Regionalizing the 1987 Corps of Engineers Wetland Delineation Manual

SNEC-SWCS/SSSSNE

26 February 2009

National Project Goals

- Update the 20-year-old wetland delineation manual to reflect the state-of-the-science
- Improve its sensitivity to regional differences in climate, landforms, geology and soils, and plant distributions and adaptations
- Address National Academy of Sciences recommendations
- Establish a mechanism to propose, review, and approve periodic updates

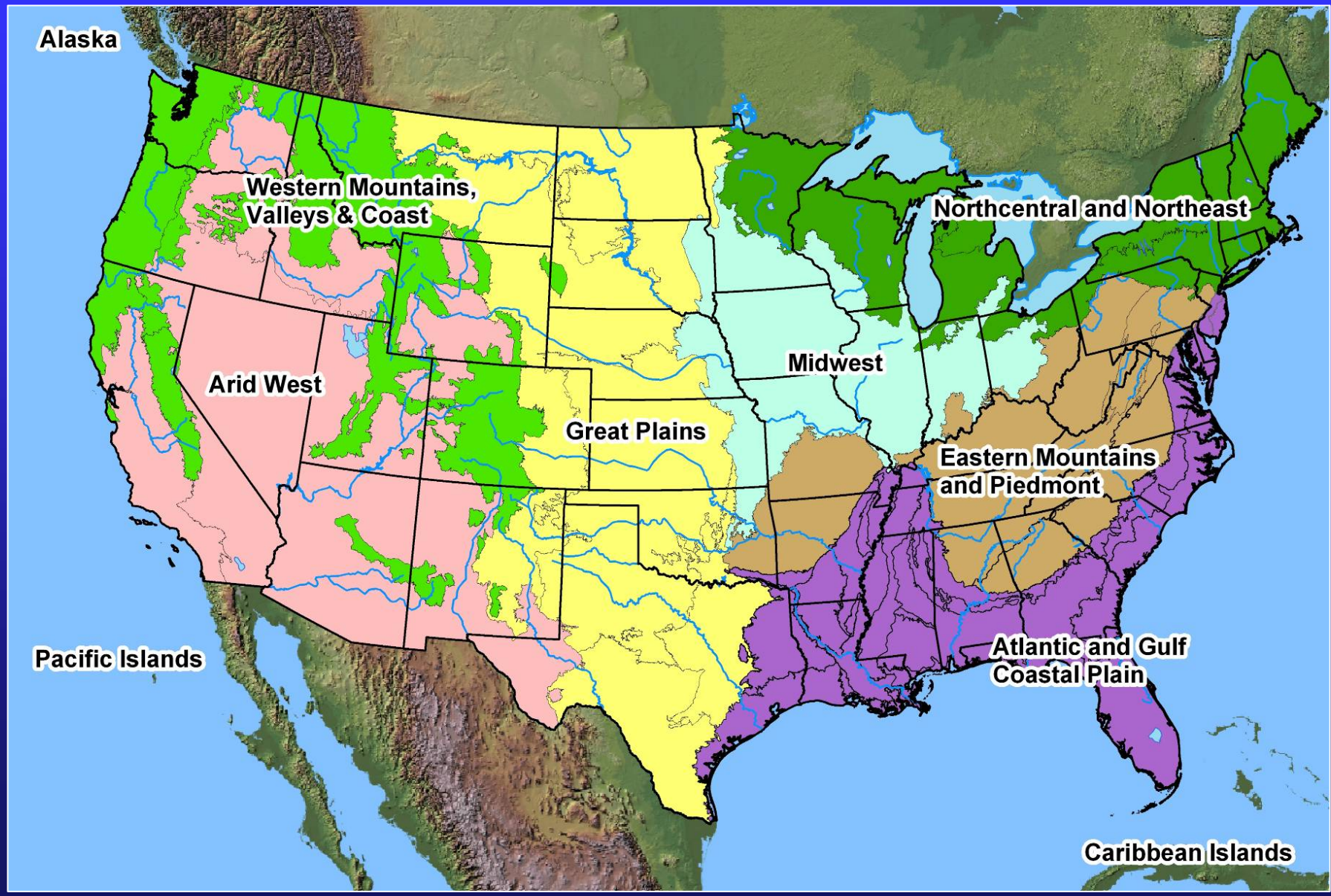
Project History

- In 2003, Corps Headquarters initiated a project to develop Regional Supplements to the 1987 wetland delineation manual
  - R&D effort led by Engineering Research and Development Center (ERDC)
  - Initiated in Alaska and the Arid West
- Current status and products:
  - http://www.usace.army.mil/CECW/Pages/reg_supp.aspx

