Wetlands and Streams

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Mark Gallagher
Princeton Hydro, LLC.

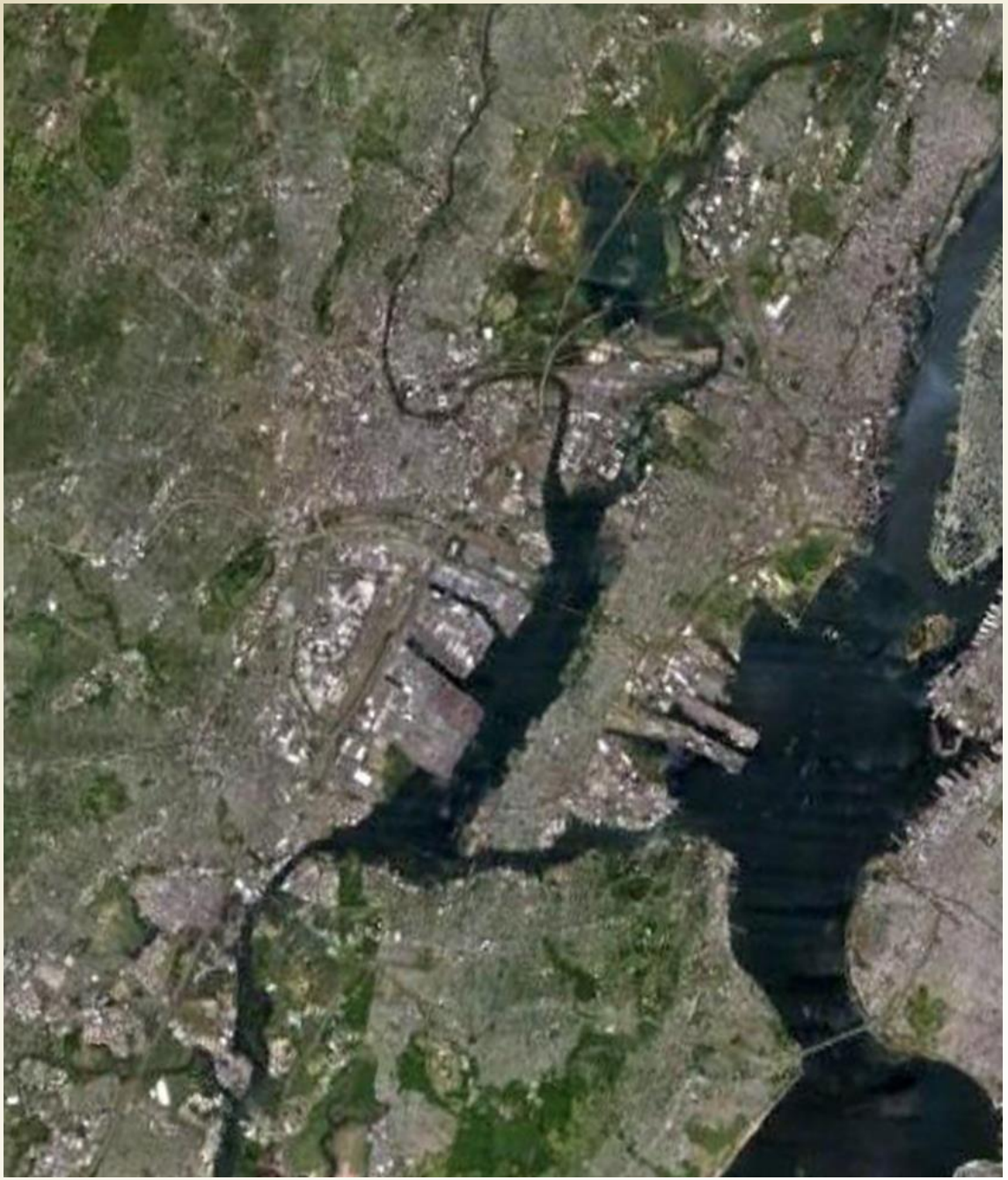
Objectives of Today's Presentation

- Brief history of wetlands and wetland regulations in NJ
- Introduction to wetland regulations
  - Section 404
  - Wetland terminology – Cowardin CLassification
  - Wetland Definitions
    - Wetland Vegetation
    - Wetland Hydrology
- Describe how to identify wetlands and streams
- Review some of the basic objectives and need for the collection of data relevant to wetland permitting

The perception of wetlands has changed dramatically over time

- As recently as the 1970's, wetlands were considered "bug-infested, disease- ridden wastelands were subject to widespread filling.

Newark Bay and the Meadowlands 1905 to present



Key Wetland Legislation

1972 FWPCAA. The Federal Water Pollution Control Act Amendments of 1972

Clean Water Act – Section 404

Conservation provisions of the 1985-2000 Farm Bills (Food Security Acts)

No net wetland loss policies (Executive Order 11990 of May 24, 1977)

Clean Water Act Section 404 of the

The objective of the Act is to maintain and restore the chemical, physical, and biological integrity of the waters of the United States. Section 404 of the Act authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into the waters of the United States, including wetlands.

Freshwater Wetlands Protection Act

NJSA 13:9B-1 New Jersey legislature passed the Freshwater Wetlands Protection Act on July 1, 1987

The Legislature therefore determines that in this State, where pressures for commercial and residential development define the pace and pattern of land use, it is in the public interest to establish a program for the systematic review of activities in and around freshwater wetland areas designed to provide predictability in the protection of freshwater wetlands; that it shall be the policy of the State to preserve the purity and integrity of freshwater wetlands from random, unnecessary or undesirable alteration or disturbance; and that to achieve these goals it is important that the State expeditiously assume the freshwater wetlands permit jurisdiction currently exercised by the United States Army Corps of Engineers pursuant to the Federal Act and implementing regulations.

