NWI Unfinished Business: The Current State of Wetland Mapping In Alaska

Part 2

Wetland Mapping Consortium Webinar

February 12, 2020

ASWM

GeoSpatialServices
Saint Mary's University of Minnesota

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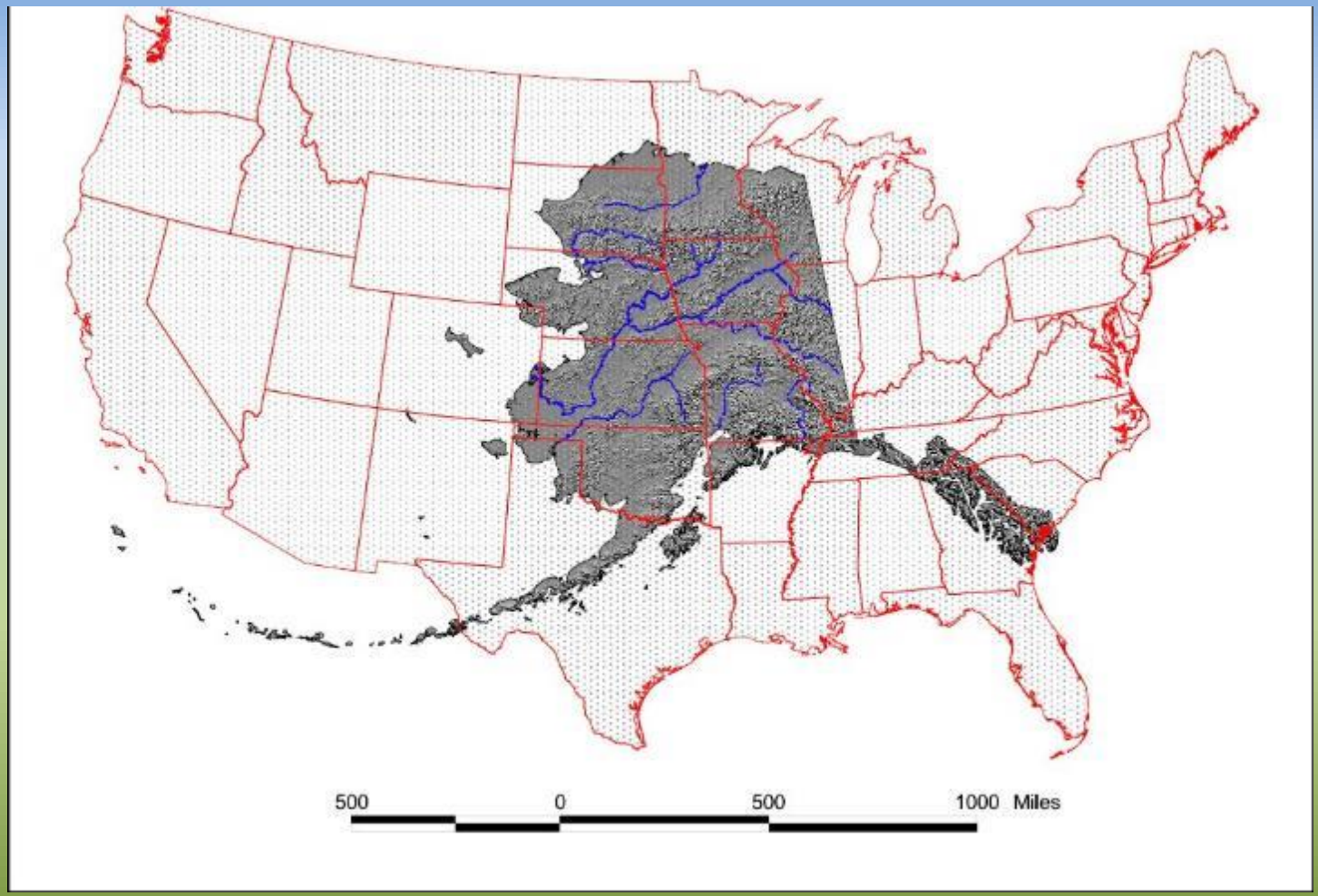
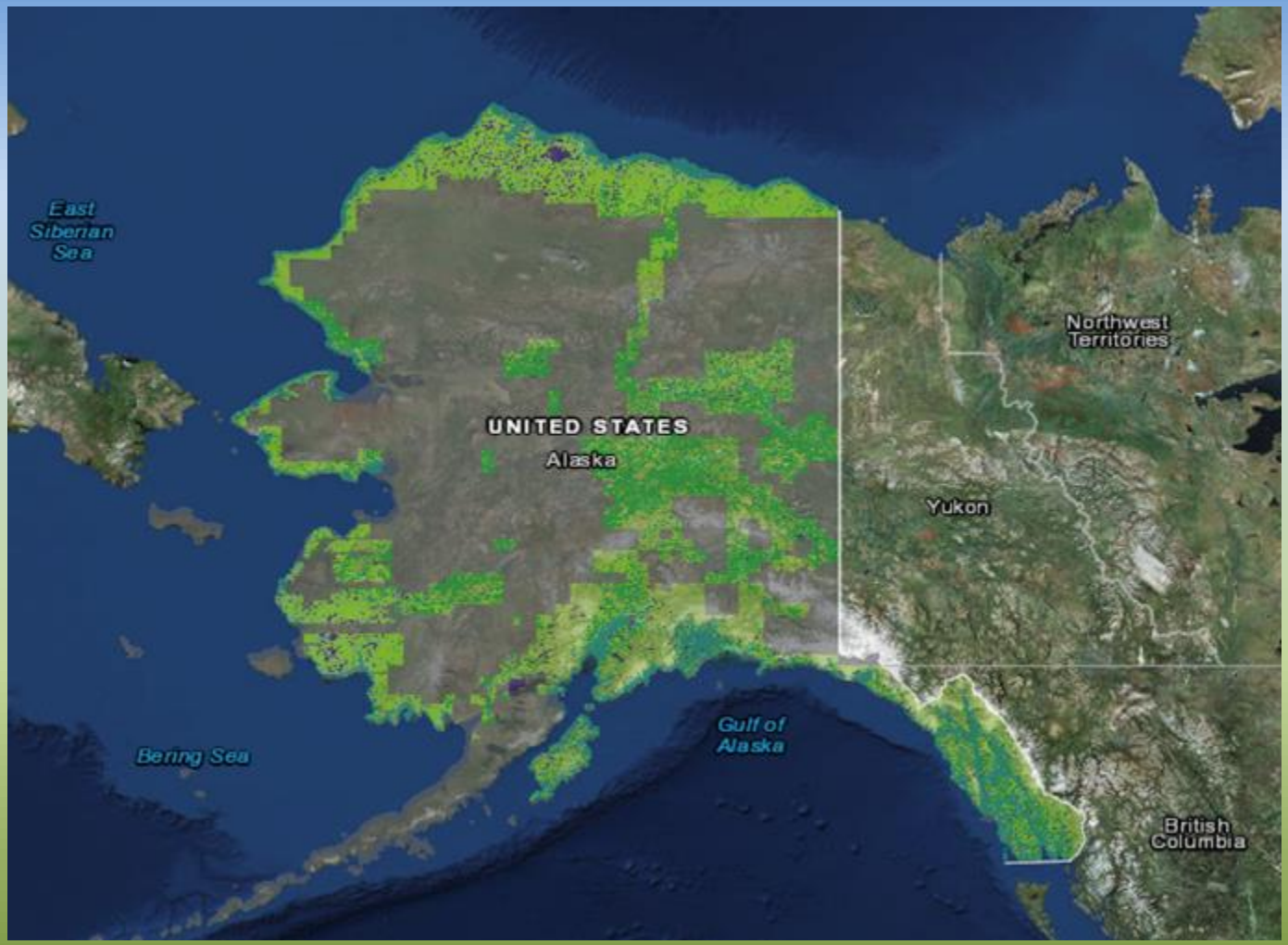
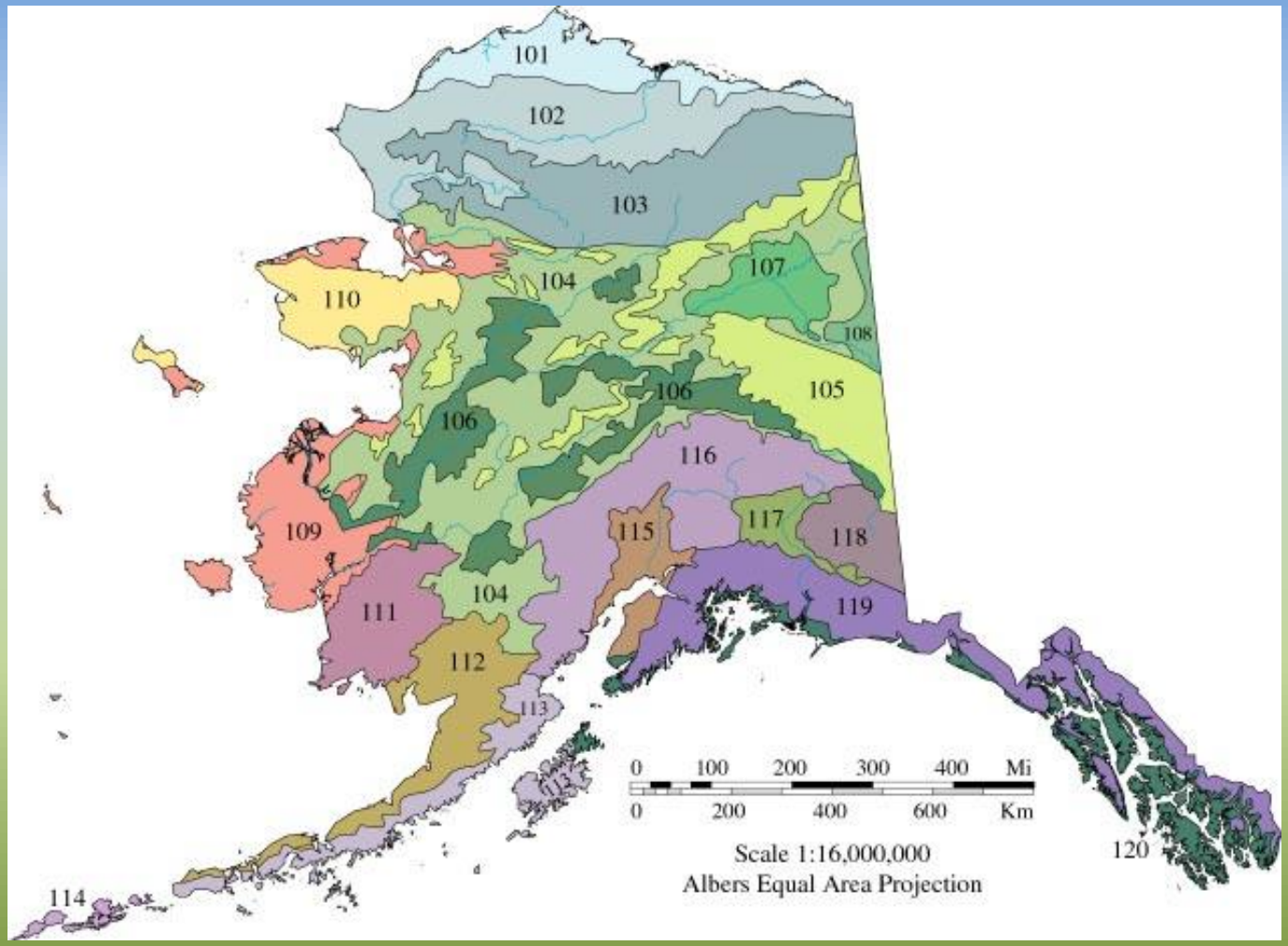
A Big Issue…



