aquatic invertebrate habitat
- Waterfowl and waterbird habitat
- Provision of habitat for culturally significant wildlife
- Habitat for unique, uncommon or culturally significant wetland plant communities



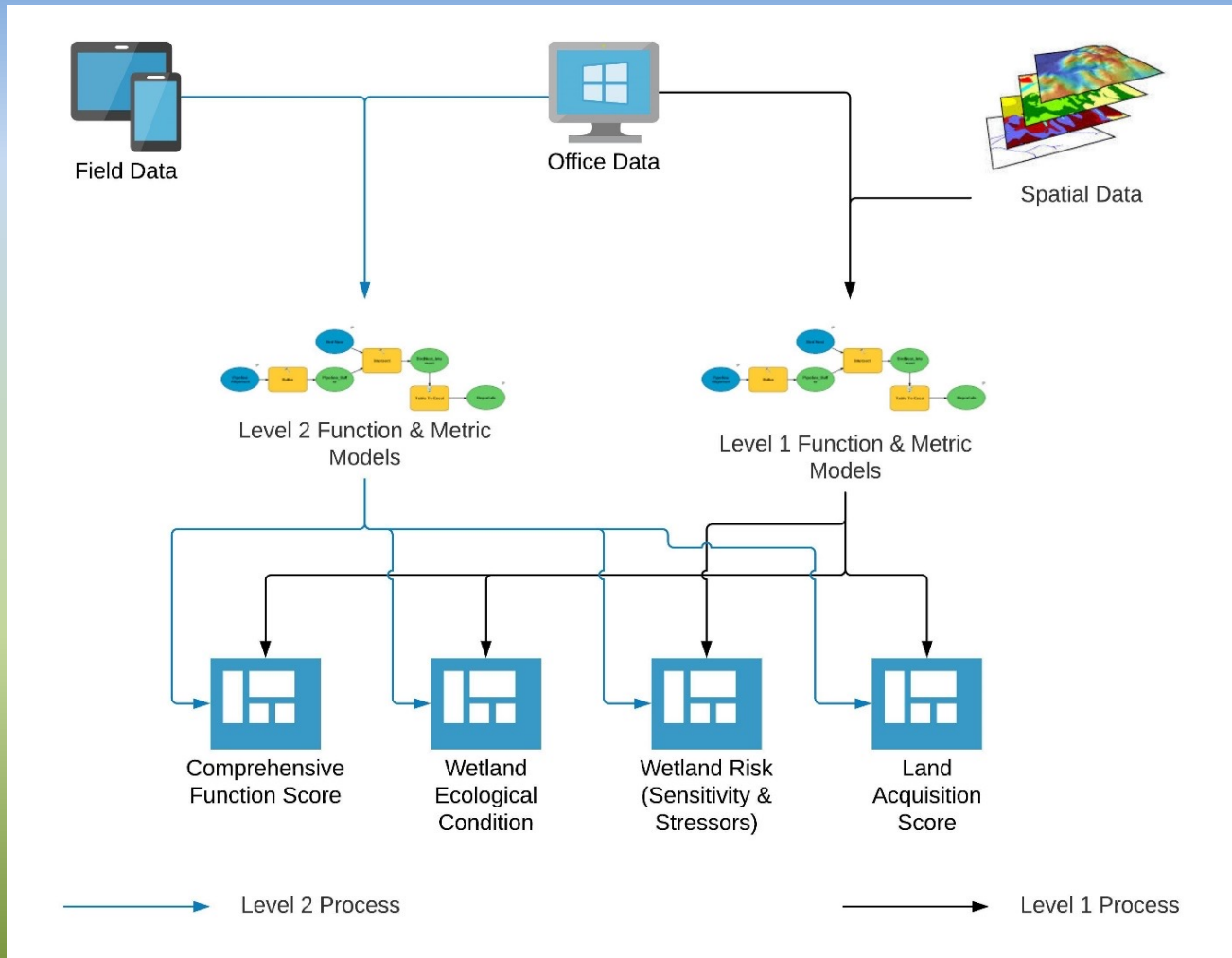
Rapid Assessment Methods



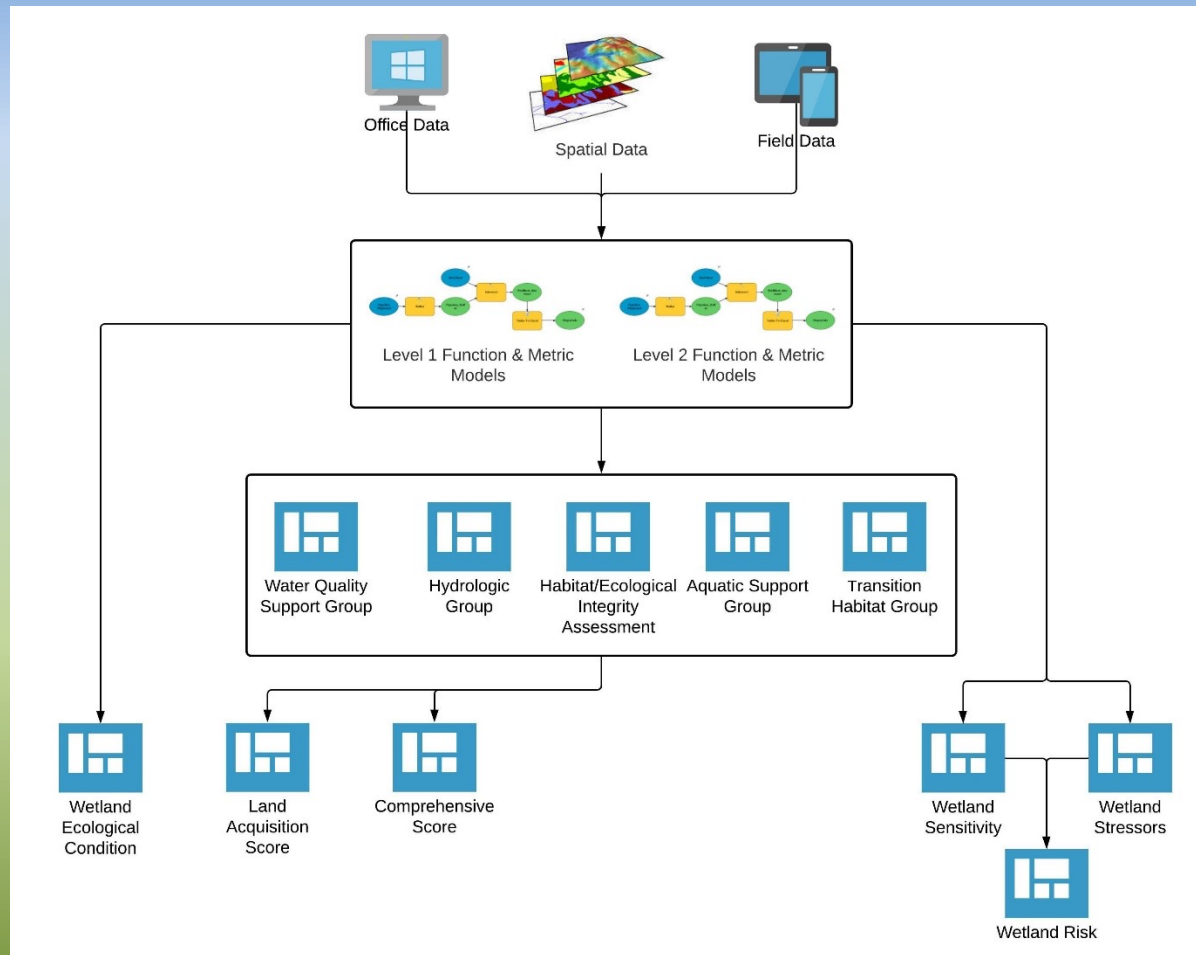
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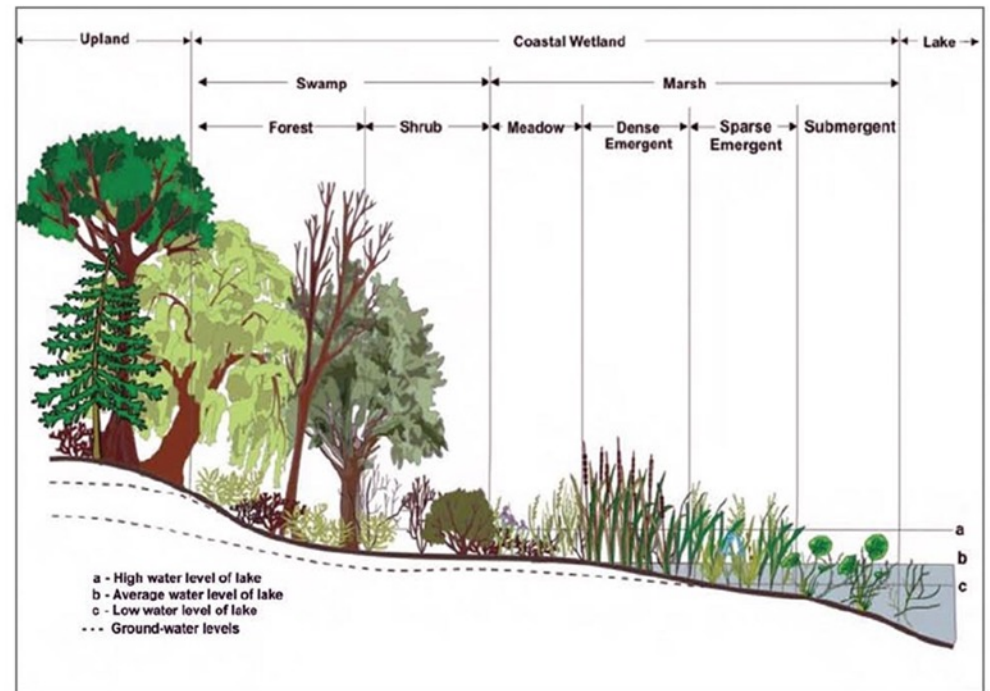
General RAM Approach



Develop Functional Groups



Monitoring and Assessment



Management Activities



GeoSpatial Services



Tribal Awareness Building

Three Affiliated Tribes

STORY RELATED TO LIKE-A-FISHHOOK VILLAGE FROM *MANDAN SOCIAL AND CEREMONIAL ORGANIZATION*

by Alfred W. Bowers

GeoSpatialServices

Tribal College Curriculum

NUETA HIDATSA SAHNISH COLLEGE

Tribally educated; globally prepared.

Environmental Science Degree Program:

- Wetland Science
- Range Management
- GIS/GPS/RS Technology
- Field Methods - FQA/IBI/WQ
- Internship
- Tribal History, Tradition and Law



Questions?

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