Freshwater Wetlands Protection Act Rules

Memorandum of Agreement with EPA related to NJ's assumption of Section 404 of the Clean Water Act

"nothing precludes the State from adopting or enforcing requirements which are more stringent or from operating a program with a greater scope that that required by 40 C.F.R. Parts 230 and 233

Freshwater Wetlands Protection Act

The Pilgrim Pipeline project will require an Individual Freshwater Wetland Permit and as such must show the following

- Has no practicable alternatives which would have less adverse impact on the aquatic environment or would not involve a freshwater wetland or SOW.
- Would not violate an applicable water quality standard

At least 13 Category 1 antidegradation streams along route

- Is in the public interest as it relates to the public's interest in natural resource preservation as well as in the interest of the property owner/applicant.
- …..and other issues including but not limited to conflicts with endangered species and historic and archaeologic sites

Key Regulations Applicable to the Pilgrim Pipeline

- FERC is not involved
- Federal and State Endangered Species Regulations
- National Historic Preservation Act
- NJ Freshwater Wetlands Protection Act Clean Water Act (EPA review over 5 acres of impact)
  - Section 401 Water Quality Certification
  - Compliance with NJ Water Quality Standards
- Flood Hazard Area Control Act
- Federal Executive Orders

Endangered Species Act: Section 7(a)(2)

The Endangered Species Act (ESA) directs all Federal agencies to work to conserve endangered and threatened species and to use their authorities to further the purposes of the Act. Section 7 of the Act, called "Interagency Cooperation," is the mechanism by which Federal agencies ensure the actions they take, including those they fund or authorize, do not jeopardize the existence of any listed species.

Individual Permit Requirements

Will not destroy, jeopardize or adversely modify a present or documented habitat for threatened or endangered species; and shall not jeopardize the continued existence of a local population of a threatened or endangered species,

Additional Constraints for Exceptional Value Wetlands

Wetlands of exceptional resource value or in trout production waters. An applicant shall also demonstrate either:

That there is a compelling public need for the proposed activity greater than the need to protect the freshwater wetland or trout production water, and that the need cannot be met by essentially similar projects in the region which are under construction or expansion, or which have received the necessary governmental permits and approvals

Compelling Public Need

that based on specific facts, the proposed regulated activity will serve an essential health or safety need of the municipality in which the proposed regulated activity is located, that the public health and safety benefit from the proposed use and that the proposed use is required to serve existing needs of the residents of the State, and that there is no other means available to meet the established public need

Individual Permit Requirements

Will not adversely affect a property which is listed or is eligible for listing on the New Jersey or National Register of Historic Places unless the applicant demonstrates to the Department that the proposed activity avoids or minimizes impacts to the maximum extent practicable or the Department determines that any impact to the affected property would not impact the property's ability to continue to meet the criteria for listing

Scientific Definition of a Wetland

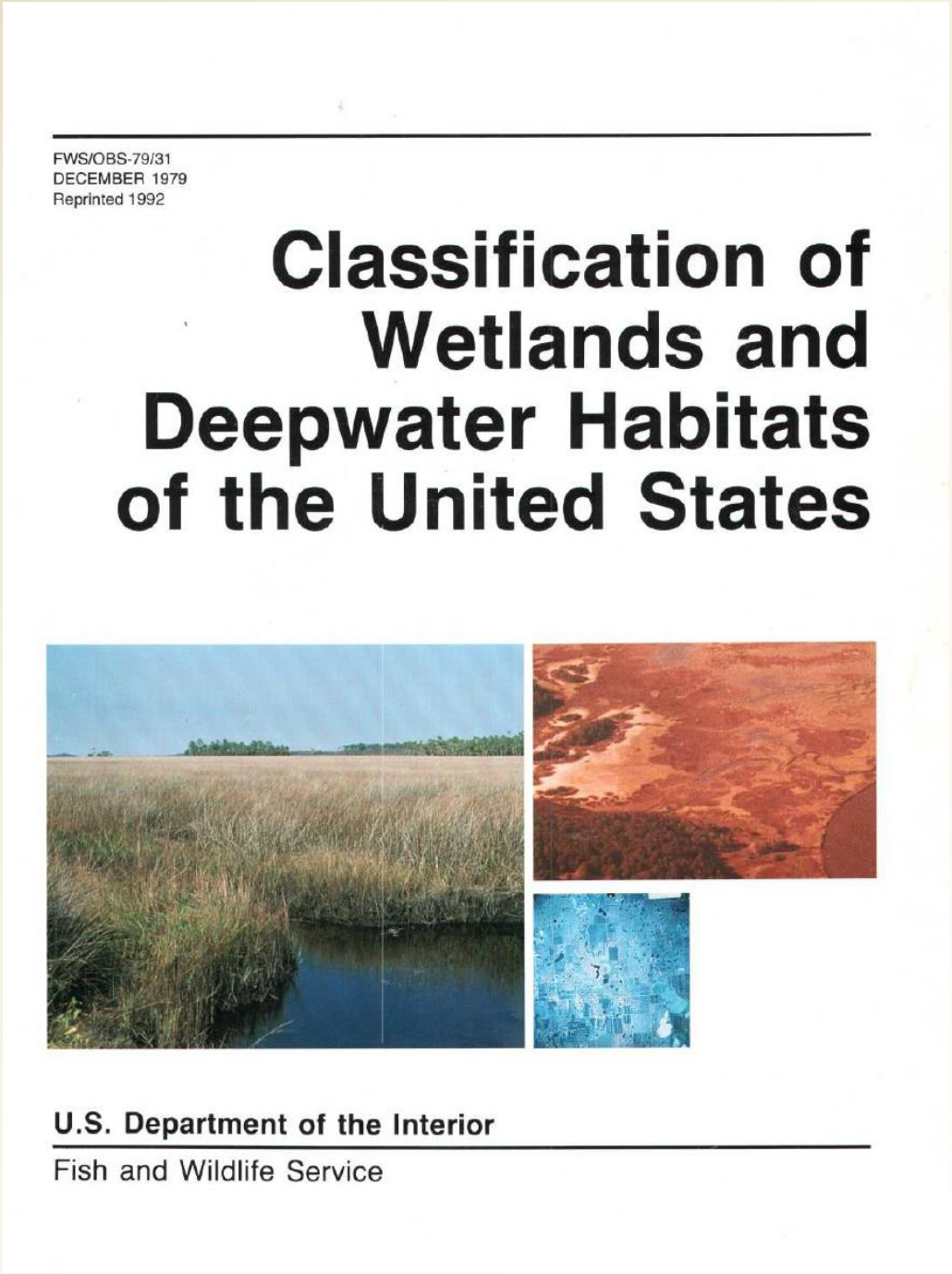
"Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the land surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year." (USFWS, Cowardin et al., 1979)

