

# Using New Technologies to Update the National Wetland Inventory

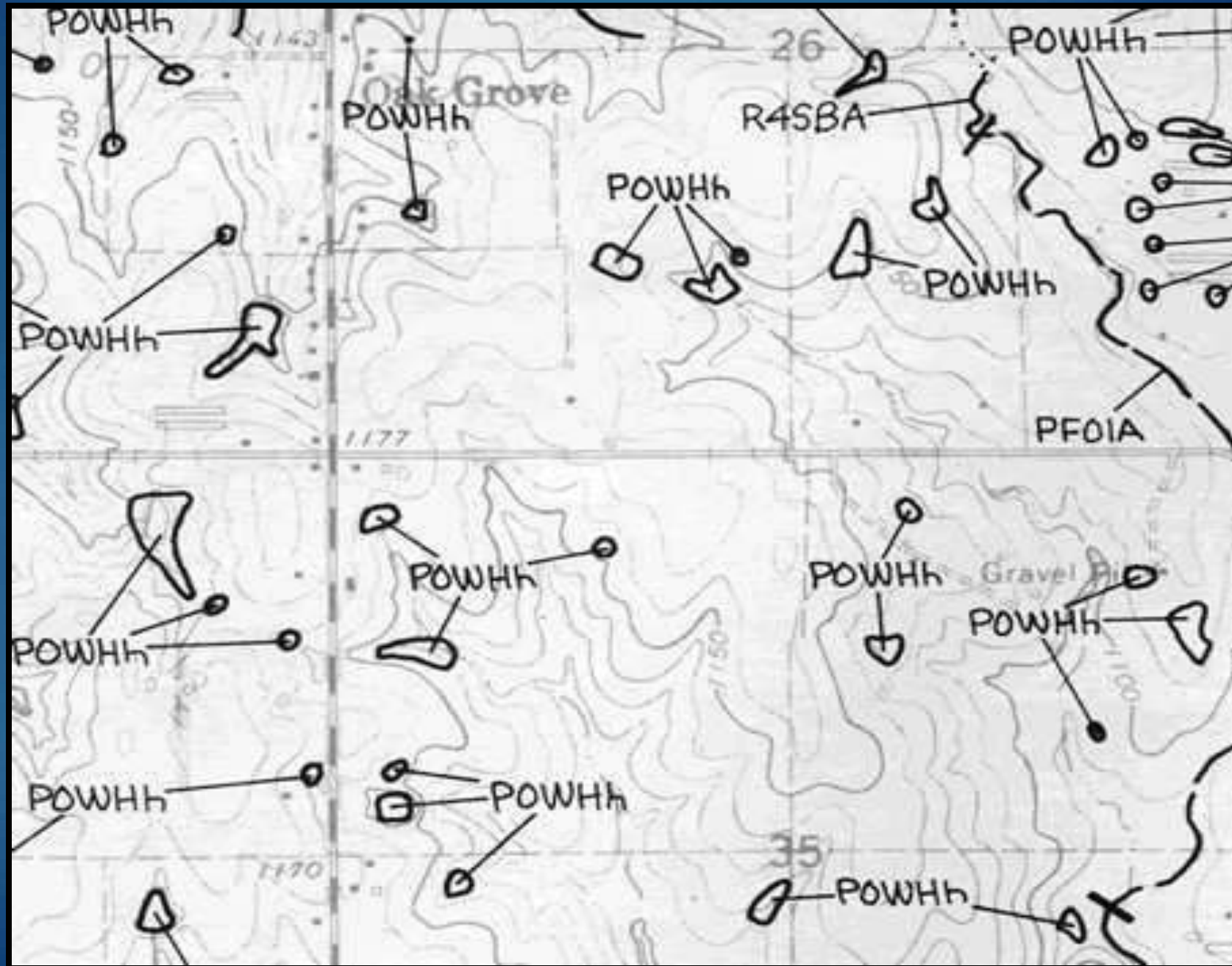
JEREMY JONES MDEQ



# National Wetlands Inventory Data:

METHODS

# NWI METHODOLOGY: The Beginning







# NWI METHODOLOGY: The 2<sup>nd</sup> Generation

Digital NWI Maps Available to GIS Professionals





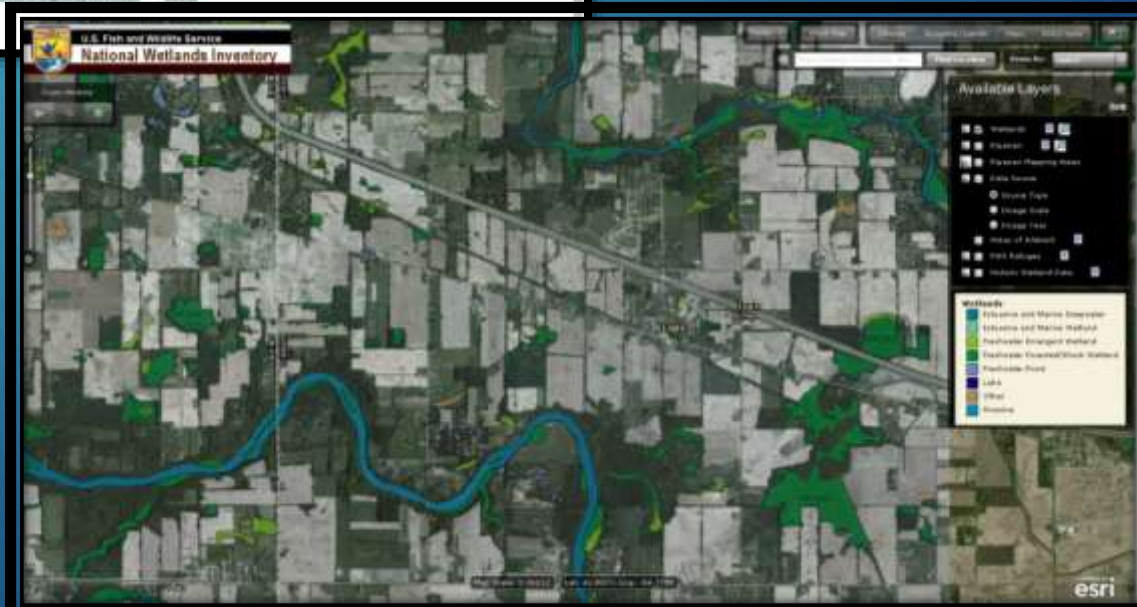
# NWI METHODOLOGY: The 3rd Generation

Digital NWI Maps Available Online



DEQ Wetlands Map Viewer

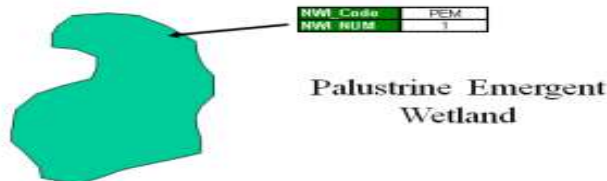
USFWS Wetlands Mapper



# NWI UPDATE: Tracking One Wetland in Time

## Example of Attribute System for Updating and Tracking Wetlands

### Original NWI (1978 – 1983)



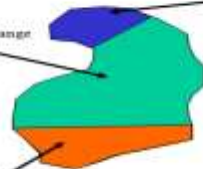
## Example of Attribute System for Updating and Tracking Wetlands