An Even Bigger Issue…



And Its Complicated…



And The Landscape is Changing…

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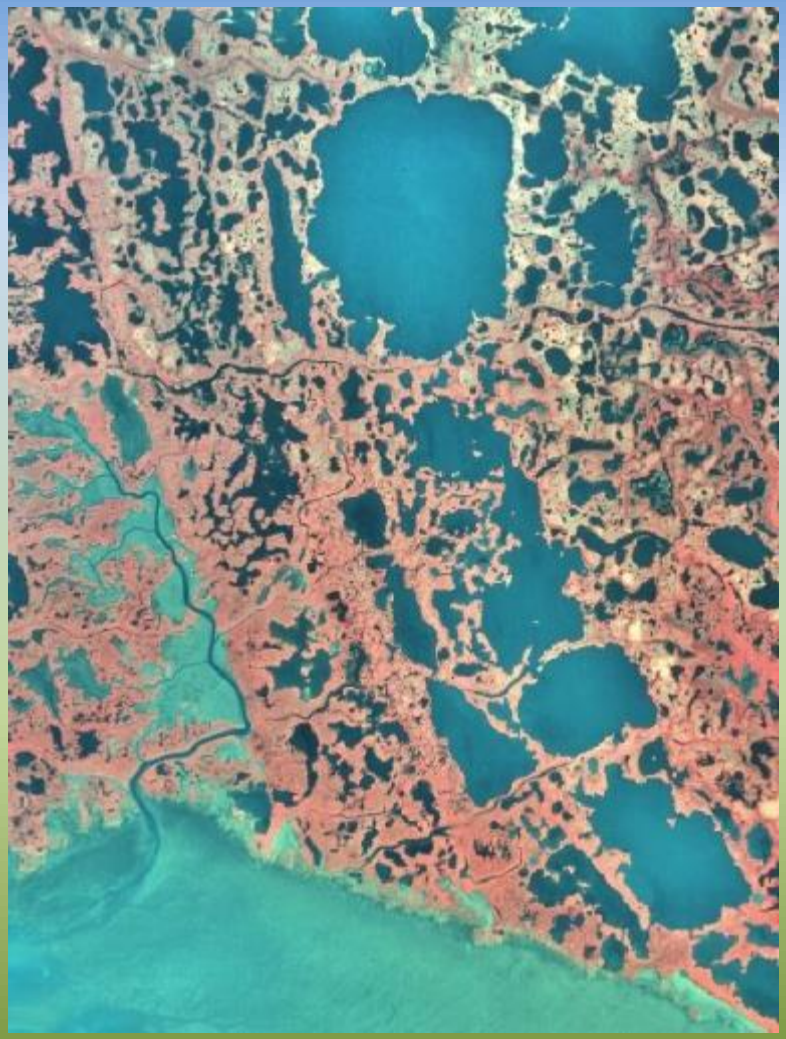

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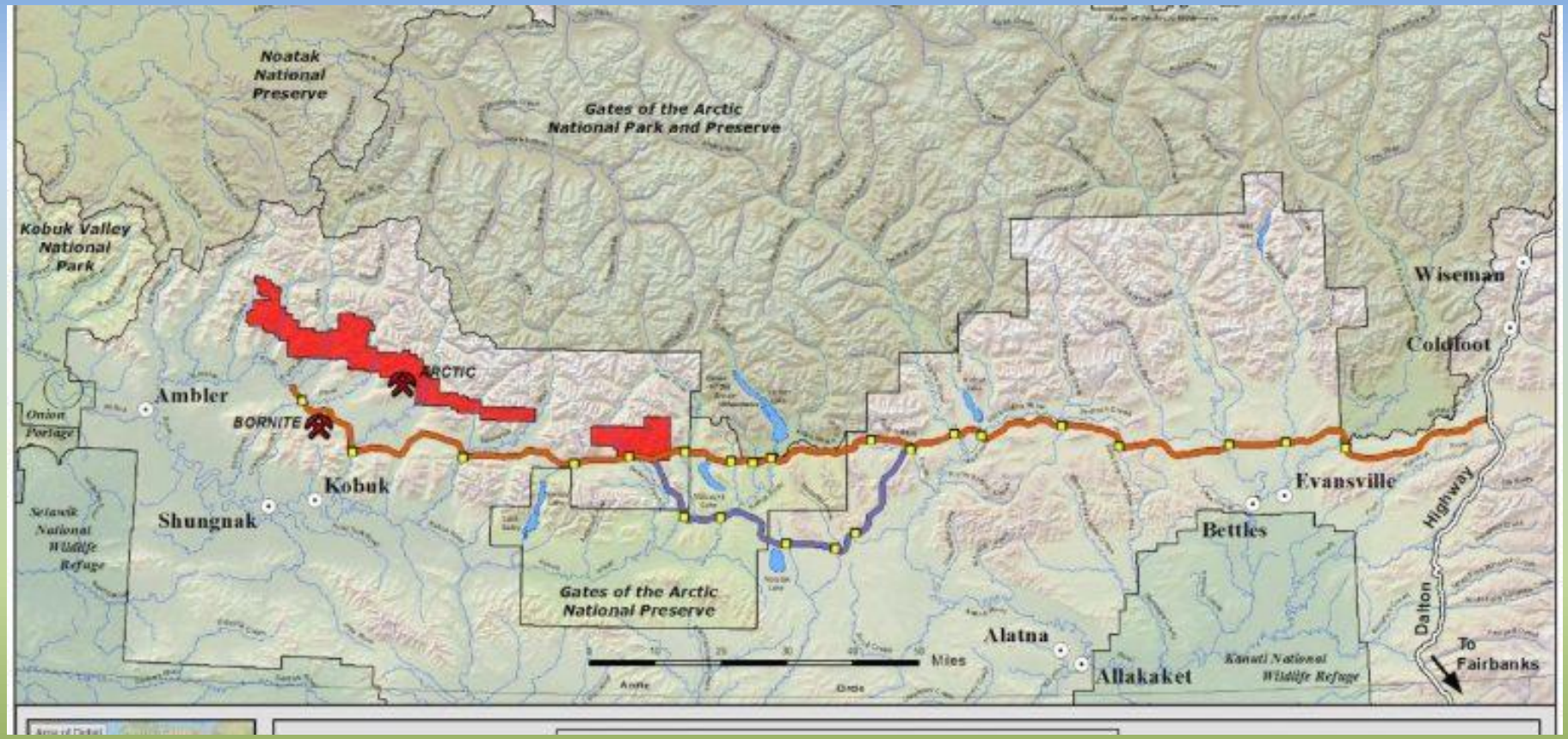
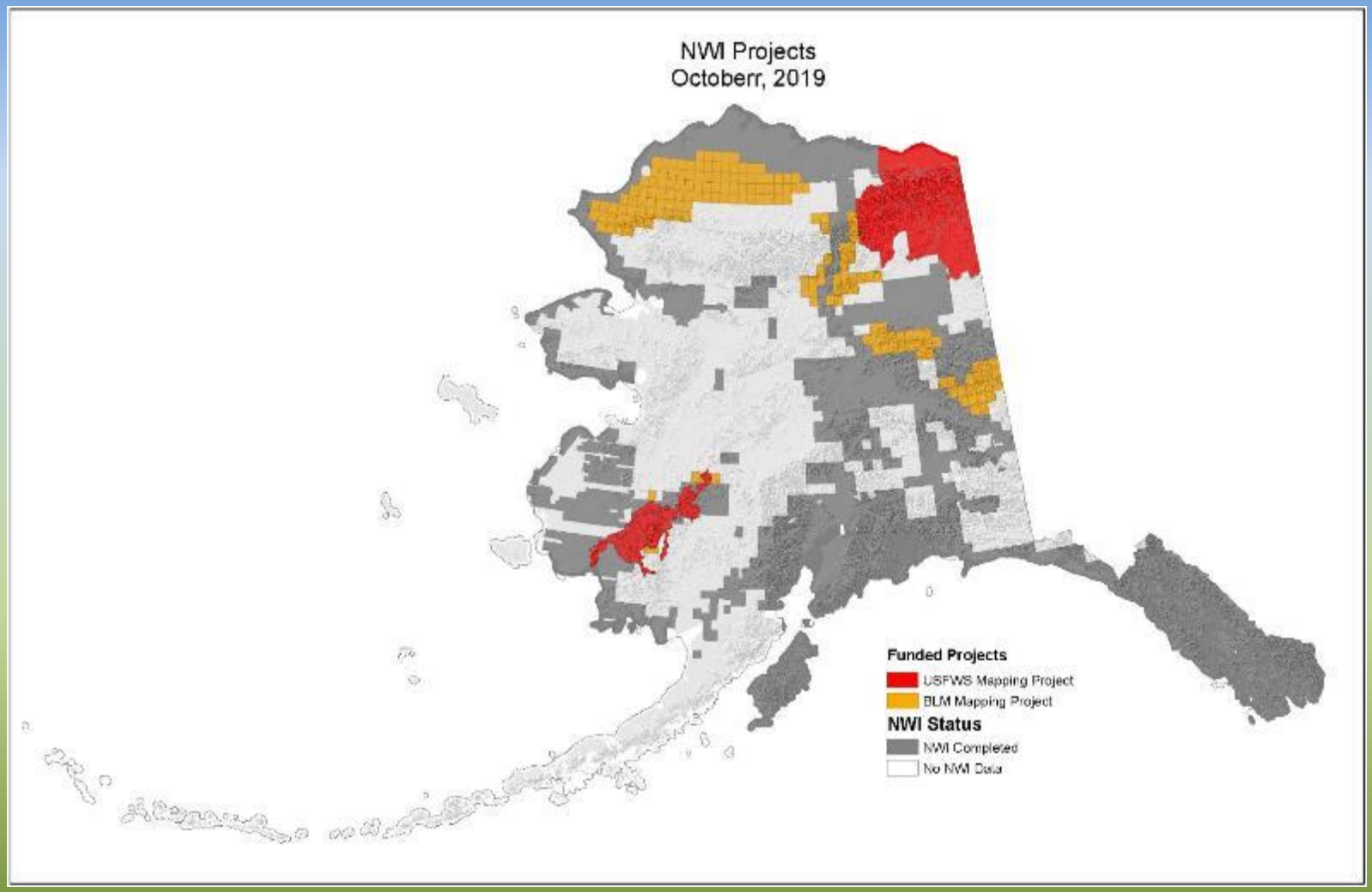