Status of Regional Supplements

- Alaska
  - Version 2.0 published & implemented in October 2007
- Arid West
  - Version 2.0 published Oct & implemented Nov 2008
- Western Mountains, Valleys, and Coast
  - Interim version implemented July 2008
- Great Plains
  - Interim version implemented May 2008
- Midwest
  - Interim version published Oct & implemented Nov 2008
- Atlantic and Gulf Coastal Plain
  - Interim version publ Dec 2008 & implemented Jan 2009
- Caribbean Islands
  - ERDC review of peer review, public comments, & field testing
- Northcentral and Northeast
  - ERDC review of peer review, public comments, & field testing
- Hawaii and Pacific Islands
  - Second working group meeting February 2009
- Eastern Mountains and Piedmont
  - Second working group meeting March 2009

Wetland Delineation Regions



Tentative Schedule of Regions

	Target Date for Publication of the Interim Version
Alaska	2006
Arid West	2006
Western Mountains, Valleys & Coast	2007
Great Plains	2007
Midwest	2008
Atlantic and Gulf Coastal Plain	2008
Northcentral and Northeast	2009
Caribbean Islands	2009
Eastern Mountains and Piedmont	2010
Hawaii / Pacific Islands	2010

Interagency Partnerships

- National Advisory Team (NAT)
  - 2 EPA, 4 NRCS, 1 FWS, 5 Corps District, 3 ERDC, and 2 Corps HQ members
  - Provides technical oversight, consistency across regions, and quality control during the development of Regional Supplements
  - In the future, serves as the point-of-contact and reviewer of proposals to update the Manual or its supplements

Interagency Partnerships (cont.)

- Regional Working Groups
  - Composed mainly of federal, state, and academic experts from the region
  - Identify technical issues, select wetland indicators, develop regionalized procedures, and help ERDC draft the Regional Supplement
  - Participate in field testing the supplement
  - More than 140 people have participated

Steps in the Process

- Develop a Regional Supplement in cooperation with the Regional Working Group
- Review by the NAT
- Independent peer reviews (mainly private sector volunteers)
- Field testing following NAT protocol
- Public notice for review and comments
- Public notice for 1-year interim implementation
- Public notice for final implementation

What won’t change?

- The Corps/EPA wetland definition
- The basic three-factor approach to wetland identification (vegetation, soil, hydrology)
- Emphasis on indicator-based wetland determinations
- Jurisdictional reach

As regional supplements are finalized and implemented, they will replace certain portions of the 1987 delineation manual

Table 1. Sections of the Corps Manual replaced by this Regional Supplement.

Item	Replaced Portions of the Corps Manual (Environmental Laboratory 1987)	Replacement Guidance (this Supplement)
Hydrophytic Vegetation Indicators	Paragraph 35, all subparts, and all references to specific indicators in Part IV.	Chapter 2
Hydric Soil Indicators	Paragraphs 44 and 45, all subparts, and all references to specific indicators in Part IV.	Chapter 3
Wetland Hydrology Indicators	Paragraph 49(b), all subparts, and all references to specific indicators in Part IV.	Chapter 4
Growing Season Definition	Glossary	Chapter 4, Growing Season; Glossary
Hydrology Standard for Highly Disturbed or Problematic Wetland Situations	Paragraph 48, including Table 5 and the accompanying User Note in the online version of the Manual	Chapter 5, Wetlands that Periodically Lack Indicators of Wetland Hydrology, Procedure item 3(g)

Remaining Contents of the National Delineation Manual

- Corps/EPA wetland definition
- Basics of the three-factor approach
- General definitions of hydrophytic vegetation, hydric soil, and wetland hydrology
  - No specific indicators
- Preliminary data gathering (offsite sources)
- Routine and Comprehensive field methods
- General Atypical Situation guidance
- General Problem Area guidance
- Main Glossary
- NAT to begin updating in 2009

Contents of a Regional Supplement

- Description of the region
- Hydrophytic vegetation indicators
- Hydric soil indicators
- Wetland hydrology indicators
- Guidance for “difficult wetland situations” in the region
- Data form

Role of the Technical Standard for Water-Table Monitoring

- To determine whether wetland hydrology is present on highly disturbed or problematic sites that lack wetland indicators
  - Not intended for routine use or to overrule an indicator-based determination on an undisturbed site
- Provides standards for the design, construction, and installation of water-table monitoring wells, and the collection and interpretation of data
  - http://el.erdc.usace.army.mil/wrap/pdf/tnwrap05-2.pdf

Relationship to the Plant Lists

- The regionalization of the 1987 Manual and the updating of wetland plant lists are separate and independent efforts. The Regional Supplements do not contain any changes to the plant lists.
- However, an independent effort to update the National Wetland Plant List is currently underway

Future of the Wetland Plant List

- Authority for the wetland plant list was transferred from the Fish and Wildlife Service to the Corps of Engineers in March of 2007
- National Panel, comprised of Corps, FWS, EPA, and NRCS, for the wetland plant list established in 2007; Regional Panels in 2008
- The list will be revised using a web-based system for national and regional panels, states, tribes and all others.
- Regional Panels currently evaluating species