### Update 1 1998

NWI CODE	PEM
NWI NUM	1
REV_DATE_1	
REV_NUM_1	
REV_DATE_2	
REV_NUM_2	
REV_DATE_3	
REV_NUM_3	
REV_DATE_4	
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REV_NUM_5	
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REV_DATE_17	
REV_NUM_17	
REV_DATE_18	
REV_NUM_18	
REV_DATE_19	
REV_NUM_19	
REV_DATE_20	
REV_NUM_20	

No Change

Palustrine Emergent To Drained by Agriculture



Palustrine Emergent To Palustrine Unconsolidated Bottom

New Palustrine Unconsolidated Bottom

NWI CODE	PEM
NWI NUM	1
REV_DATE_1	
REV_NUM_1	
REV_DATE_2	
REV_NUM_2	
REV_DATE_3	
REV_NUM_3	
REV_DATE_4	
REV_NUM_4	
REV_DATE_5	
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REV_NUM_6	
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REV_NUM_20	

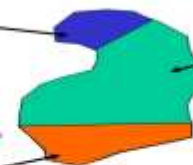
NWI CODE	PEM
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REV_NUM_1	
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REV_NUM_2	
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REV_NUM_17	
REV_DATE_18	
REV_NUM_18	
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REV_NUM_19	
REV_DATE_20	
REV_NUM_20	

## Example of Attribute System for Updating and Tracking Wetlands

### Update 2 (2006\_2007)

NWI CODE	PEM
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REV_NUM_1	
REV_DATE_2	
REV_NUM_2	
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REV_NUM_3	
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REV_NUM_4	
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REV_NUM_5	
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REV_DATE_17	
REV_NUM_17	
REV_DATE_18	
REV_NUM_18	
REV_DATE_19	
REV_NUM_19	
REV_DATE_20	
REV_NUM_20	

No Change From Update 1



NWI CODE	PEM
NWI NUM	1
REV_DATE_1	
REV_NUM_1	
REV_DATE_2	
REV_NUM_2	
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REV_NUM_17	
REV_DATE_18	
REV_NUM_18	
REV_DATE_19	
REV_NUM_19	
REV_DATE_20	
REV_NUM_20	

No Change From Update 1

From Palustrine Unconsolidated Bottom To Scrub-Shrub

NWI CODE	PEM
NWI NUM	1
REV_DATE_1	
REV_NUM_1	
REV_DATE_2	
REV_NUM_2	
REV_DATE_3	
REV_NUM_3	
REV_DATE_4	
REV_NUM_4	
REV_DATE_5	
REV_NUM_5	
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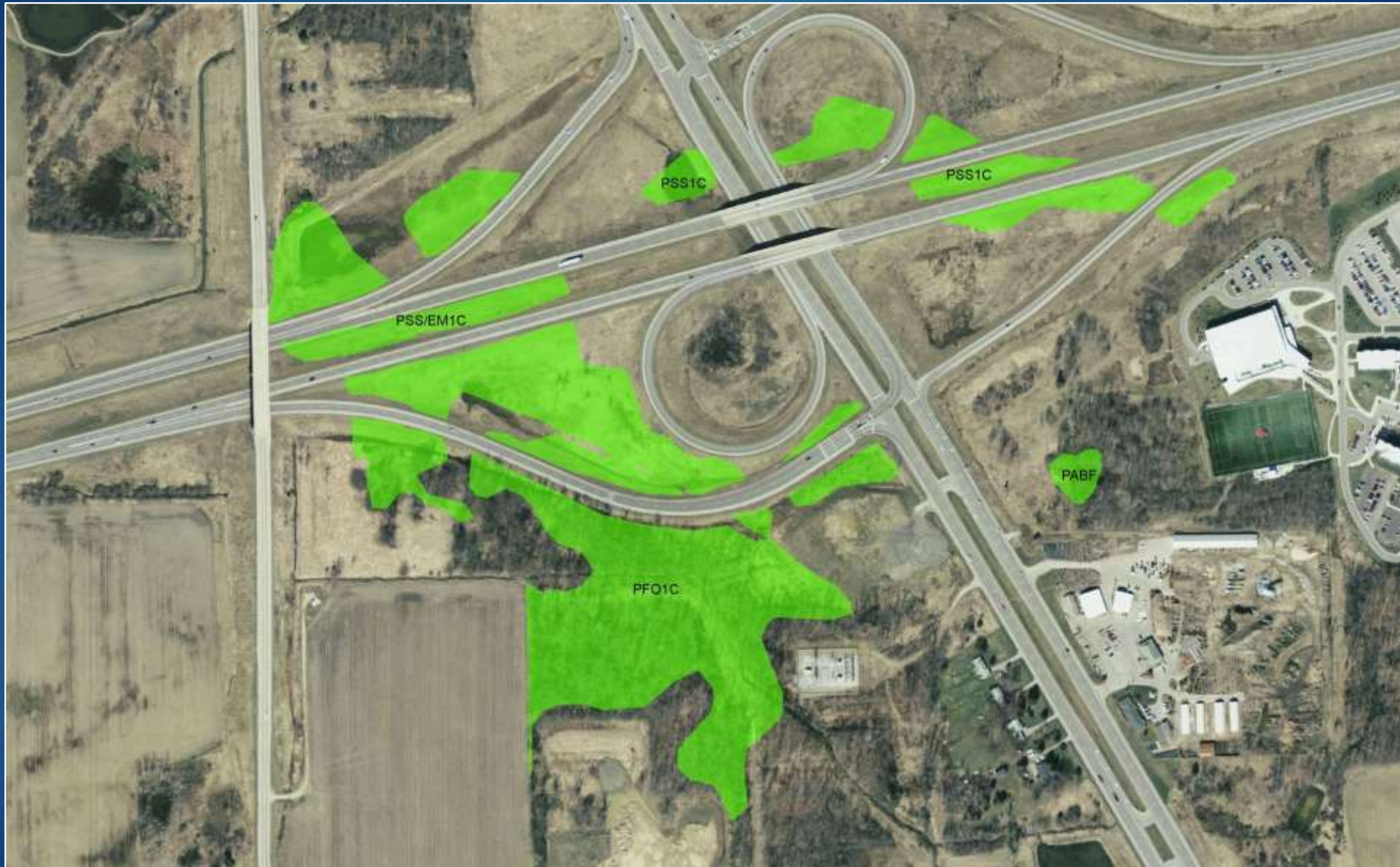
From Drained by Agriculture To Palustrine Scrub-Shrub