And The Landscape is Changing…

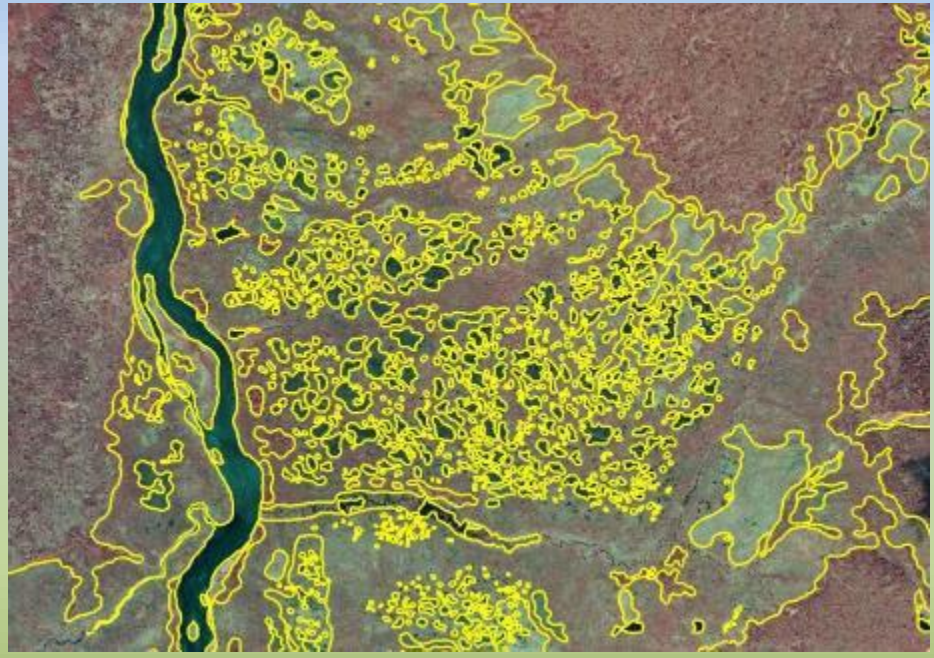
Current Mapping Projects



Target Mapping Unit

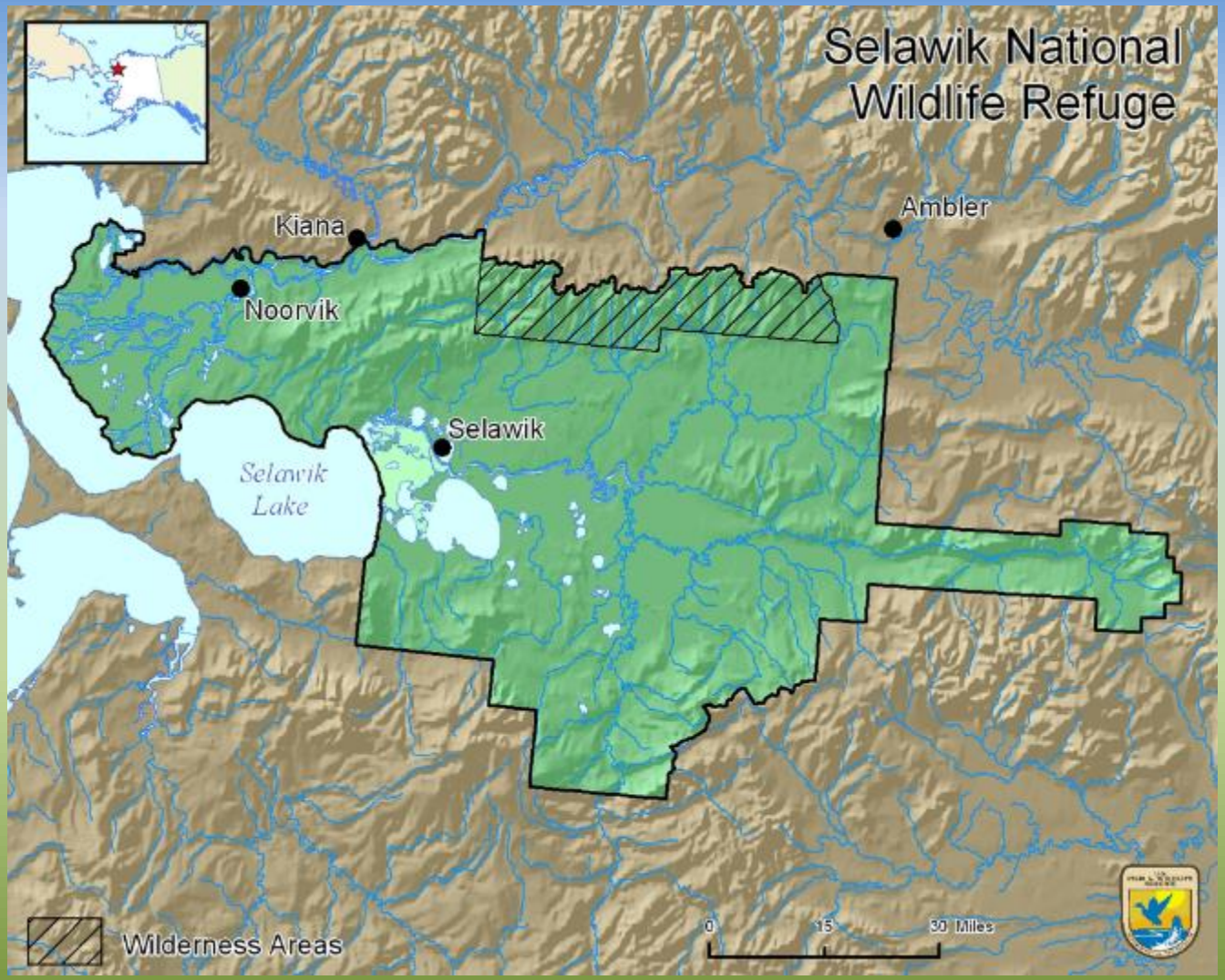
5 acre TMU

1 acre TMU



Both are NWI Compliant Products

Selawik Wildlife Refuge Update



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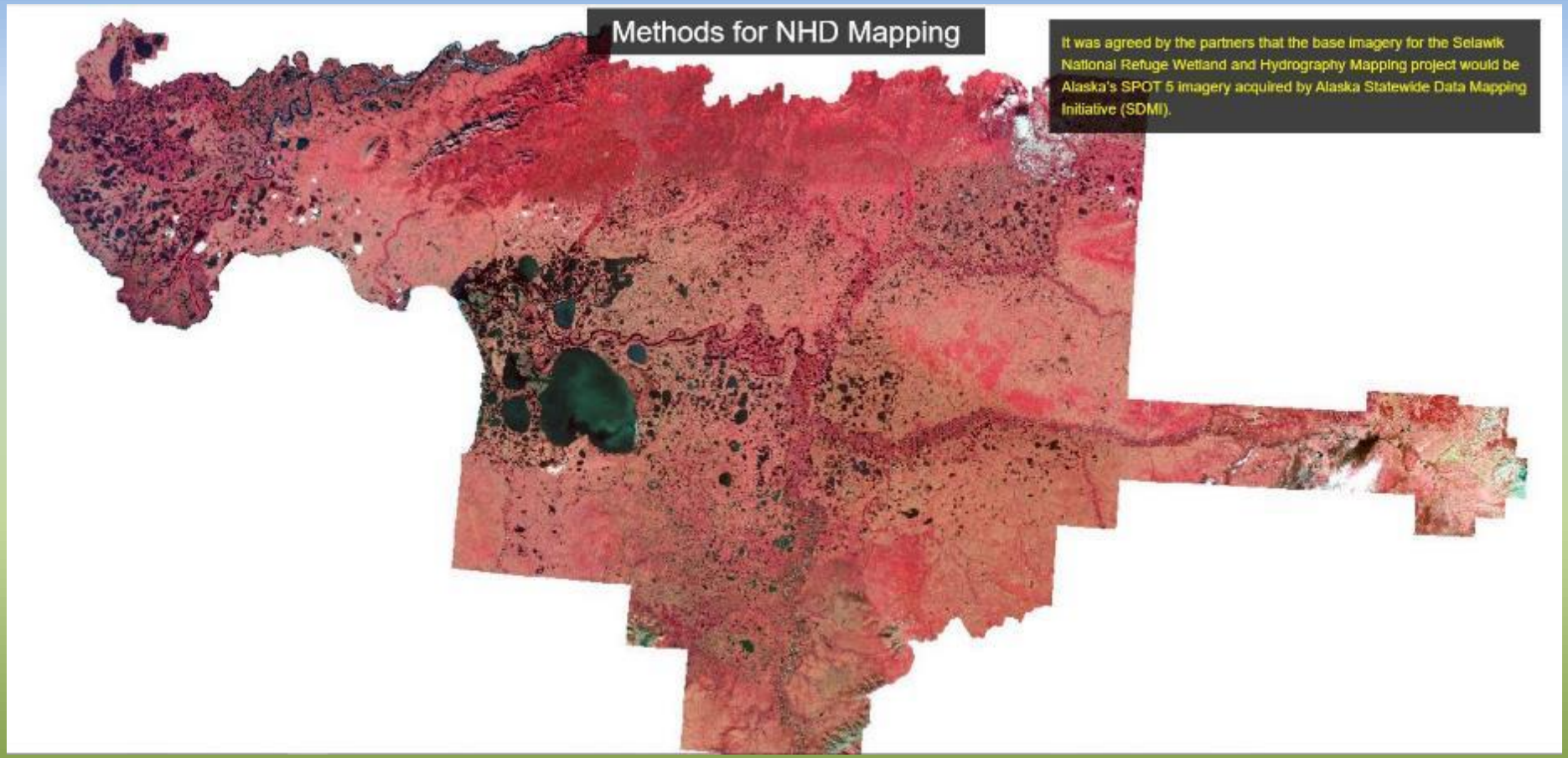
NWI 2.0 Combined NHD and NWI