Hydrophytic Vegetation Indicators

Examples in Regional Supplements:

- Rapid Test (Northcentral/Northeast)
- Dominance Test (all regions)
- Prevalence Index (all regions)
- Morphological Adaptations (most regions)
- Wetland Non-Vascular Plants (used in Alaska and the Pacific Northwest only)

Hydrophytic Vegetation Indicators

Dominance Test:

- More than 50% of dominant species across all strata are rated OBL, FACW, or FAC
- Dominants are selected by the 50/20 rule
- In most regions, including Northcentral/ Northeast, ‘+’ and ‘-’ modifiers are not used

Hydrophytic Vegetation Indicators

Prevalence Index:

- The prevalence index (PI) is 3.0 or less
- PI is a weighted-average wetland indicator status of all (or nearly all) species in the sample
  - OBL=1, FACW=2, FAC=3, FACU=4, UPL=5
  - Weighted by absolute percent cover
  - At least 80% of the total plant cover must be correctly identified and have an assigned indicator status (including UPL)
  - '+' and '-' modifiers are not used

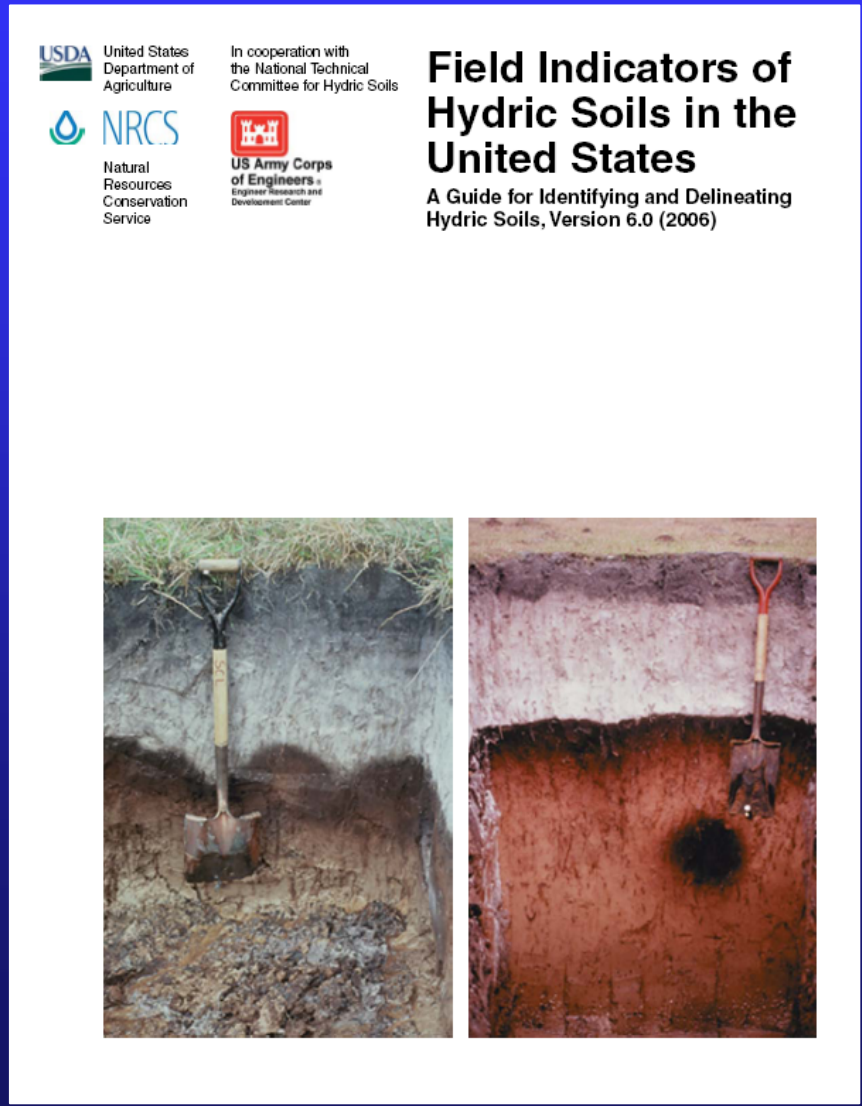
Prevalence Index Calculation

Total % cover of:		Multiply by:	
OBL species	0	× 1 =	0
FACW species	90	× 2 =	180
FAC species	45	× 3 =	135
FACU species	15	× 4 =	60
UPL species	12	× 5 =	60
Column totals:	162 (A)		435 (B)

Prevalence index = B/A = 2.69

Hydric Soil Indicators

- A subset of the NTCHS Field Indicators of Hydric Soils in the US
- NE Indicators being modified for this