NWI CODE	PEM
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REV_NUM_1	
REV_DATE_2	
REV_NUM_2	
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REV_NUM_20	

NWI CODE	PEM
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REV_NUM_1	
REV_DATE_2	
REV_NUM_2	
REV_DATE_3	
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REV_NUM_20	



# NWI UPDATE: Tracking One Wetland in Time





# NWI UPDATE: Tracking One Wetland in Time

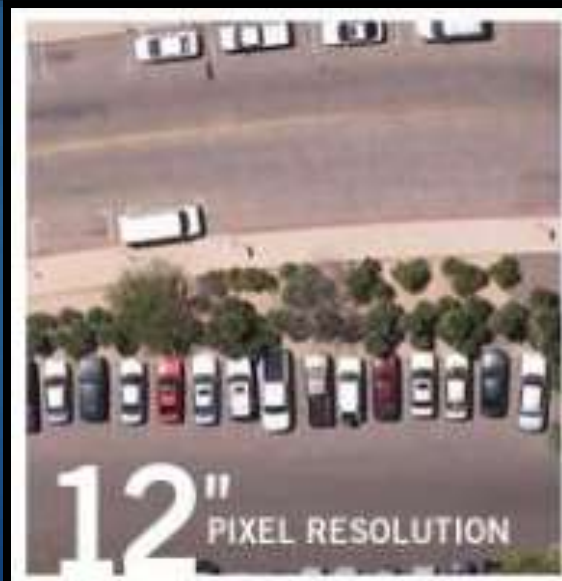
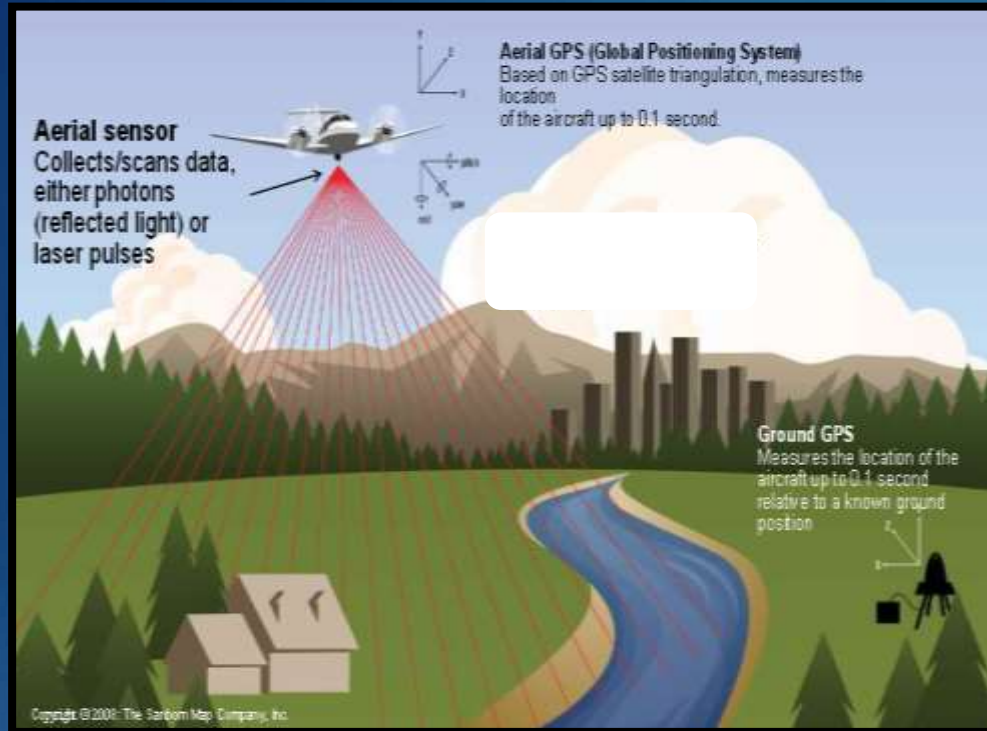