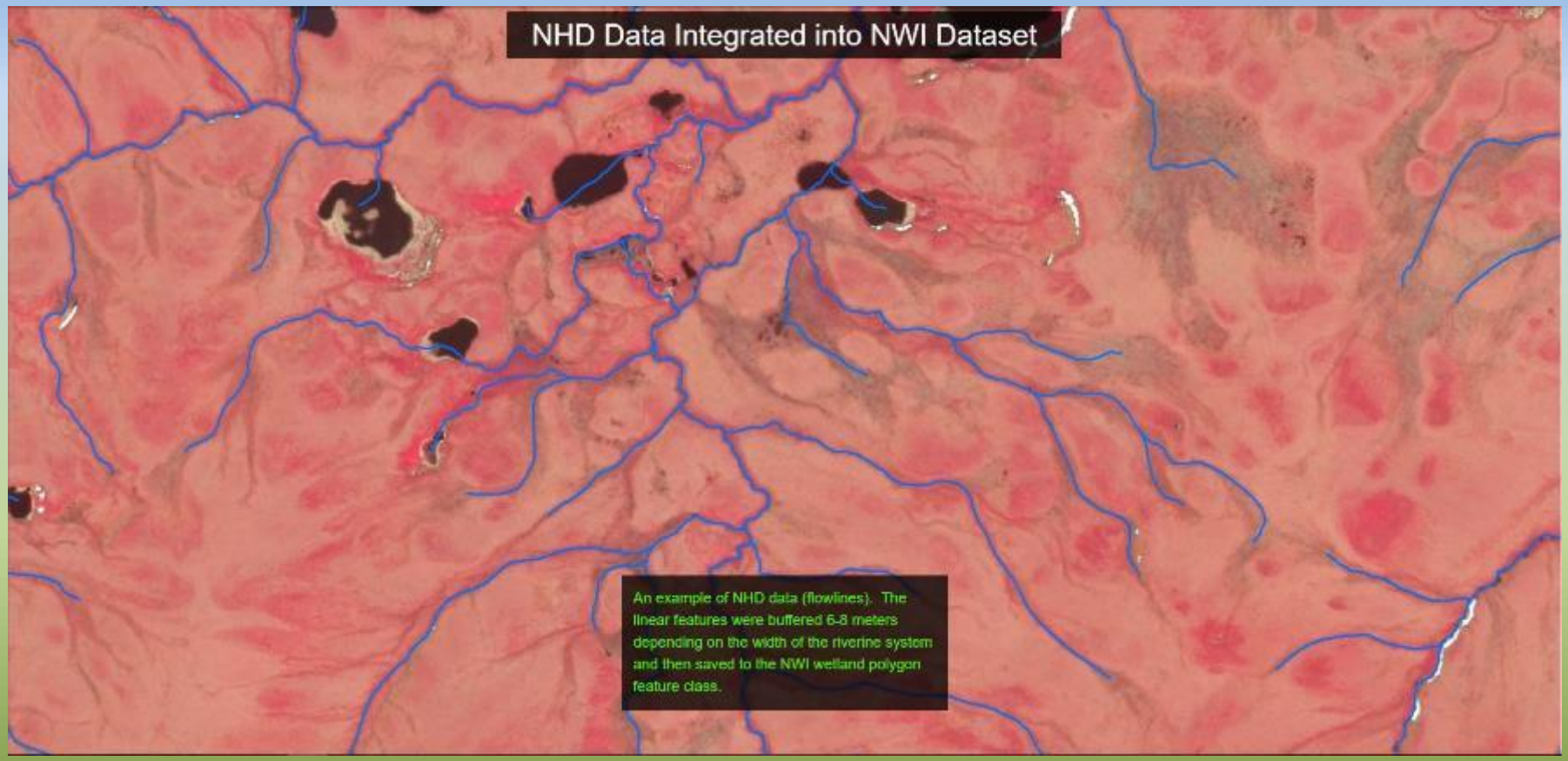
What is NWI 2.0

- Sometimes called the Surface Waters and Wetland Inventory
- Provides more inclusive geospatial data of all wetlands and surface water features.
- An interreted dataset that depicts all surface water and wetland features in a single feature class
  - Retains the wetland and deepwater polygons from NWI
  - Reintroduces linear wetlands as narrow polygonal features
  - Completes segmented connections
  - Provides consistency by applying Cowardin classification to all features

Combined NWI and NHD Update



Integrating NHD and NWI



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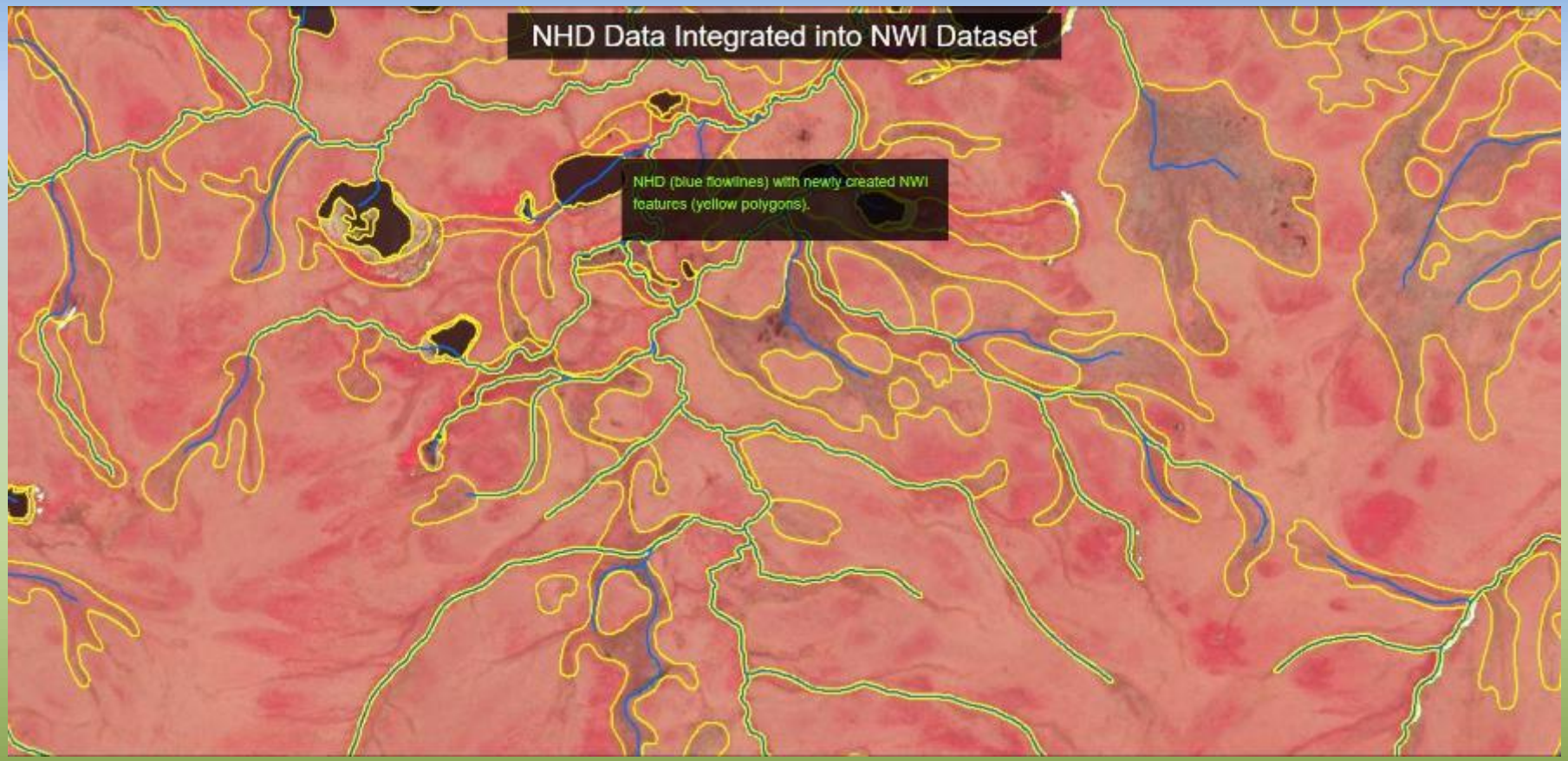