Current Definition of Wetland

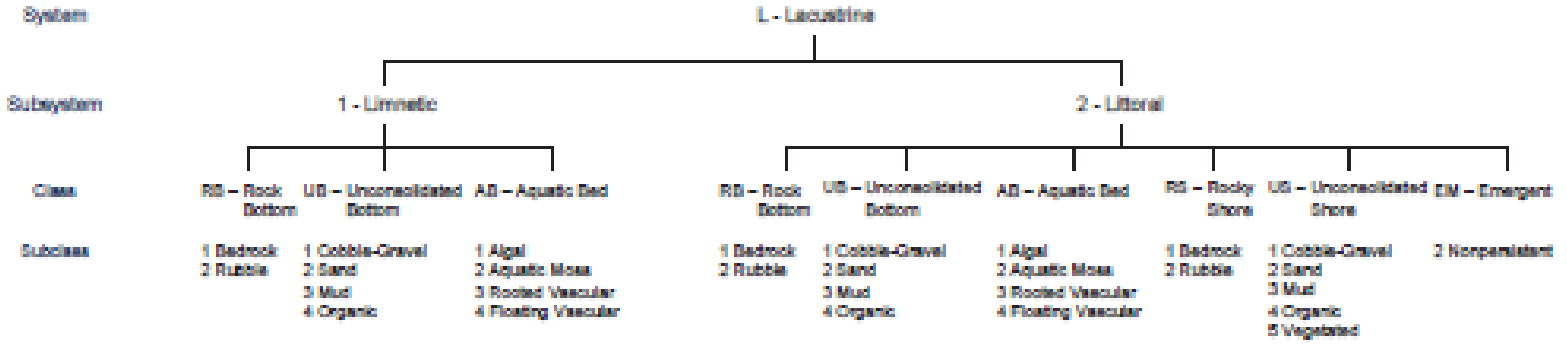
Definition of a Wetland - *Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.*

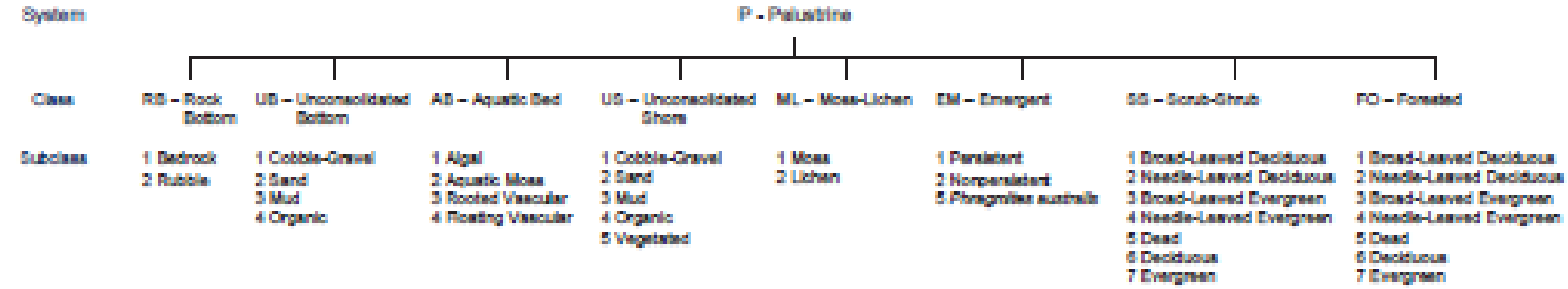
US Army Corps of Engineers

Wetland Classification System



WETLANDS AND DEEPWATER HABITATS CLASSIFICATION





MODIFIERS

In order to more adequately describe the wetland and deepwater habitats, one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

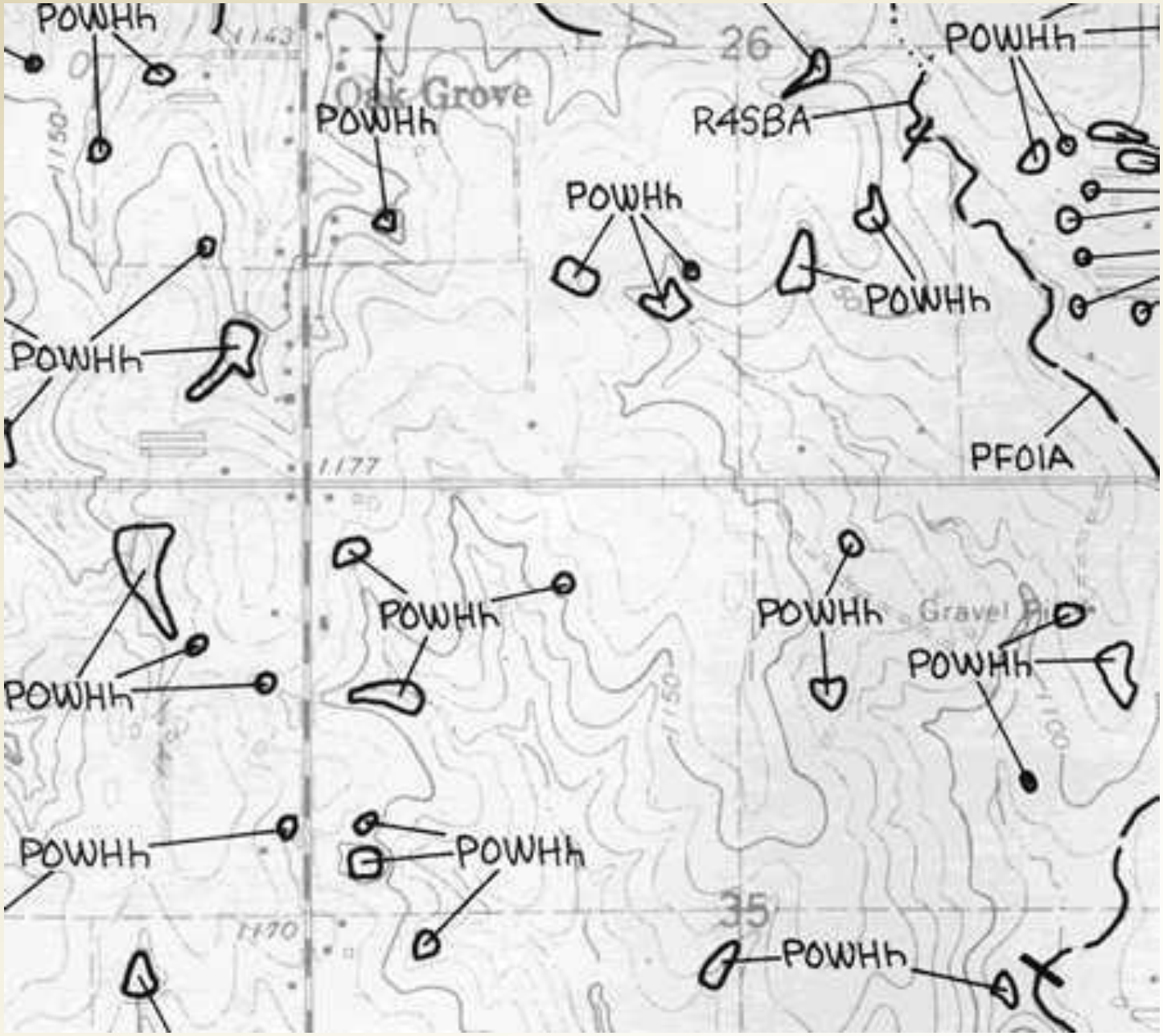
Water Regime			Special Modifiers	Water Chemistry			Soil
Nontidal	Saltwater Tidal	Freshwater Tidal		Coastal Salinity	Inland Salinity	pH Modifiers for all Fresh Water	
A Temporarily Flooded	L Subtidal	S Temporarily Flooded-Tidal	b Beaver	1 Hypersaline	7 Hypersaline	a Acid	g Organic
B Saturated	M Irregularly Exposed	R Seasonally Flooded-Tidal	d Partly Drained/Ditched	2 Euhaline	8 Eusaline	t Circumneutral	n Mineral
C Seasonally Flooded	N Regularly Flooded	T Semipermanently Flooded-Tidal	f Farmed	3 Mixohaline (Brackish)	9 Mixosaline	i Alkaline	
E Seasonally Flooded/ Saturated	P Irregularly Flooded	V Permanently Flooded-Tidal	h Diked/Impounded	4 Polyhaline	0 Fresh		
F Semipermanently Flooded			r Artificial	5 Mesohaline			
G Intermittently Exposed			s Spoil	6 Oligohaline			
H Permanently Flooded			x Excavated	0 Fresh			
J Intermittently Flooded							
K Artificially Flooded							

