

# Practical Challenges & Potential Tools for Improving Wetland Policy Outcomes

Prairie Habitat Joint Venture Policy Workshop  
April 19, 2018

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**FIERA**  
Biological Consulting



# Wetland Management in Alberta



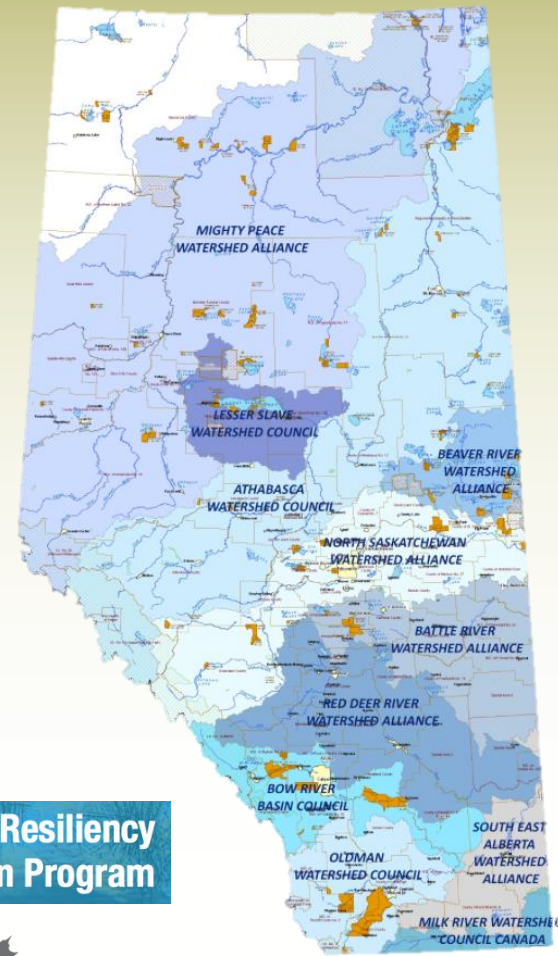
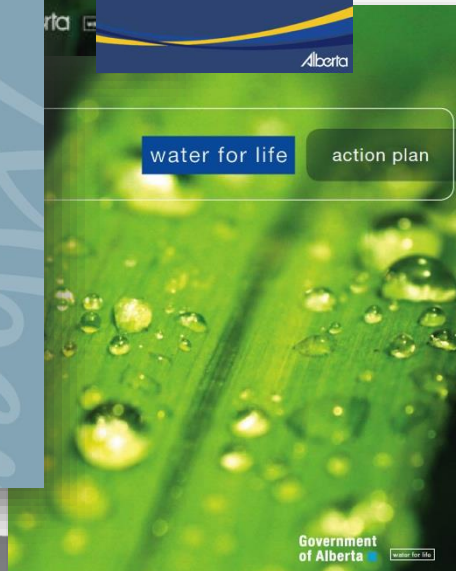
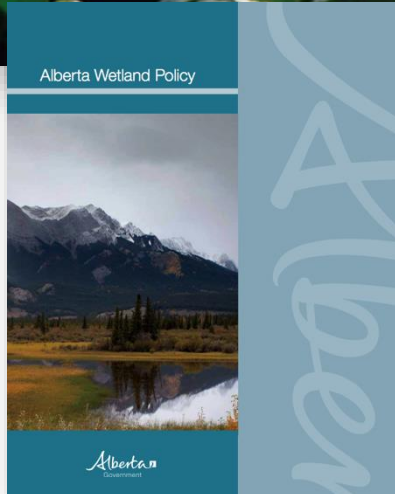
## NDP government to spend \$12M to protect Alberta watersheds

12 groups will share cash over 3 years, environment minister announces

CBC News · Posted: Mar 22, 2017 12:12 PM MT | Last Updated: March 22, 2017



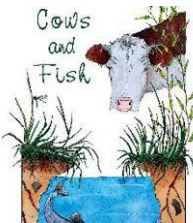
...s spending \$12 million to boost watershed planning and protect important waterways, such as the Bow River. (Government of Alberta)