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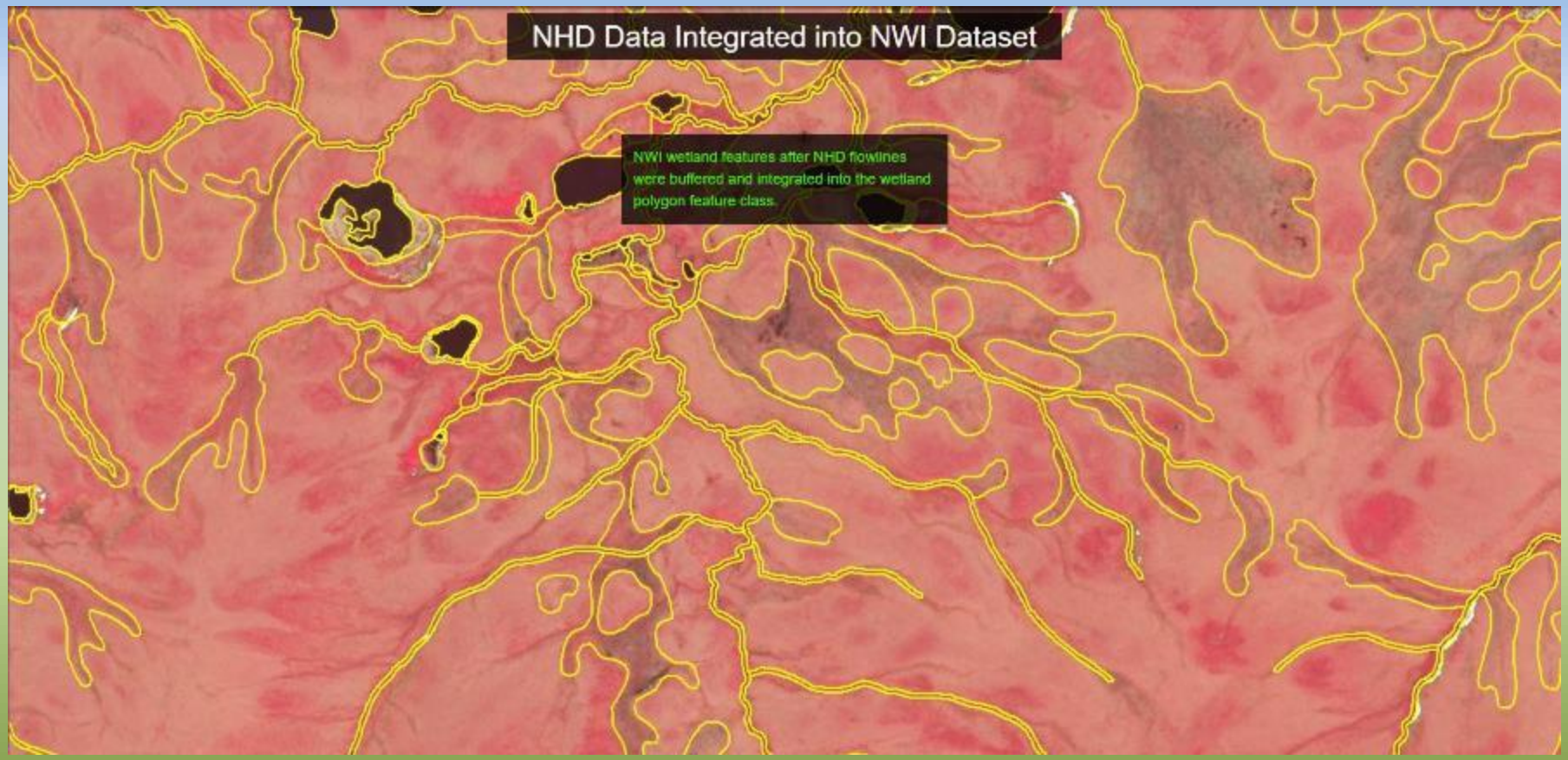
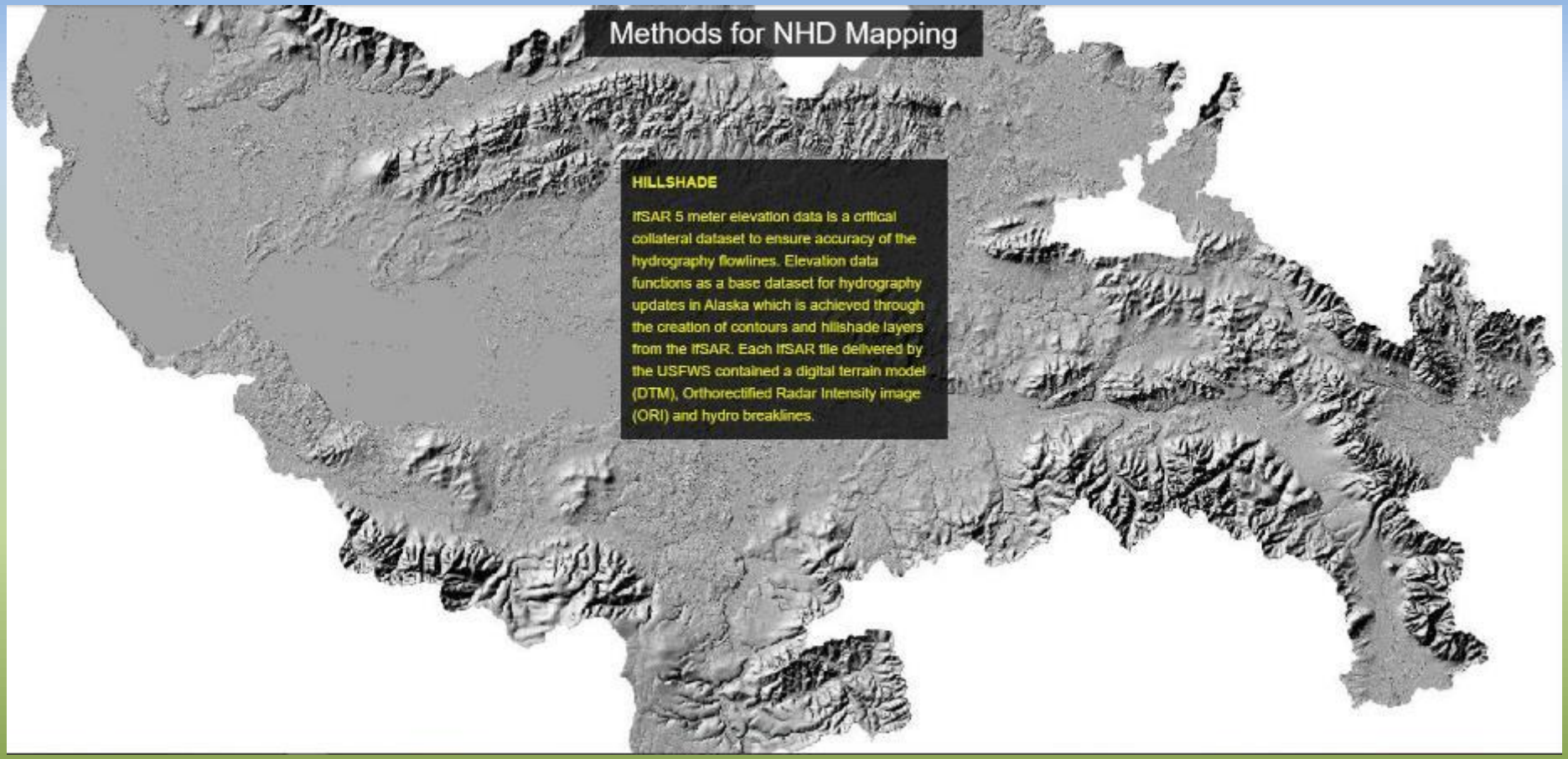
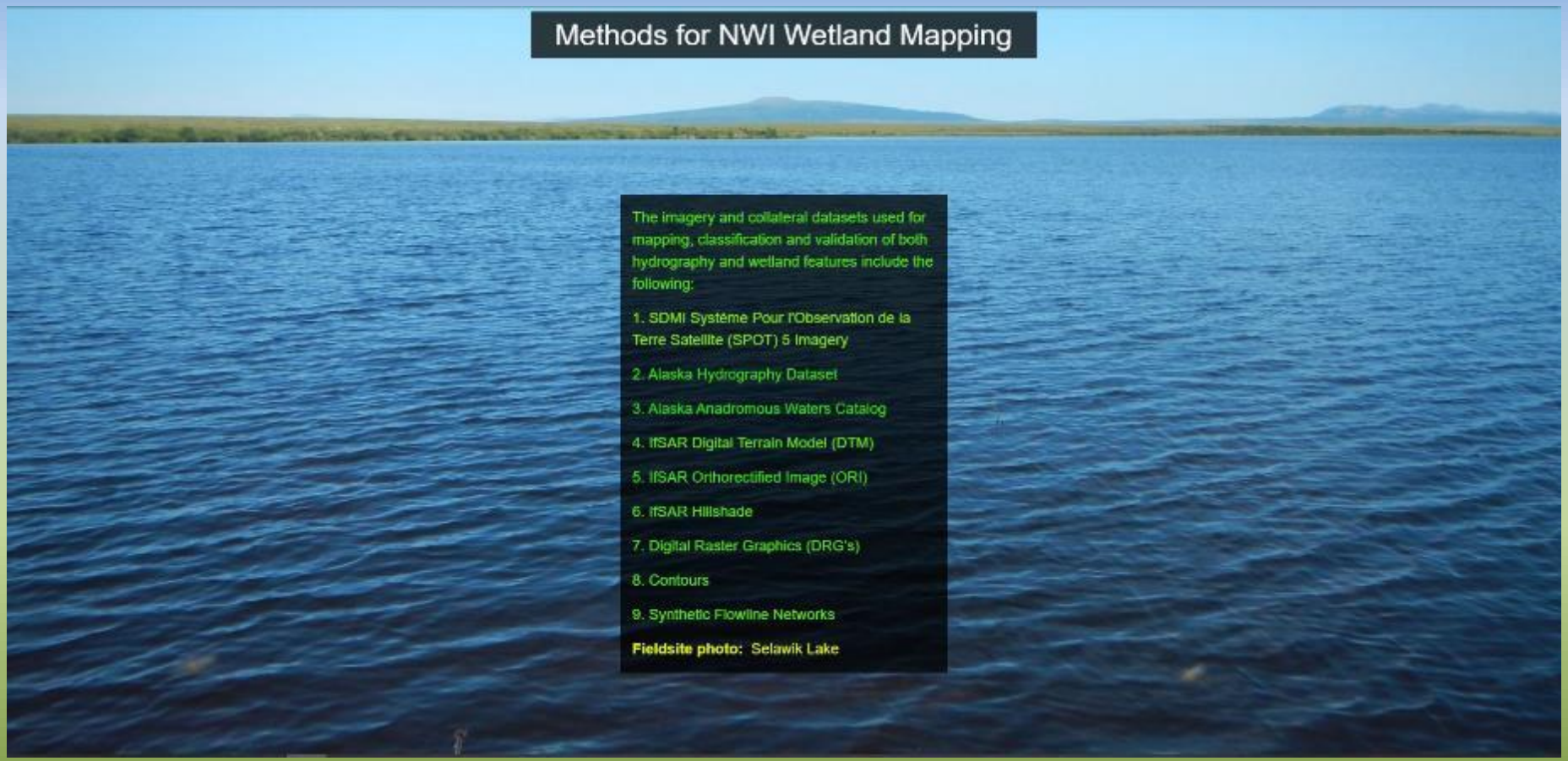


Hillshade and Derived Hydro



Additional Collateral Data



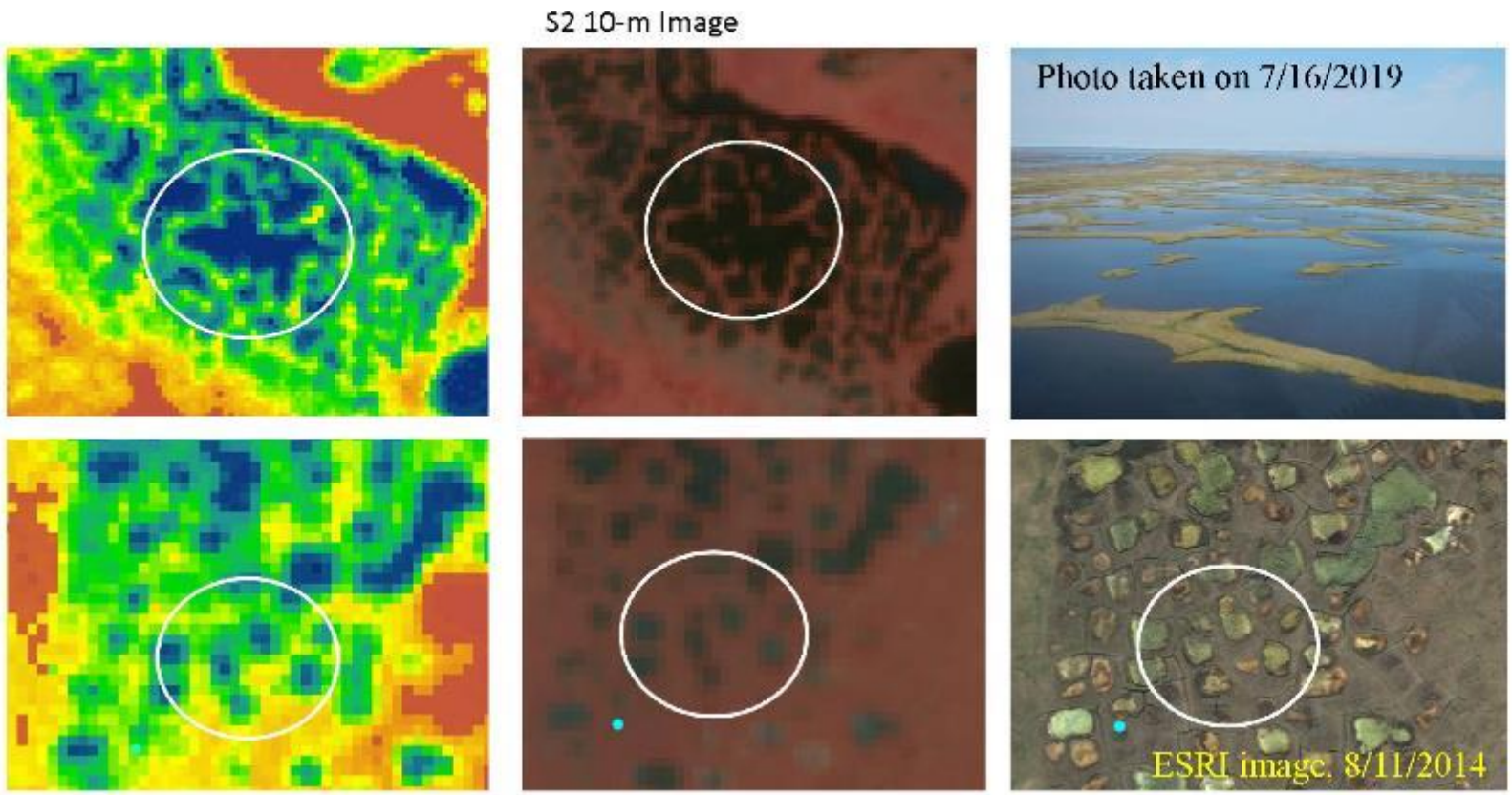
Surface Water Fraction

Researchers from the University of Maryland - Dr. Chengquan (Cheng) Huang and collaborators:

- Temporal analysis of Sentinel 1 and Sentinel 2 radar and sensors to map surface inundation change over time
- Multiple return periods in the same year and over multiple years
- Better characterize annual hydro period and inform water regime decisions
- Combine with high resolution optical imagery to inform vegetation classes
- Perhaps provide wetland delineation and classification for 5 acre TMU

Surface Water Fraction

Details for Individual Wetlands



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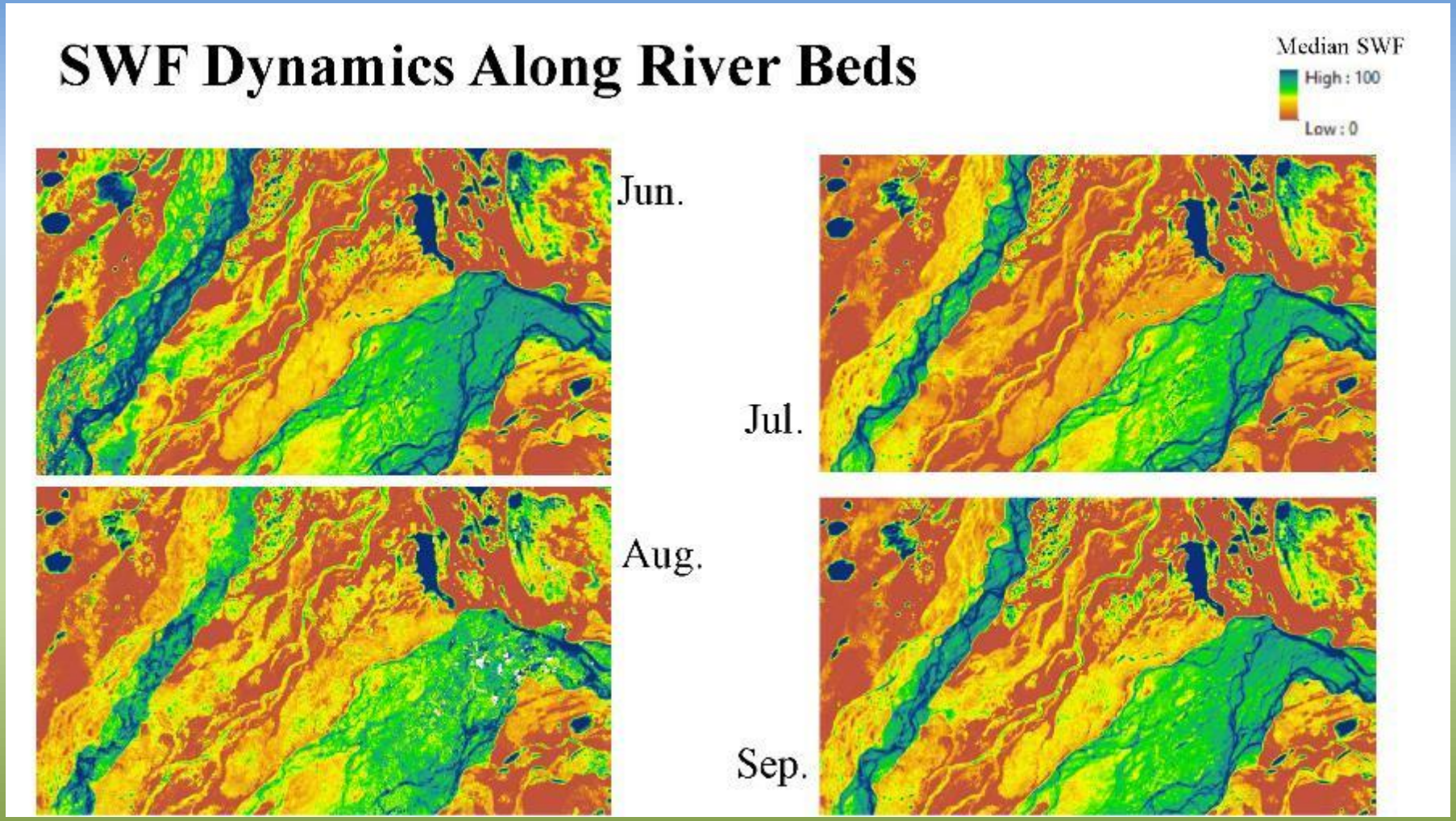

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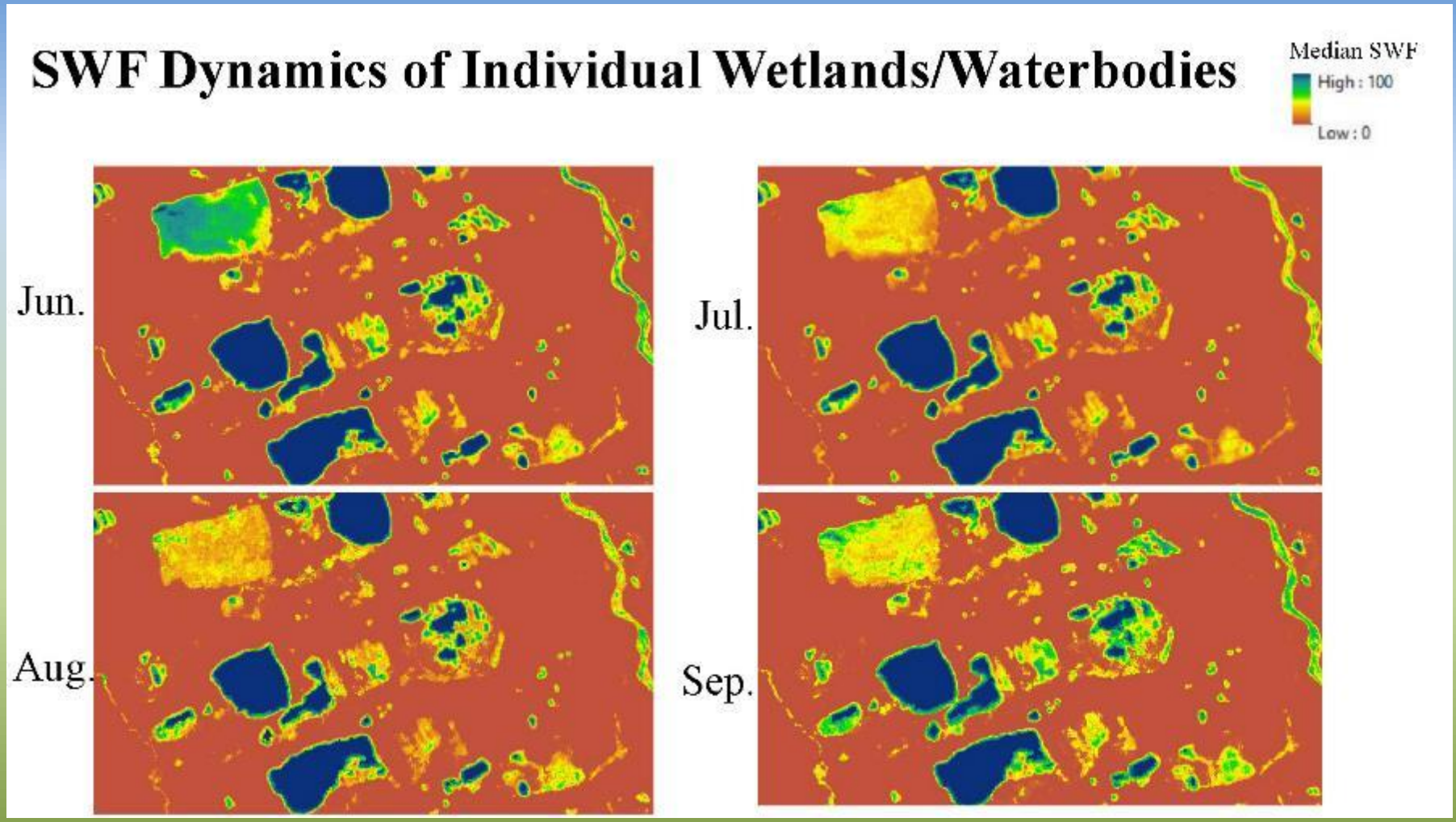
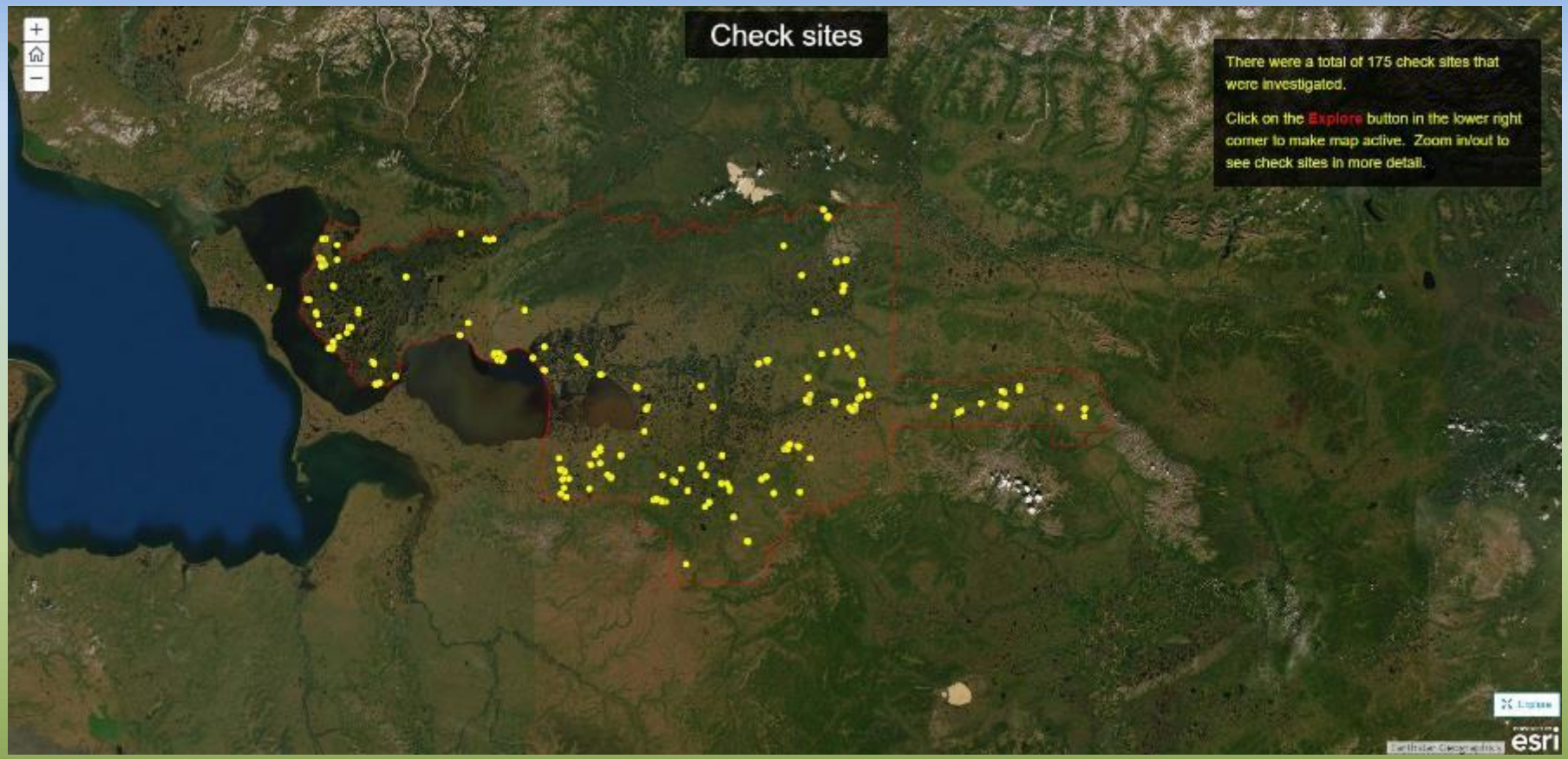
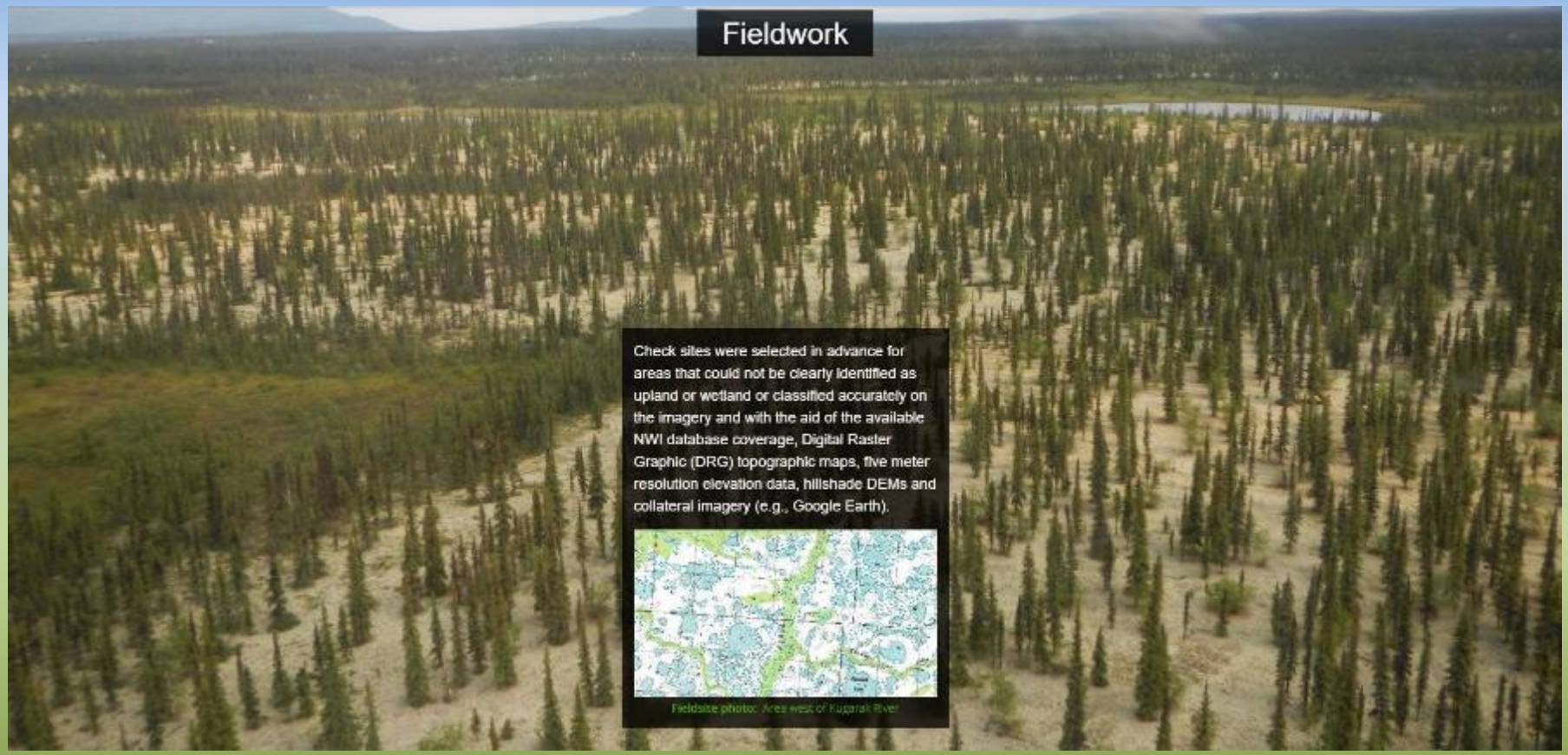