Swamp

Freshwater marsh

Pond

Typical NWI Map



Three Parameters are Common to all Wetland Definitions

- Wetlands possess (under normal circumstances)
  - Wetland Hydrology
  - Hydric soils
  - Wetland Vegetation
    - A hydrophytic plant community

Wetland Delineation Manuals

- Federal Manual for Identifying and Delineation Jurisdictional Wetlands 1989
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0) Environmental Laboratory, U.S. Army Corps of Engineers January 2012

Wetland Vegetation

The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions described in a above. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptations), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions.

USFWS Wetland Indicators

- OBL Obligate Wetland Species 99%
- FACW Facultative Wetland Species 67-99%
- FAC Facultative Species 34-66%
- FACU Facultative Upload Species 1-33%
- UPL Obligate Upland Species 1%

Broad Leaved cattail

Deeper water plants

Water Lily

Pickerelweed

Shallow Sedge

Tussock Sedge

Soft stemmed Bulrush

Blue Flag Iris

Common Vervain

Cardinal Flower

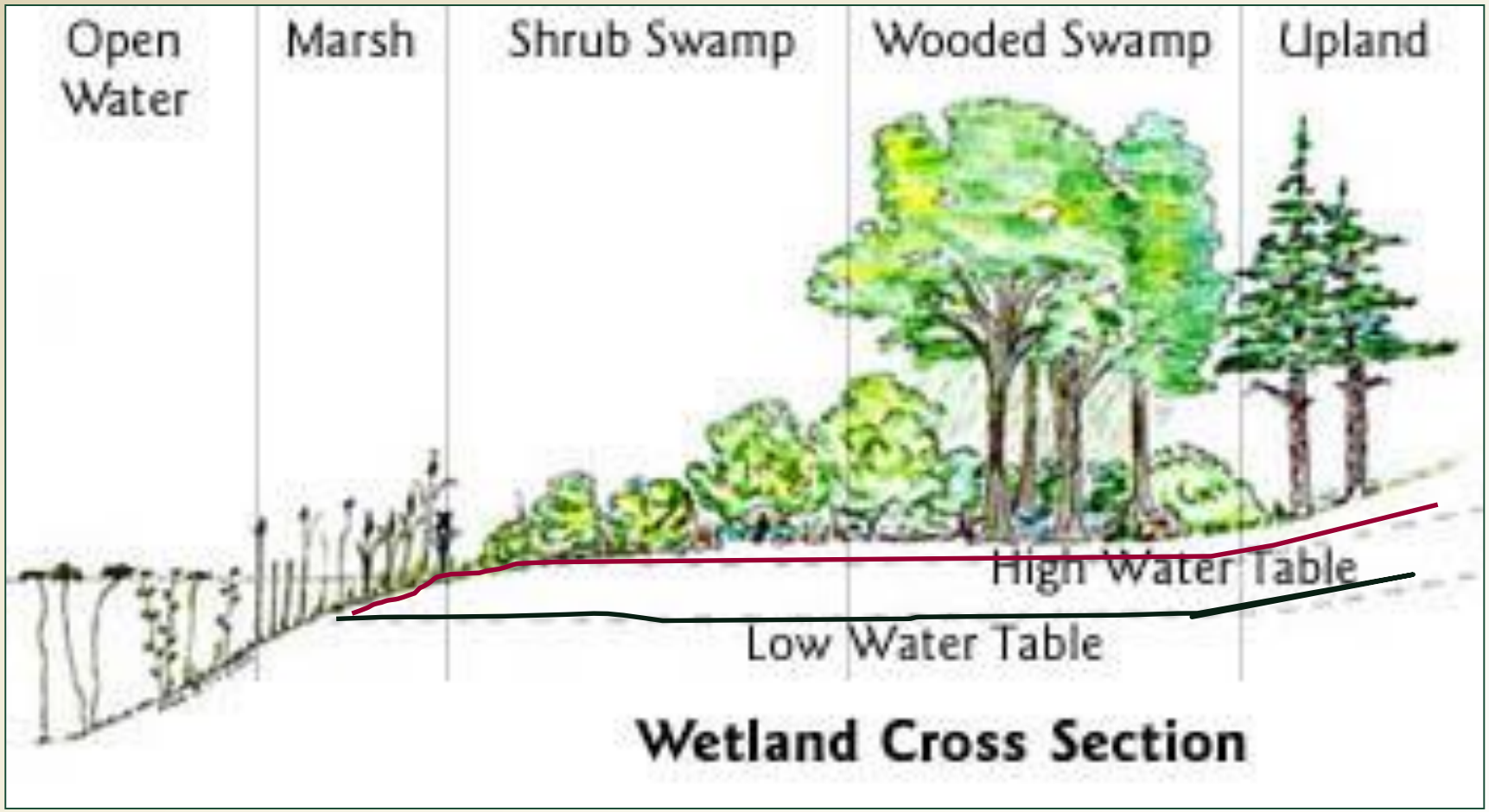
Hydric soils

Munsell Soils Color Charts

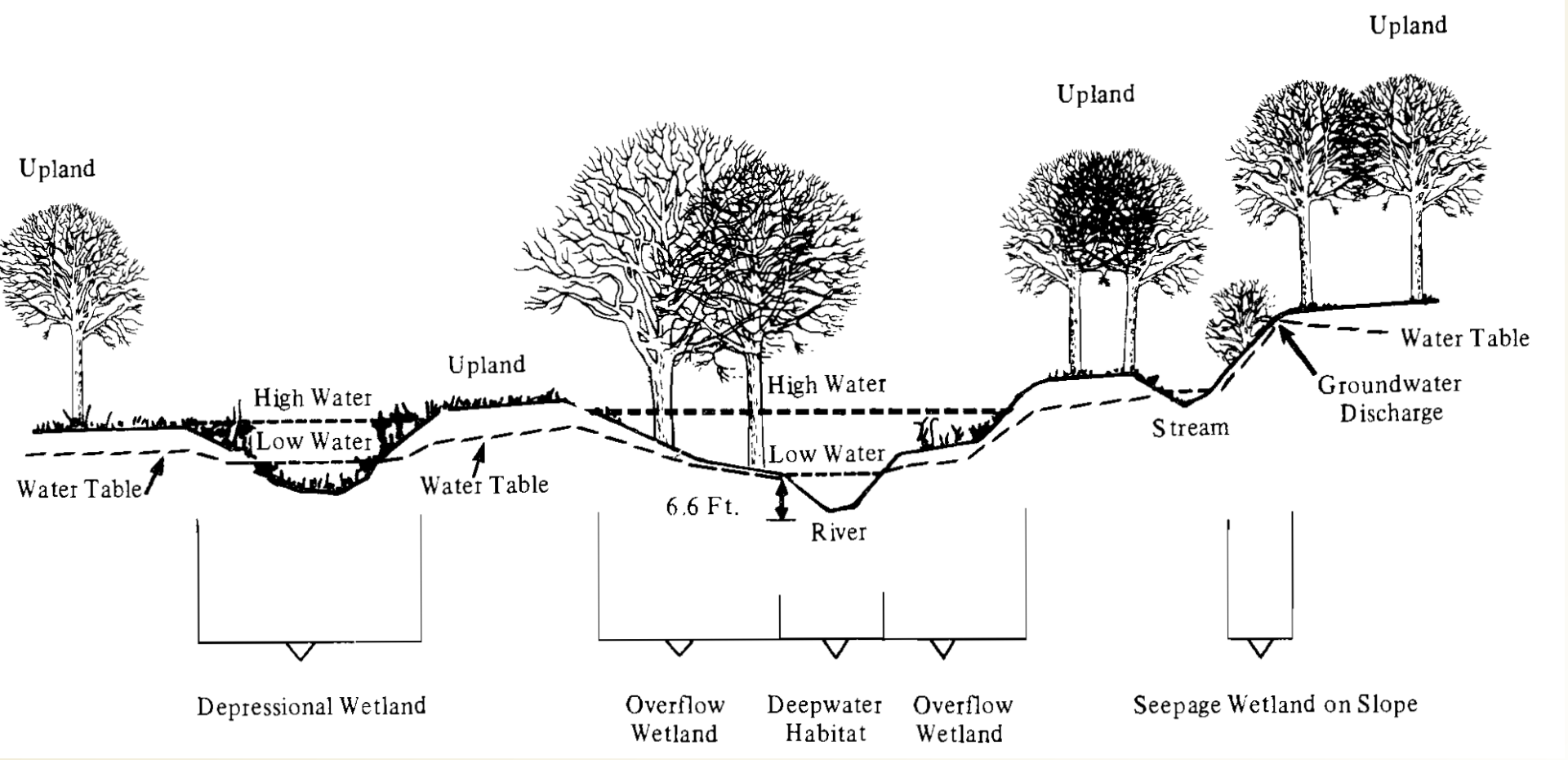
Wetland Hydrology

The area is inundated either permanently or periodically at mean water depths <6.6 ft, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation.

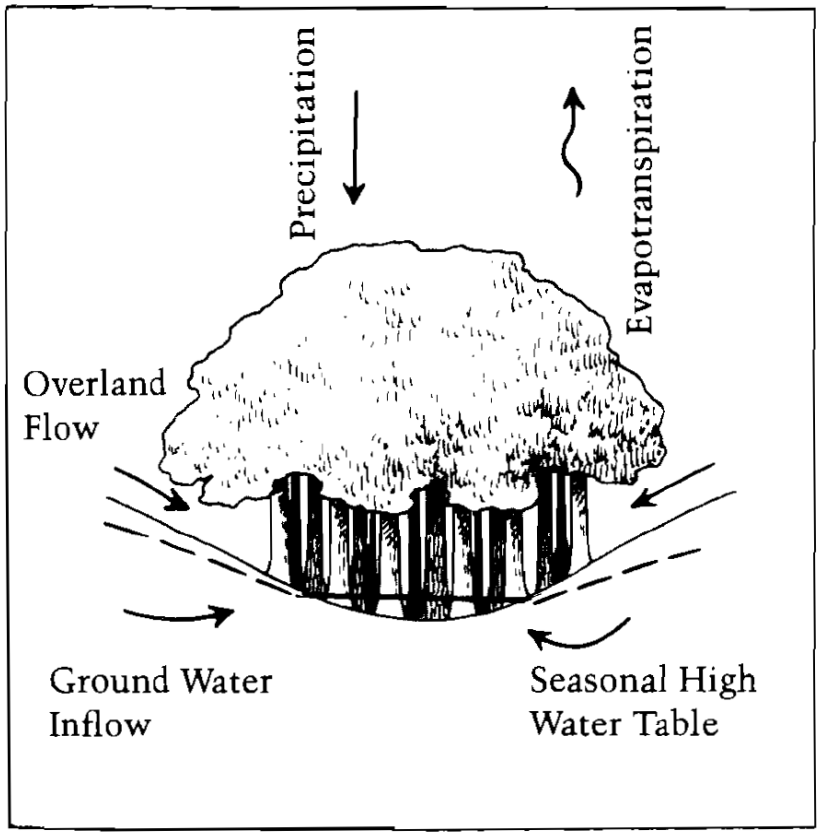
Plant Communities as they Relate to Wetland Hydrology