## Watershed Resiliency and Restoration Program

## Growing Forward 2

A federal-provincial-territorial initiative





# Wetland Management & Local Government

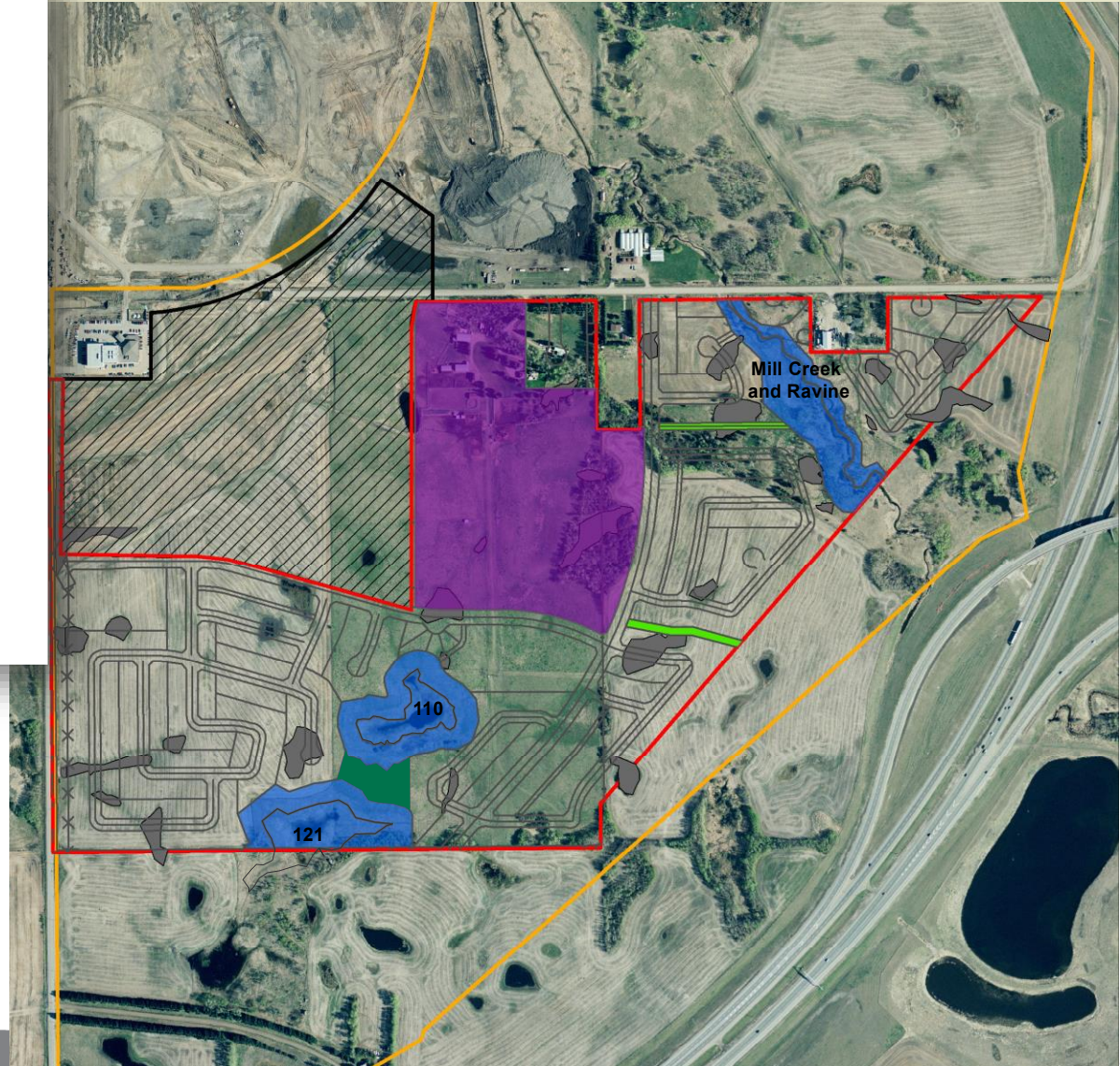