Fieldwork Checksites



Fieldwork Documentation



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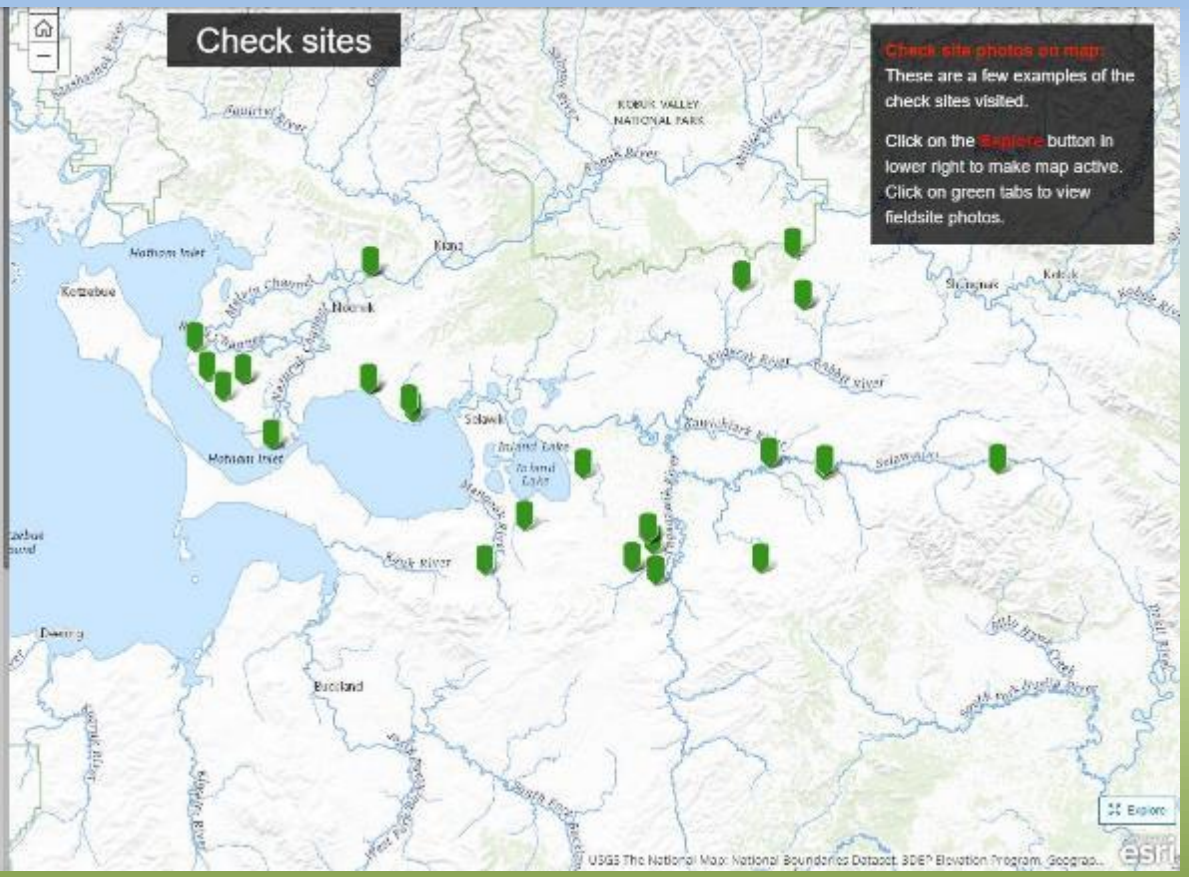