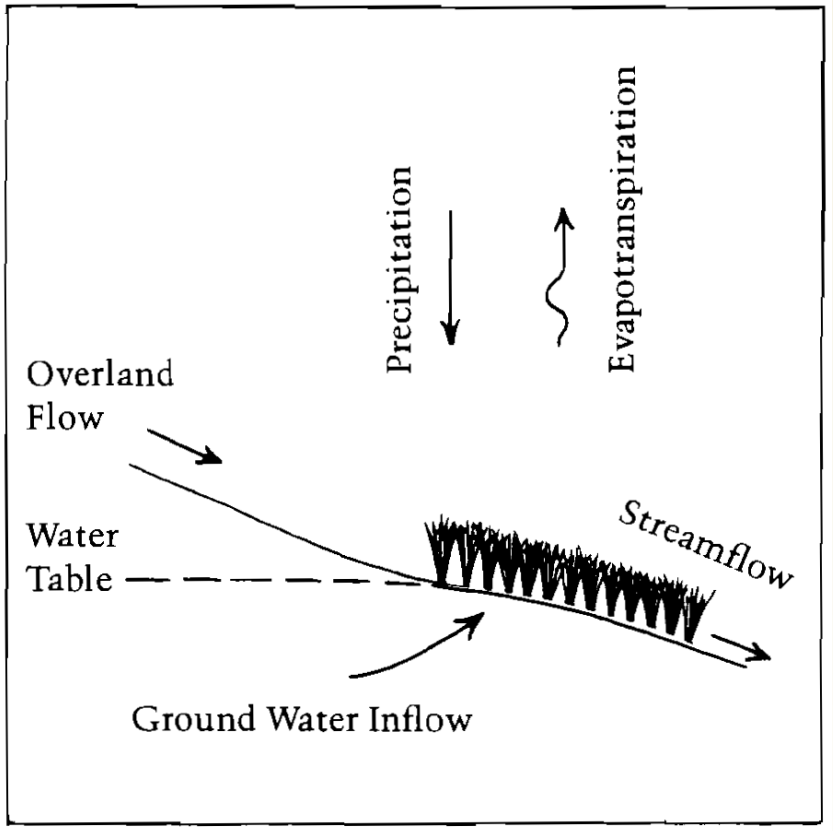
Hydrologic Cross Section



GROUND WATER
DEPRESSIONAL WETLAND



GROUND WATER
SLOPE WETLAND



Other primary indicators

Stained leaf litter

Secondary indicators

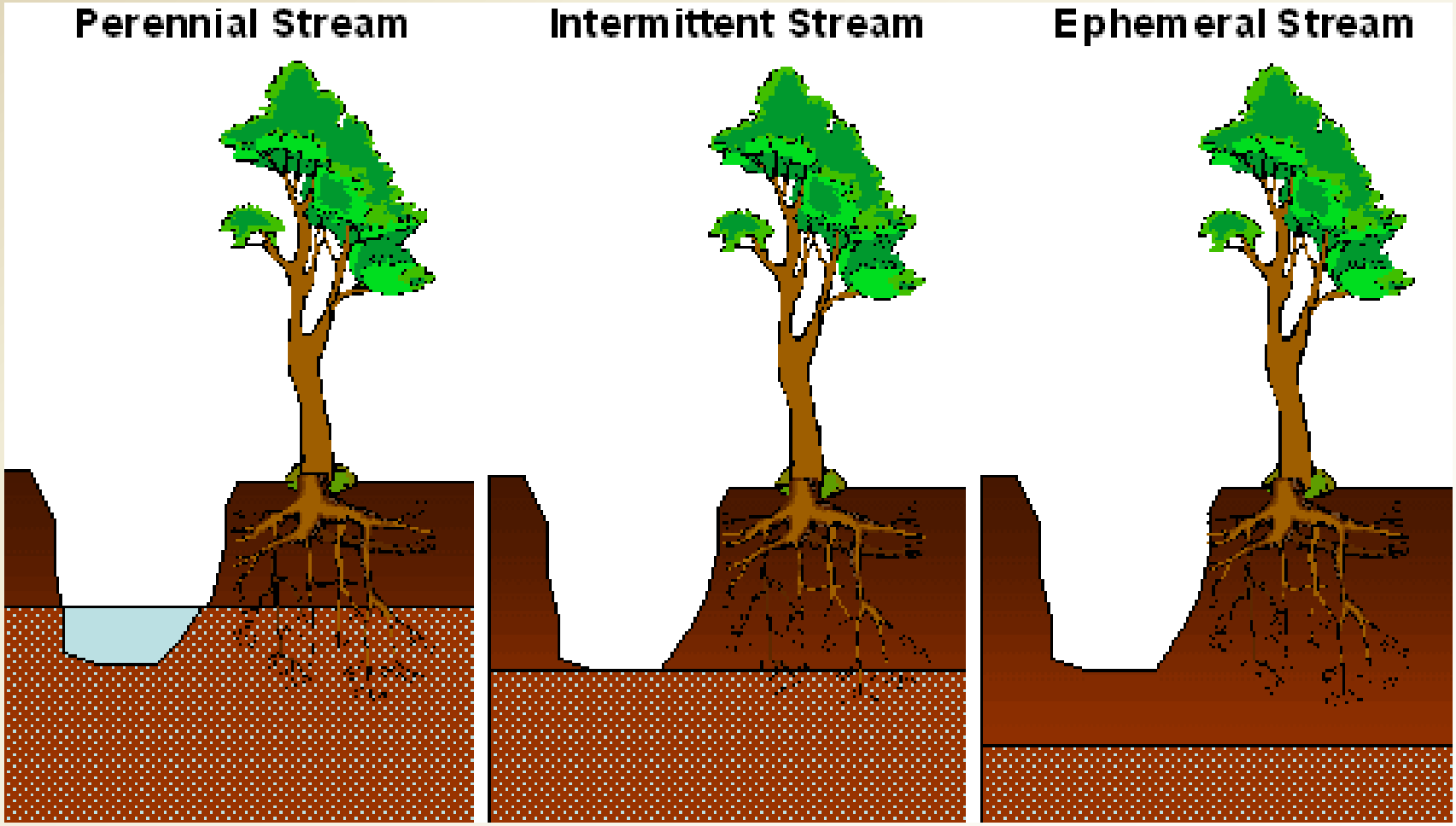
Mud cracks