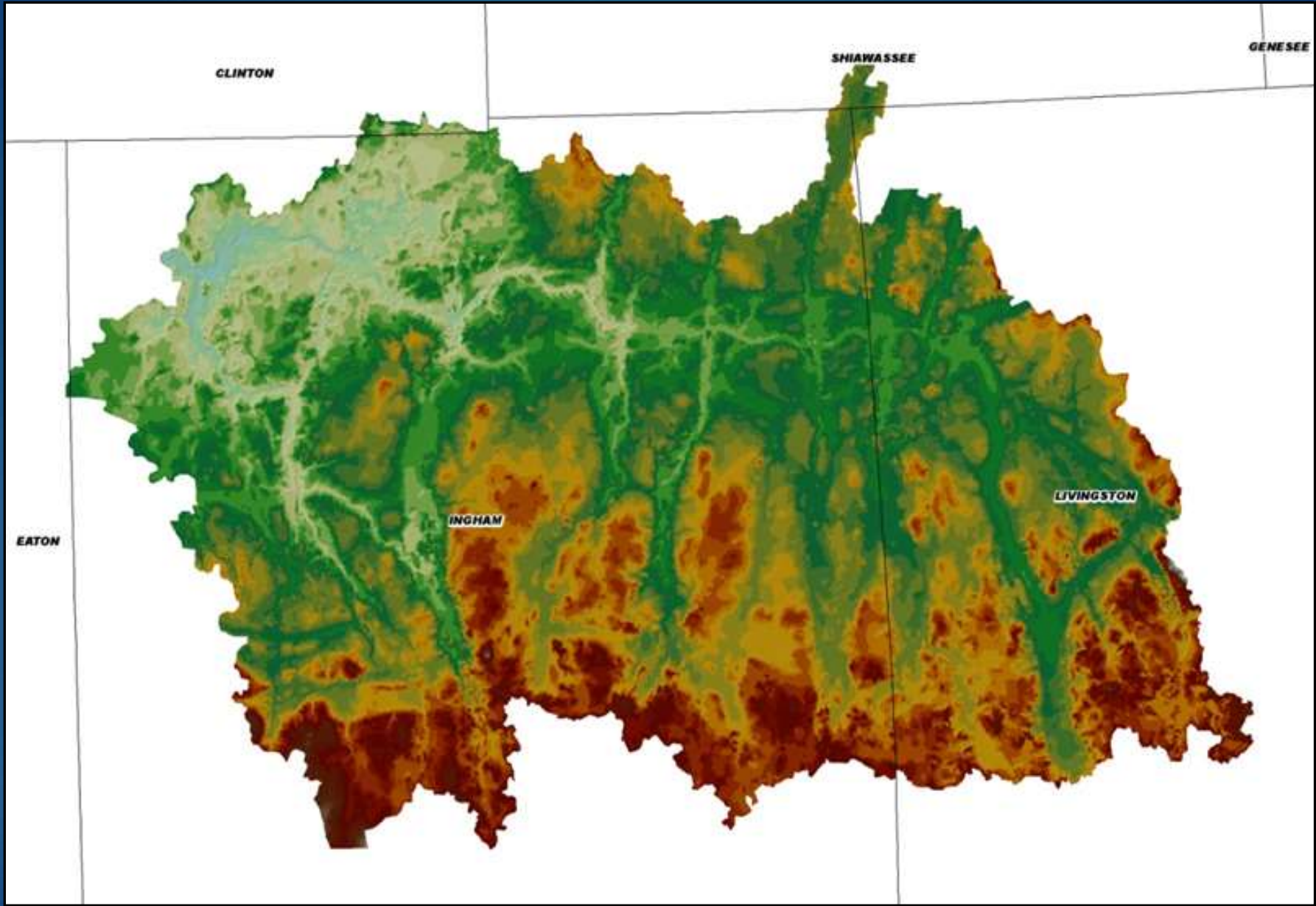
# NWI Update 2016

WASHTENAW AND KENT COUNTY



# New High Resolution Imagery & Topographic LiDAR



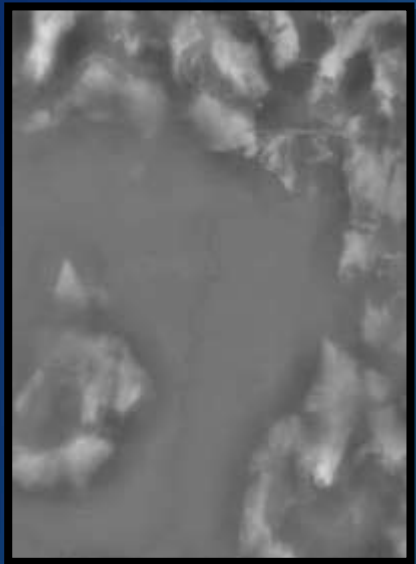


Digital Elevation Model (DEM)