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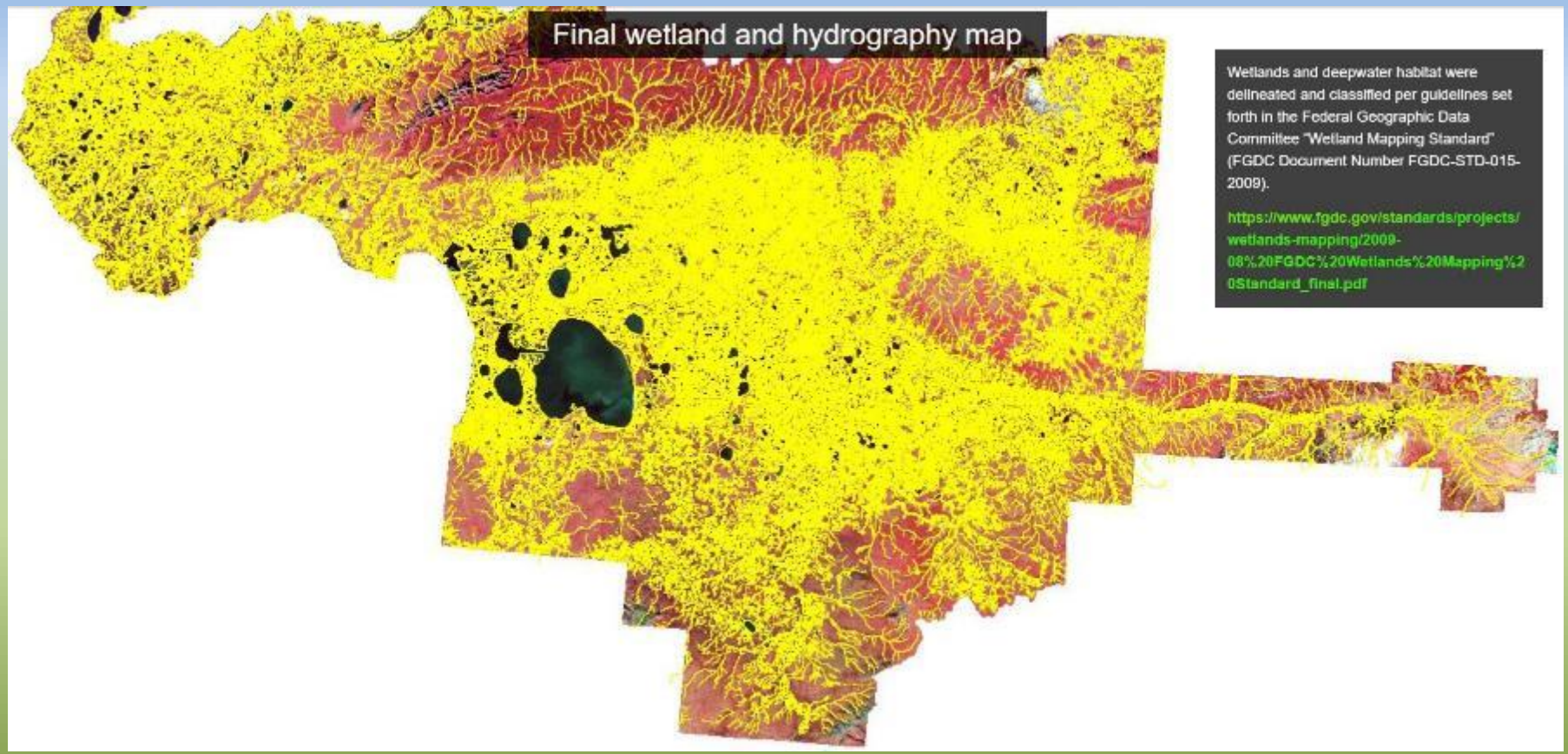
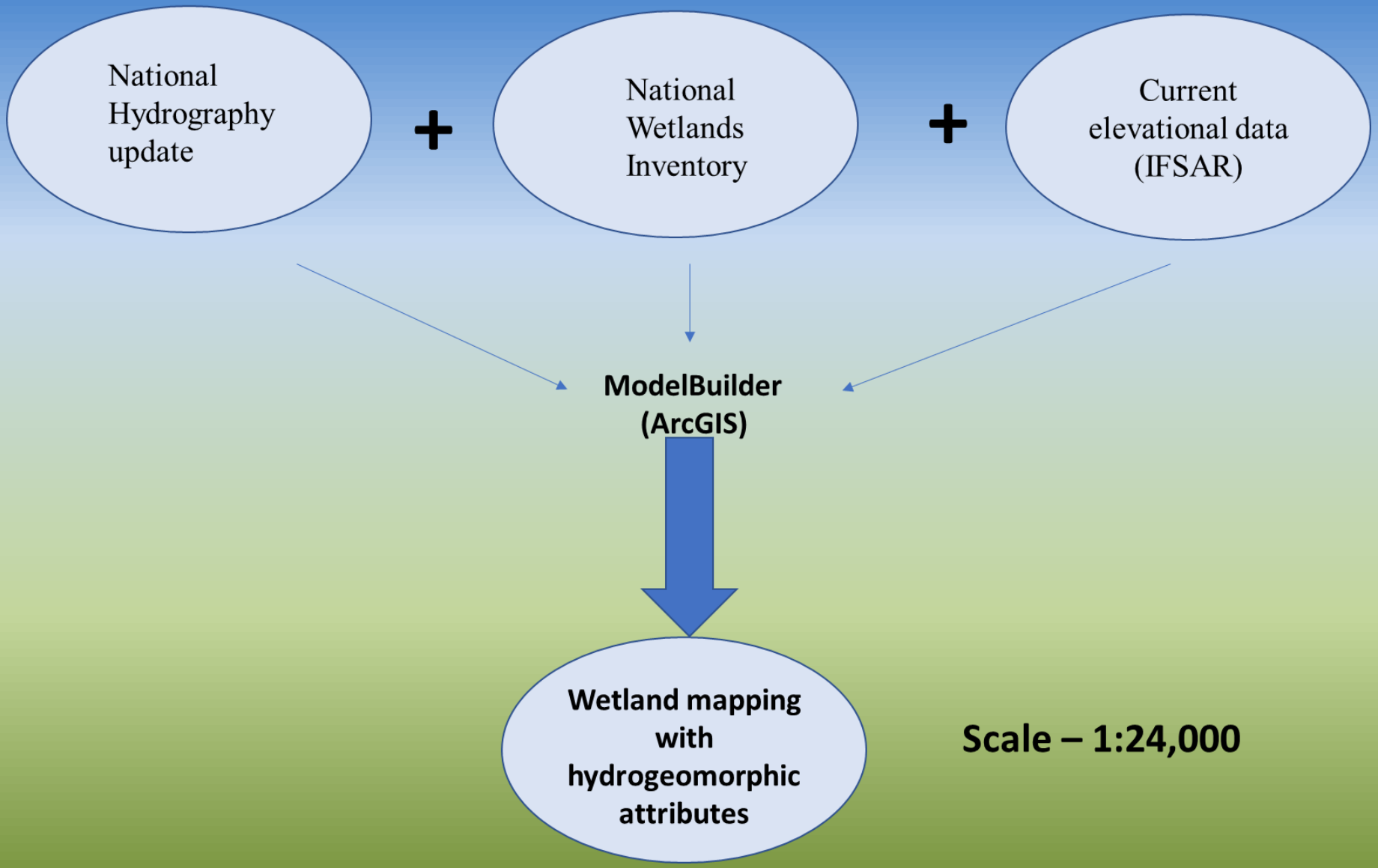
Final NWI and NHD GeoDatabase



Final NWI and NHD GeoDatabase

12,095 miles of streams, 19,571 waterbodies, 110,000 wetlands

Further attribution of National Wetlands Inventory data



Outcomes of LLWW classification

Landscape position – marine, estuarine, lotic (along rivers and streams), lentic (in basins and lakes and reservoirs)

Landform – description of the physical shape of the wetland – basin, flat, floodplain, fringe, island, slope and peatland.

Waterflow path- throughflow, inflow, vertical flow and tidal descriptors for those tidal wetlands

Waterbody – as informed by current NHD – lake, river, stream, pond

Wetland Functions Informed by LLWW

- 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 other wildlife
- Habitat for unique, uncommon or highly diverse wetland plant communities

Customized Functional Assessment

Salmon Habitat Support Function

- Develop a Quantitative Assessment
  - Better suited for decision support in wetland and watershed planning and management.
    - Triggers, modifiers, spatial context/position
  - Scoring based on an algorithm instead of spatial queries
    - More efficient, repeatable, transparent
    - Attribute based data inputs
    - Normalized
- Can the data inputs to the algorithm be derived from landscape-level data
  - LLWW
  - Typical collateral and derived datasets

Salmon Habitat Support Function

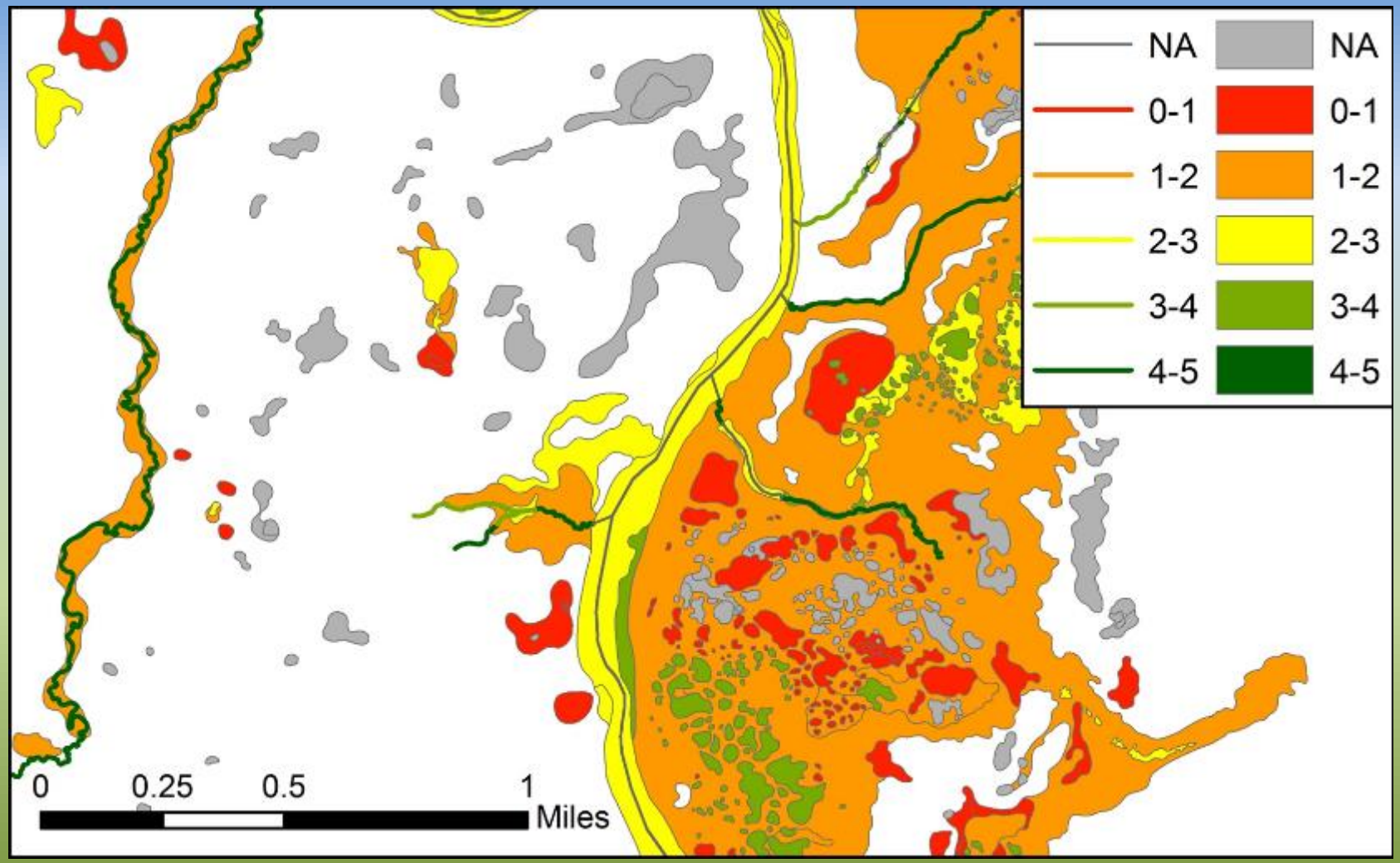
Algorithm for map units that satisfied Condition 1 (waterbody)

$$\left(\left(\frac{AV + Gr + WR}{3}\right) \times FP\right) \times FR$$

Where	
AV =	Aquatic vegetation (NWI Class)
FP =	Fish passage barrier
FR =	Flow regime
Gr =	Stream segment gradient
WR =	Water regime

Lookup Table for AV									
NWI Class									
AB	EM	FO	ML	RB	RS	SB	SS	UB	US
5	5	1	1	1	1	5	3	3	3

Salmon Habitat Support Function



Questions?

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