Role of Wetland Hydrology Indicators

- Provide evidence of a *continuing* wetland hydrologic regime
  - to ensure that soil and vegetation indicators are not relicts of a past regime
- Confirm that an episode of inundation or saturation occurred recently
  - may provide little additional information about the timing, duration, or frequency of such episodes

Wetland Hydrology Indicators

Regional Supplements

- Presented in four groups
  - Observation of surface water or saturated soil (Group A)
  - Evidence of recent inundation (Group B)
  - Evidence of recent soil saturation (Group C)
  - Evidence from other site conditions or data (Group D)

- Categorized as “primary” or “secondary”
  - Primary – any one indicator is sufficient
  - Secondary – two or more indicators are required
  - May vary by region

Wetland Hydrology Indicators

Examples from Northcentral/ Northeast Regional Supplement

- Group A
  - A1 (Surface water)
  - A2 (High water table)
  - A3 (Saturation)

Wetland Hydrology Indicators

Examples from NC/NE Regional Supplement

- Group B
  - B1 (Water marks)
  - B2 (Sediment deposits)
  - B3 (Drift deposits)
  - B4 (Algal mat or crust)
  - B5 (Iron deposits)
  - B6 (Surface soil cracks)
  - B7 (Inundation visible on aerial imagery)
  - B8 (Sparsely vegetated concave surface)
  - B9 (Water-stained leaves)
  - B10 (Drainage patterns)
  - B13 (Aquatic fauna)
  - B15 (Marl deposits)
  - B16 (Moss trim lines)

Wetland Hydrology Indicators

Examples from NC/NE Regional Supplement

- Group C
  - C1 (Hydrogen sulfide odor)
  - C2 (Dry-season water table)
  - C3 (Oxidized rhizospheres along living roots)
  - C4 (Presence of reduced iron)
  - C6 (Recent iron reduction in tilled soils)
  - C7 (Thin muck surface)
  - C8 (Crayfish burrows)
  - C9 (Saturation visible on aerial imagery)

Wetland Hydrology Indicators

Examples from NC/NE Regional Supplement

- Group D
  - D1 (Stunted or stressed plants)
  - D2 (Geomorphic position)
  - D3 (Shallow aquitard)
  - D4 (Microtopographic relief)
  - D5 (FAC-neutral test)

Growing Season

Information is used to:

- Analyze recorded hydrologic data
- Evaluate certain wetland hydrology indicators (A1, A2, A3)

Growing Season

On-site methods are preferred:

- Begins when 2 or more non-evergreen plant species exhibit any of the following:
  - Emergence of herbaceous species from the ground
  - New growth from vegetative crowns
  - Emergence from seed
  - Bud burst on woody plants
  - Emergence/elongation of leaves
  - Emergence/opening of flowers
- Soil temperature at 12 inches is above 5 C
- Whichever is earlier

Difficult Wetland Situations

Supplements address regional examples of:

- Atypical Situations – where wetland indicators may be missing or misleading due to recent human activities or natural events
- Problem Areas – where wetland indicators may be missing due to normal seasonal or annual variability, or the nature of soils or vegetation on the site
- Other issues that make wetland delineation challenging (e.g., wetland/non-wetland mosaics)

Difficult Wetland Situations

Chapter 5 includes sections on:

- Lands used for Agriculture and Silviculture
- Problematic Hydrophytic Vegetation
- Problematic Hydric Soils
- Wetlands that Periodically Lack Indicators of Wetland Hydrology

Why Some Plant Communities Can Be Problematic

- Temporal shifts in species composition
  - Seasonal and during droughts
- Sparse or patchy vegetation (e.g., vernal pools)
- Prolonged dry or drought conditions
- Grazing
- Managed plant communities (e.g., cleared, tilled, planted, irrigated)
- Natural disturbances (e.g., fires, floods, etc.)

Why Some Soils Lack Indicators

- Parent Material Problems
  - Vegetated Sand and Gravel Bars
    - Low organic matter
  - Red Parent Materials
    - Hide redox features
  - Black Parent Materials
    - Hide redox features
- Other Soil Problems
  - Seasonally Ponded Soils
    - May only saturate in the upper few inches
  - Fluvial Deposits within Floodplains
  - Recently Developed Wetlands
    - Not enough time for redox features to form

Situations That Can Make Wetland Hydrology Decisions Difficult

- Site visits during the dry season
- Periods of below-normal rainfall
- Drought years
- Years with low winter snowpack in mountains where snowmelt provides water for wetlands downslope
- Human activities that alter or destroy wetland hydrology indicators

Summary

- Ten Regional Supplements are planned, eight have been drafted or implemented, two are in early development phase
- Dozens of agency, academic, and private-sector experts involved
- Regional Supplements replace only certain portions of the 1987 Manual
- Goal is to identify all wetlands, without regard to current regulatory policy