Water marks on trees

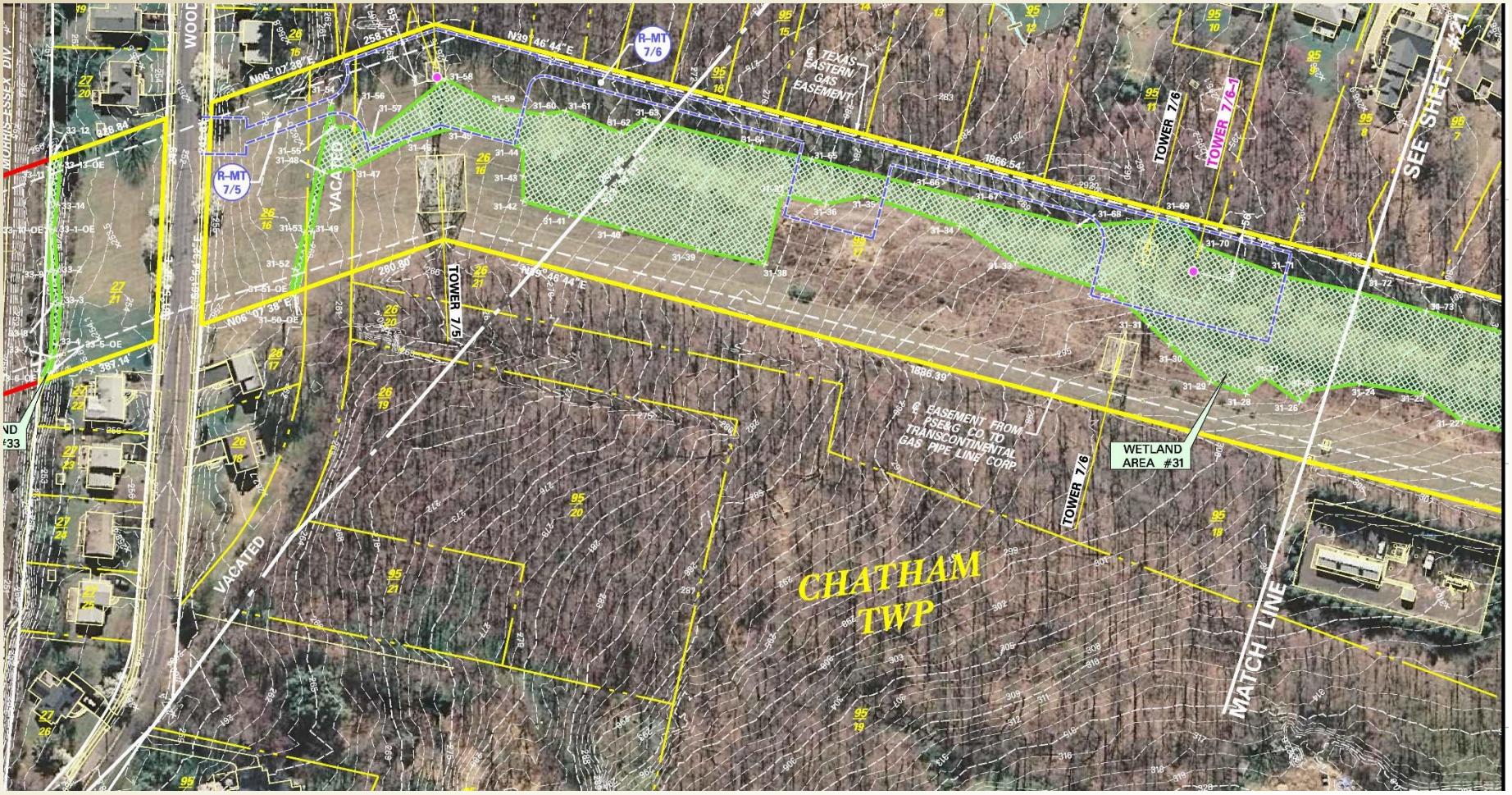
State Open Waters

- All waters of the United States including streams, lakes, rivers and bays
- Also erosional features greater than two feet wide and six inches deep
- Ditches in wetlands