# Using LiDAR for Wetland Mapping

Lidar Derived Layers



Topographic Position Index



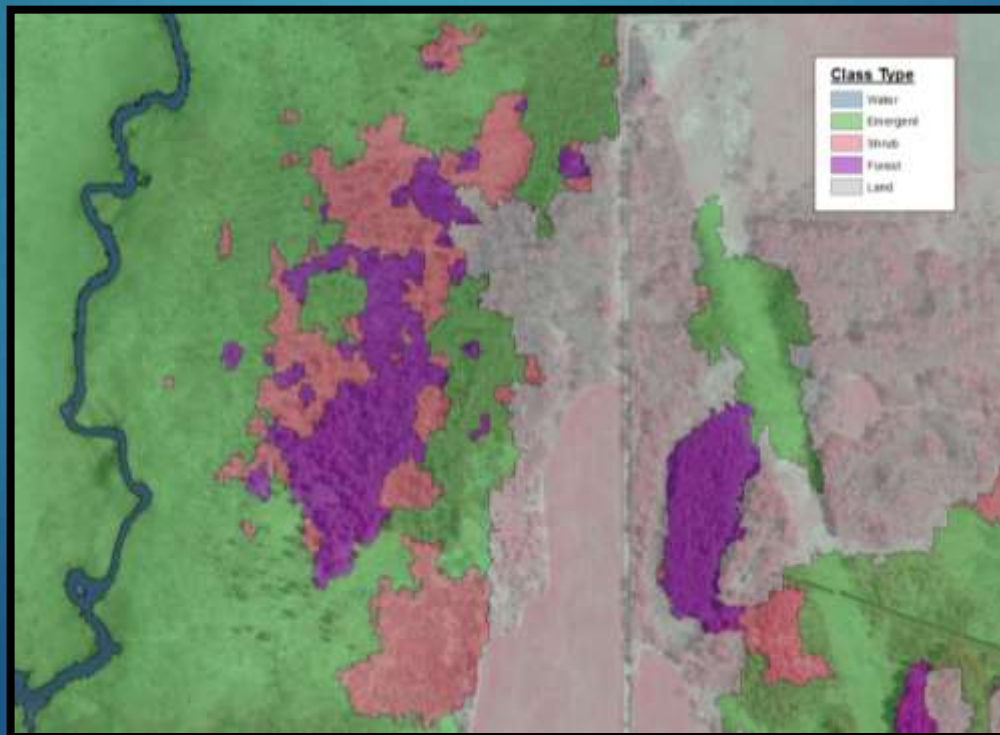
Compound Topographic Index



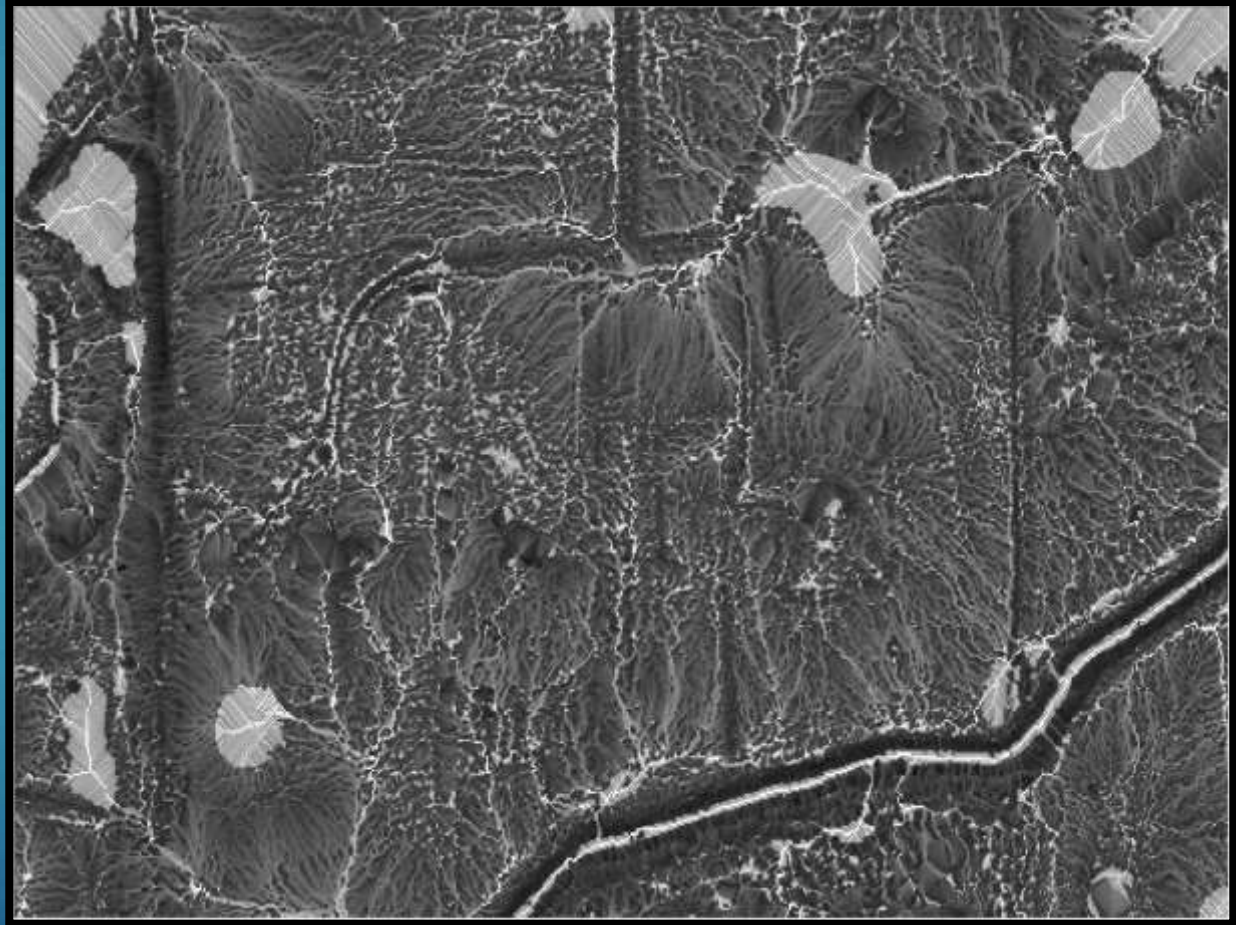
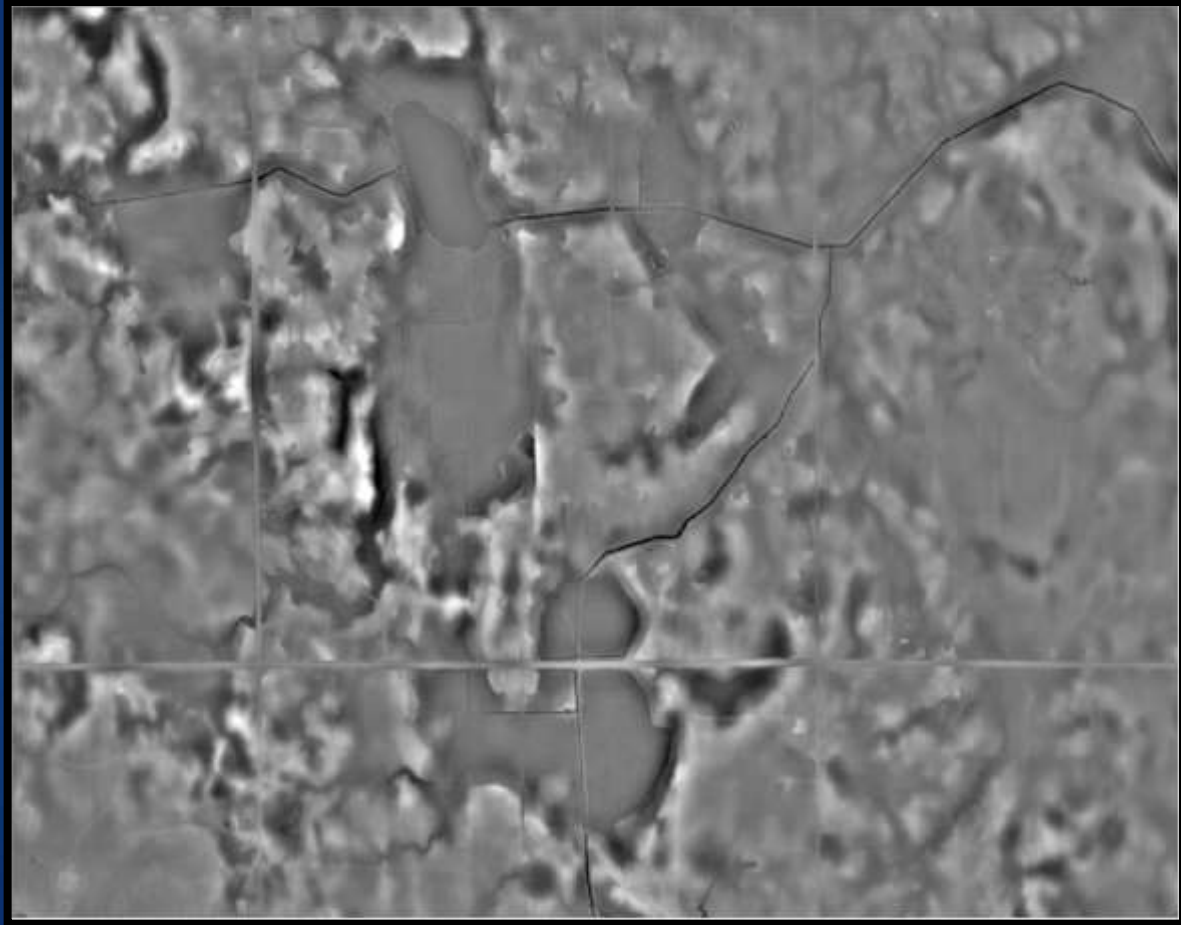
Max Height



Intensity

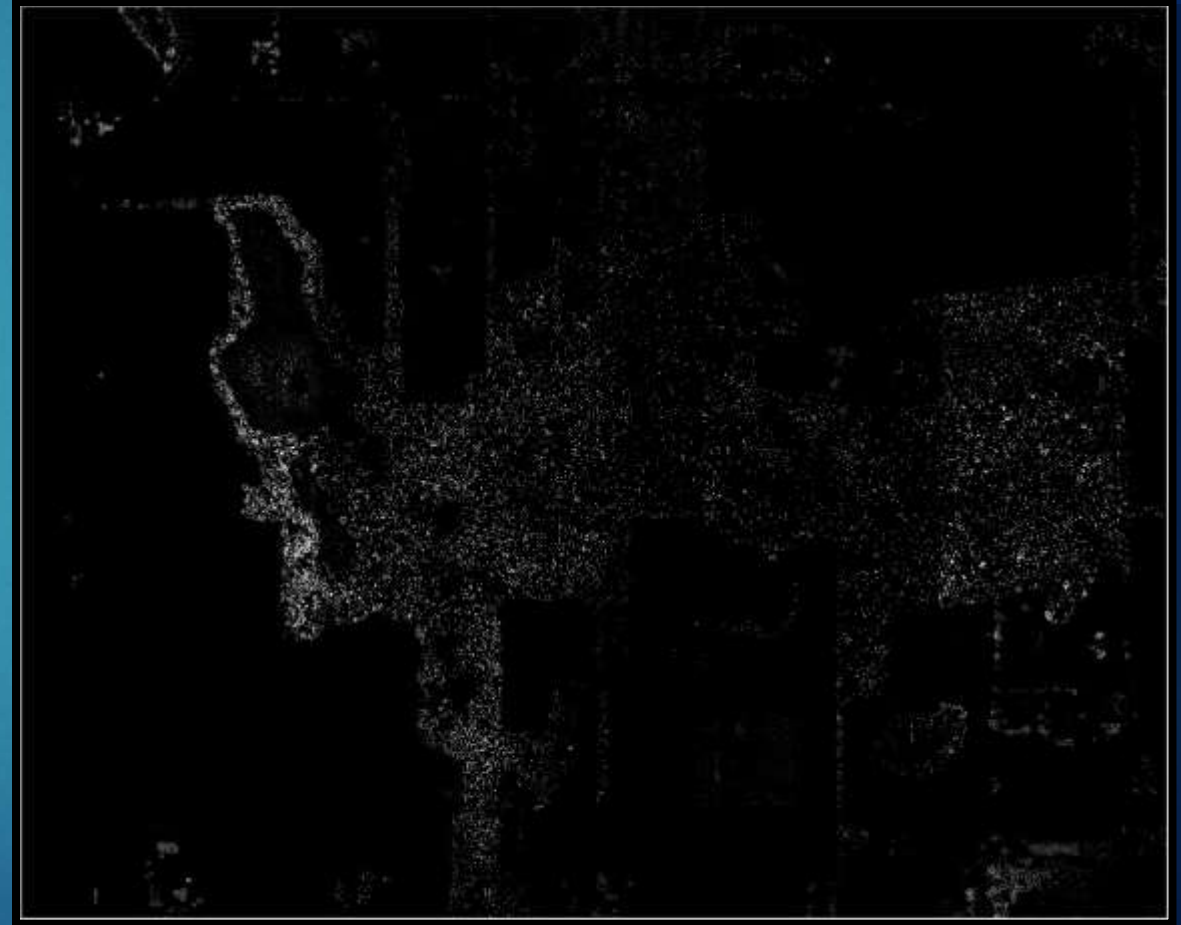
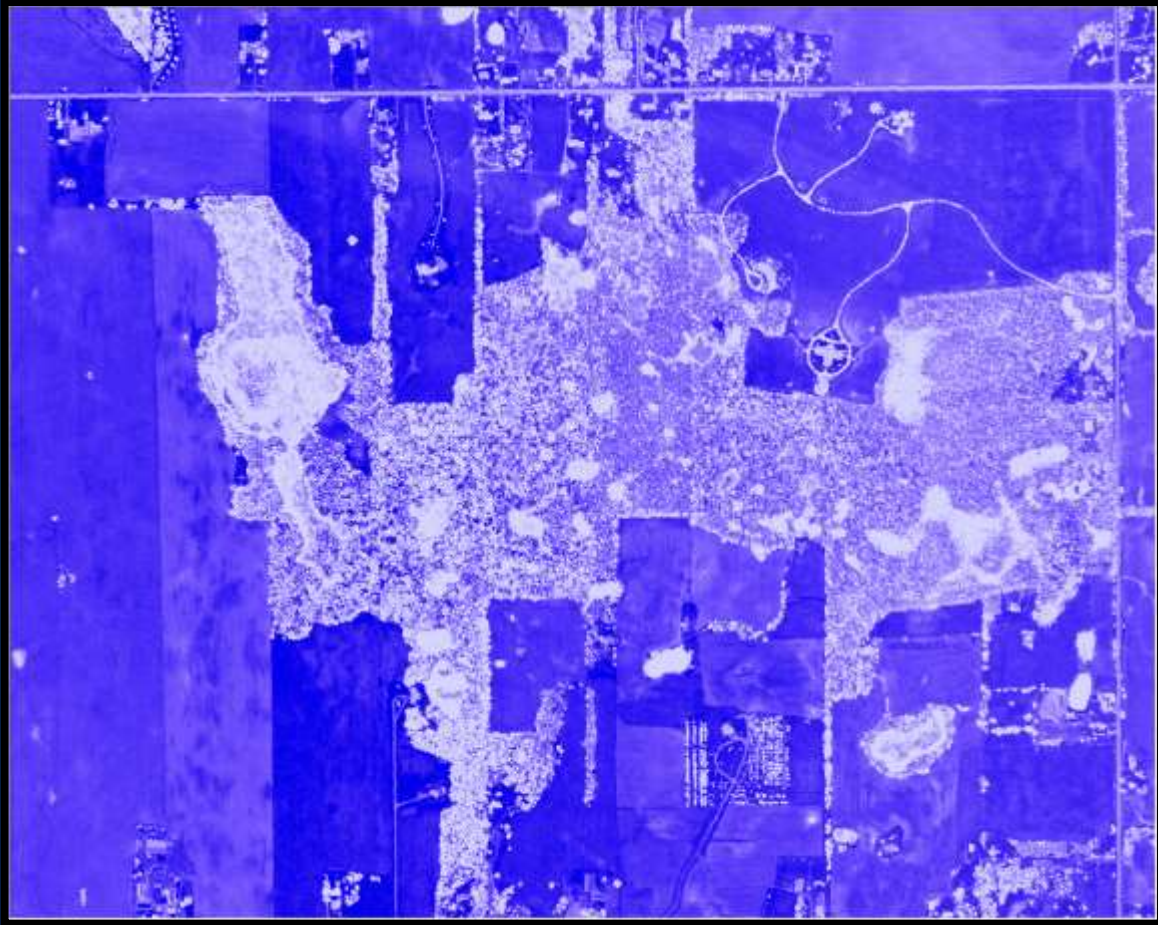


# Topographic Position Index & Compound Topographic Index





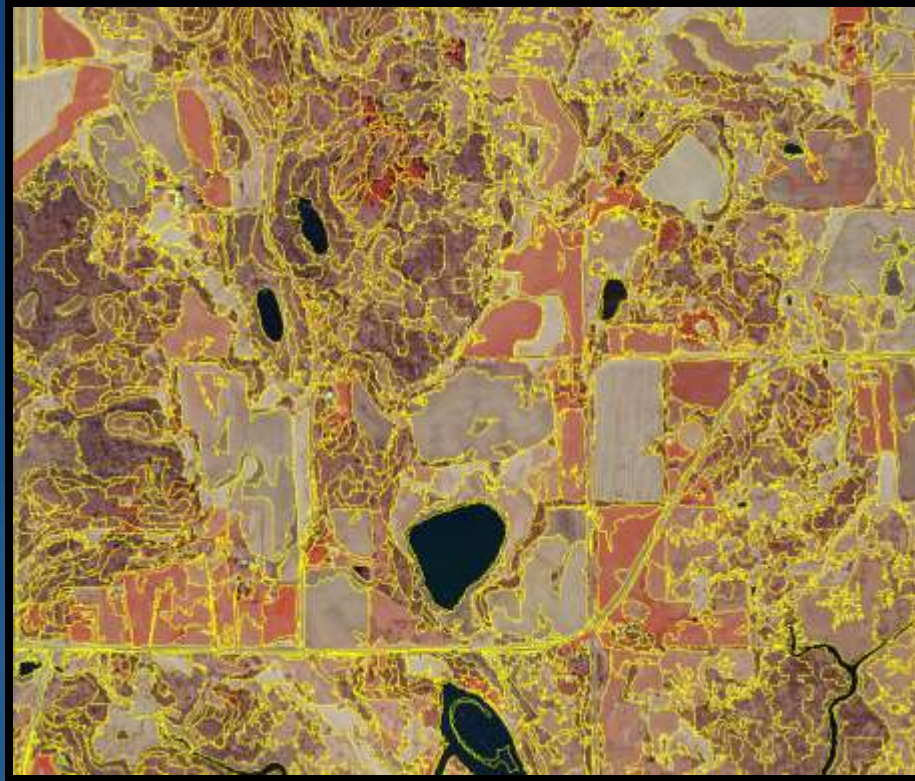
# Intensity of bare earth & Max Height returns





# The Future of Wetland Mapping: Automation and Remote Sensing

## AUTOMATED Image Segmentation



Vs.