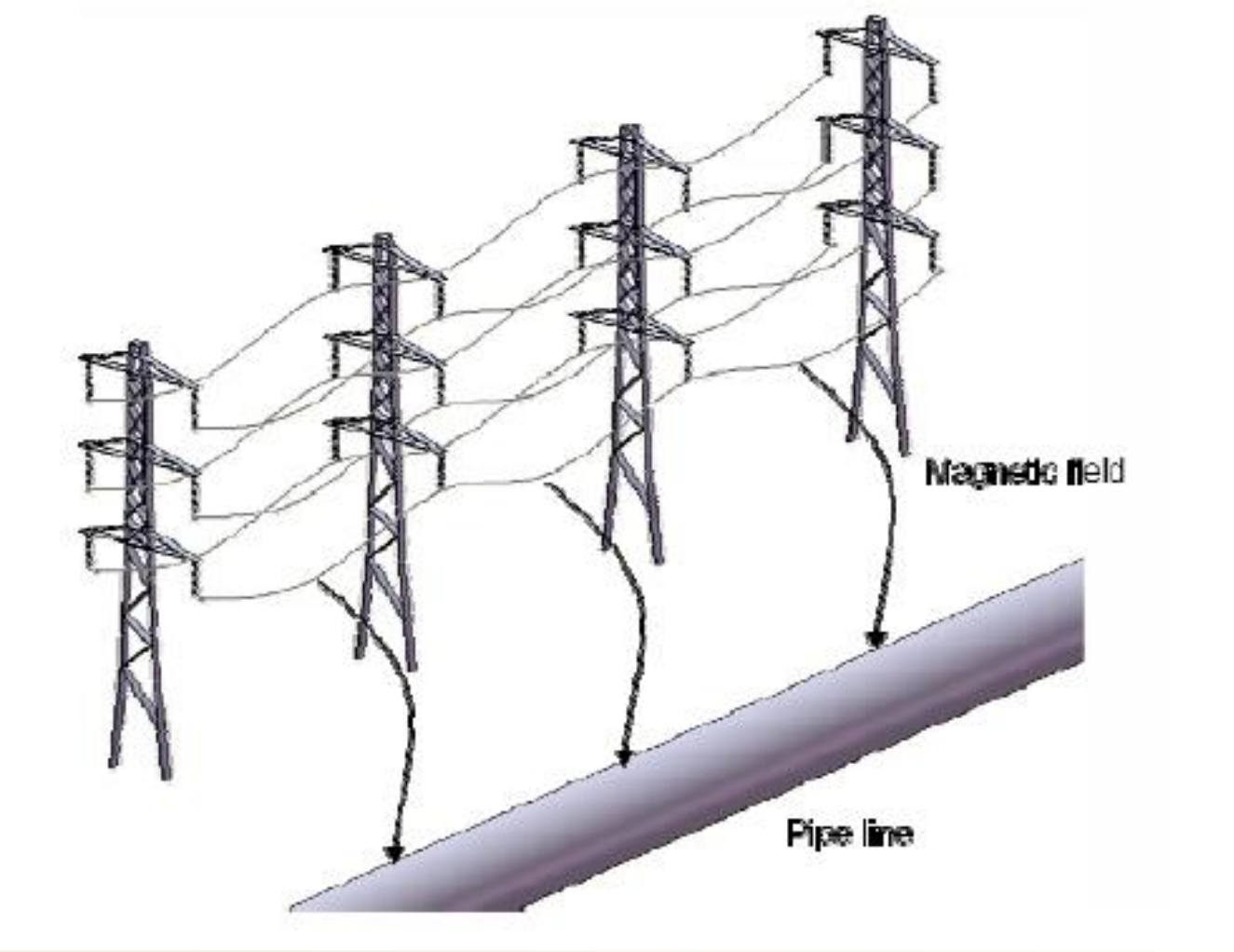
Stream types

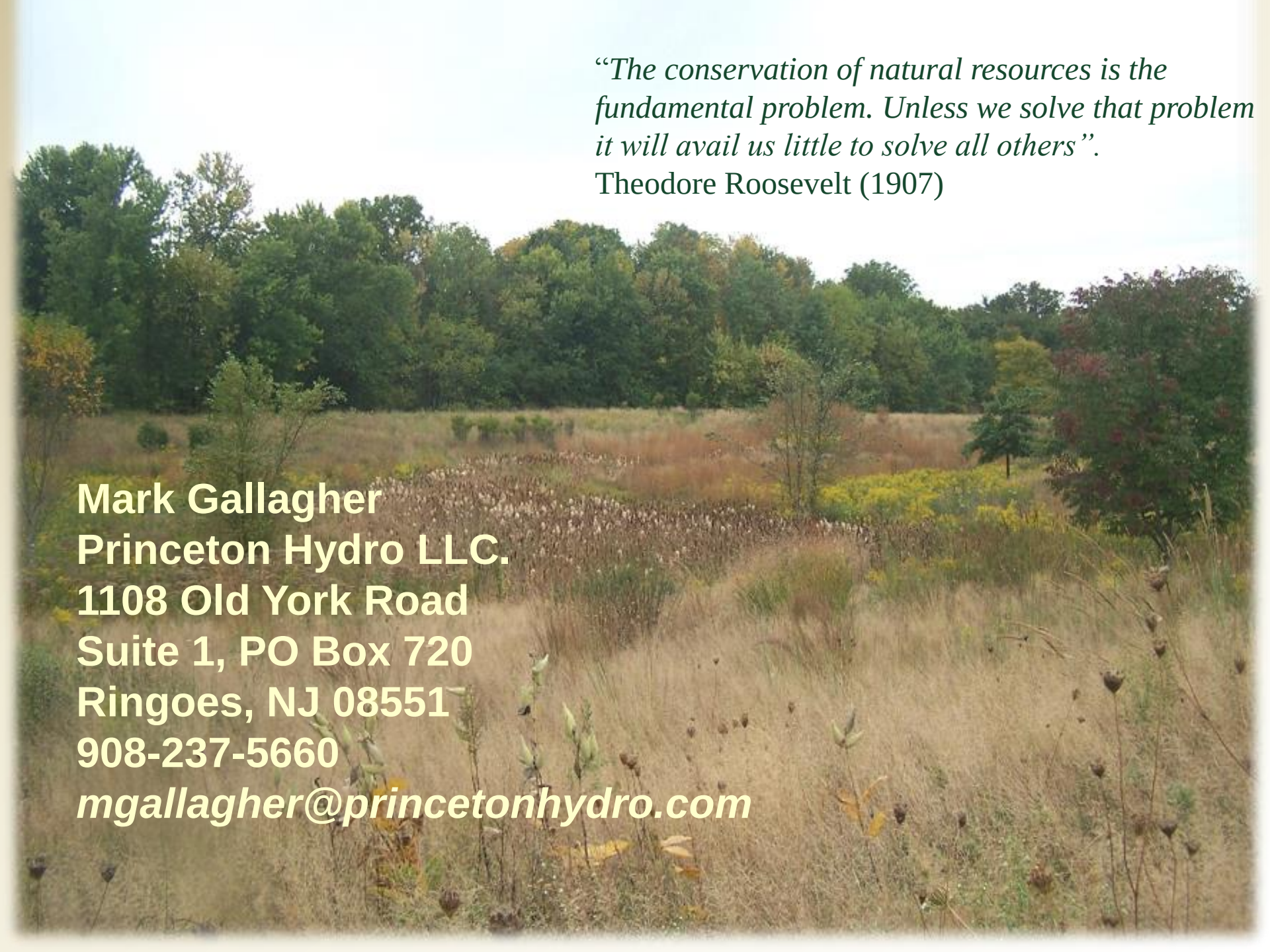


Wetlands Along PSE&G Transmission Line Corridor



Interference pushes metal pipeline outside of ROW





"The conservation of natural resources is the fundamental problem. Unless we solve that problem it will avail us little to solve all others".
Theodore Roosevelt (1907)

Mark Gallagher
Princeton Hydro LLC.
1108 Old York Road
Suite 1, PO Box 720
Ringoes, NJ 08551
908-237-5660
mgallagher@princetonhydro.com

Sweet Flag

Pickerelweed

Arrowhead

Fringed Sedge

Great Lobelia

PA CC 5

Marsh Mallow

Joe Pye Weed

Swamp Milkweed

New York Ironweed

Monkey Flower

Virginia Bluebell

New England Aster

Other common wetland plants

Ferns

Buttonbush

Sweet pepperbush

Winterberry Holly

Swamp rose

Arrowwood