# Washtenaw Example 1



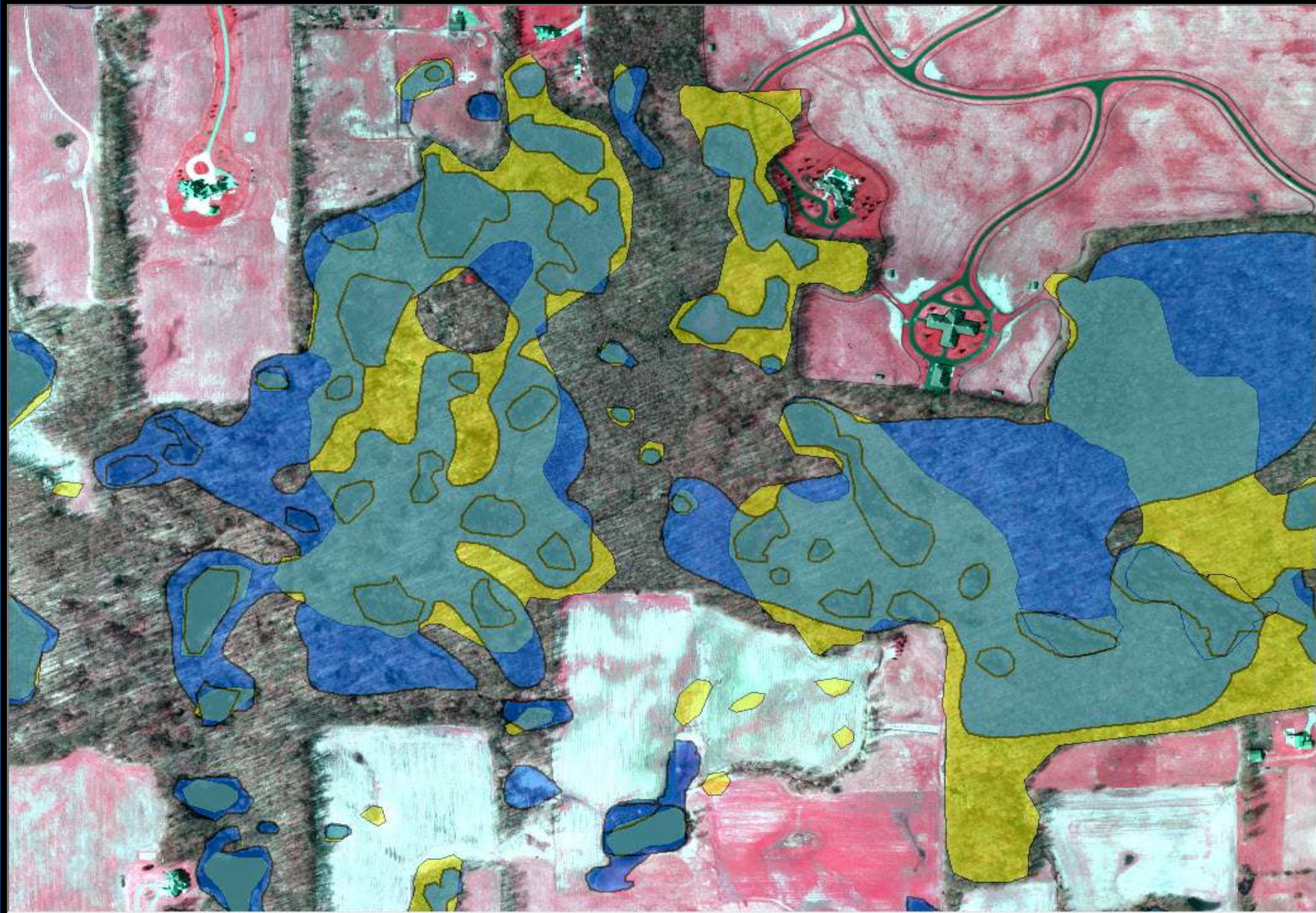


# Washtenaw Example 2



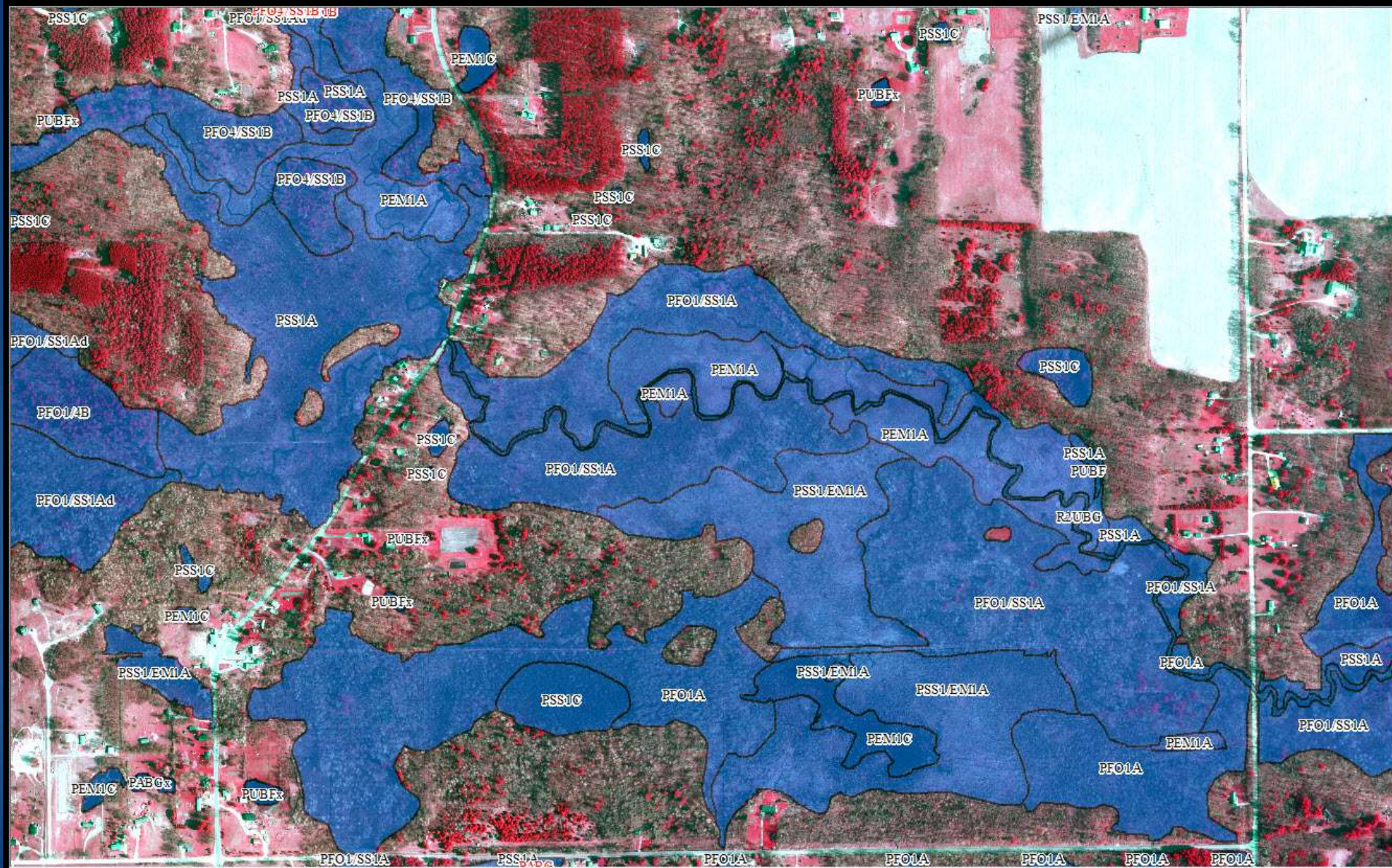


# Kent Example 3





# Kent Example 4





# By the Numbers.....



- ▶ 2005 Kent County

- ▶ 15,907 Polygons
- ▶ 75,101 Acres

- ▶ 2014 Kent County

- ▶ 26,046 Polygons
- ▶ 104,704 Acres

- ▶ 2005 Washtenaw County

- ▶ 11,780 Polygons
- ▶ 65,580 Acres

- ▶ 2015 Washtenaw County

- ▶ 22,774 Polygons
- ▶ 63,328 Acres

# By the Numbers..... Type

## Kent 2005

- ▶ PEM 12,700 acres
- ▶ PSS 8,603 acres
- ▶ PFO 33,262 acres
- ▶ PAB 673 acres

## Kent 2014

- ▶ PEM 36,553 acres
- ▶ PSS 16,972 acres
- ▶ PFO 32,981 acres
- ▶ PAB 2,943 acres

## Washtenaw 2005

- ▶ PEM 17,761 acres
- ▶ PSS 16,691 acres
- ▶ PFO 22,131 acres
- ▶ PAB 543 acres

## Washtenaw 2015

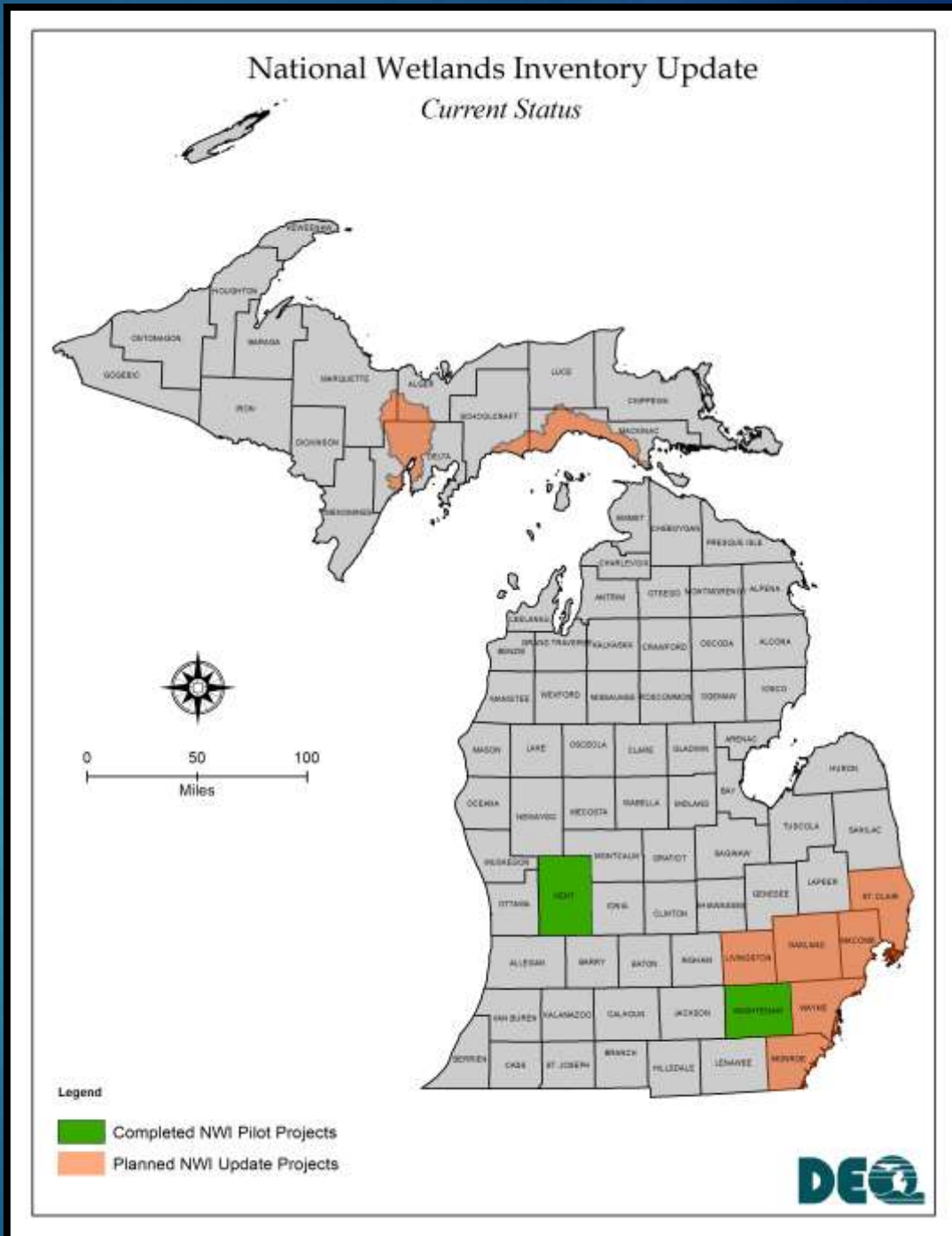
- ▶ PEM 20,085 acres
- ▶ PSS 9,671 acres
- ▶ PFO 18,991 acres
- ▶ PAB 3,251 acres

What does this all mean?



# Where we are Headed....

- SEMCOG – Tentative Winter 2018
- FWS - UP Watersheds TBD
- What's Needed?
  - Partners
  - Funding
  - Data





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