Province of Alberta

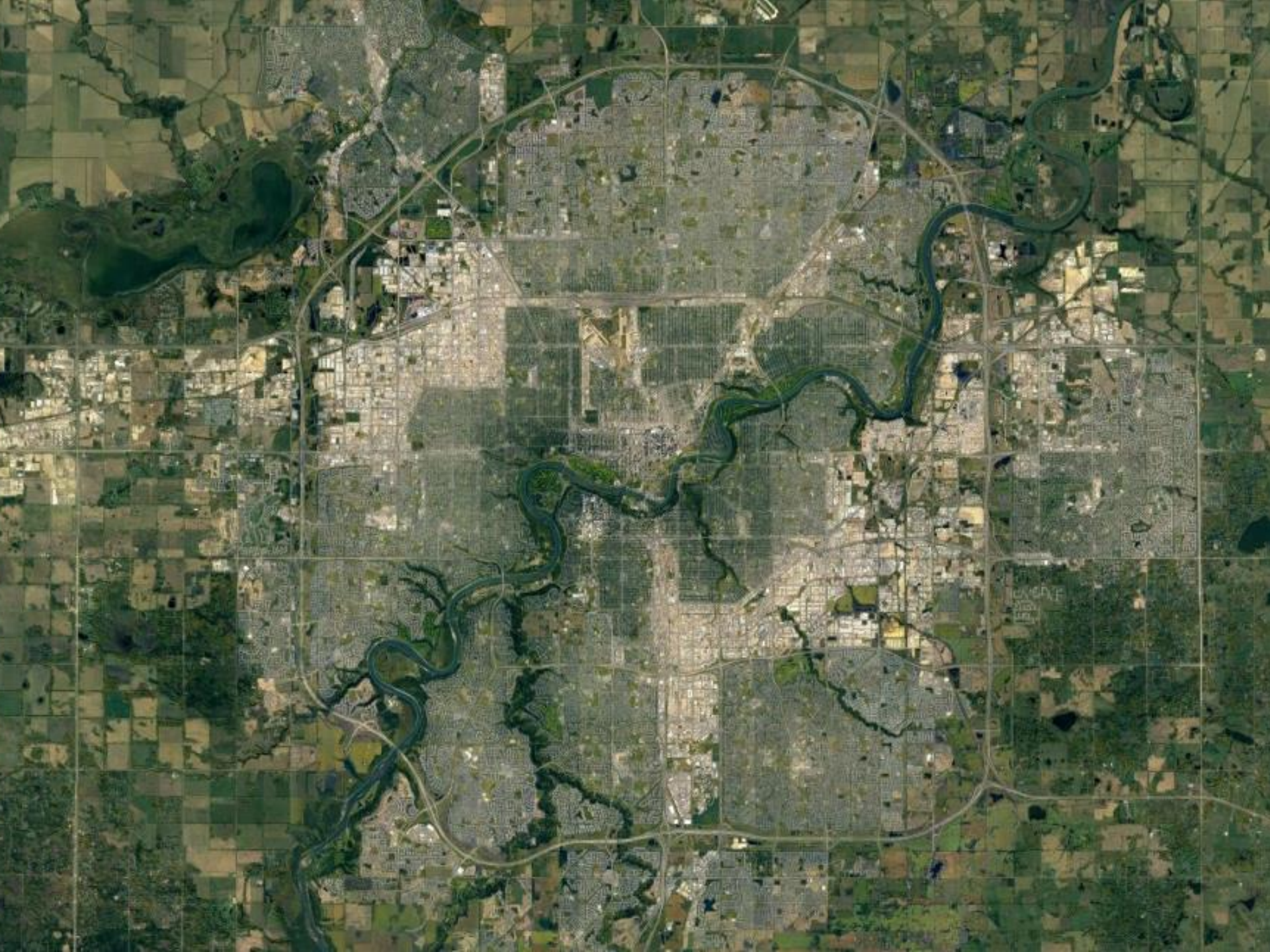
## MODERNIZED MUNICIPAL GOVERNMENT ACT

Statutes of Alberta, 2016  
Chapter 24

(not in force provisions only current as of April 1, 2018)



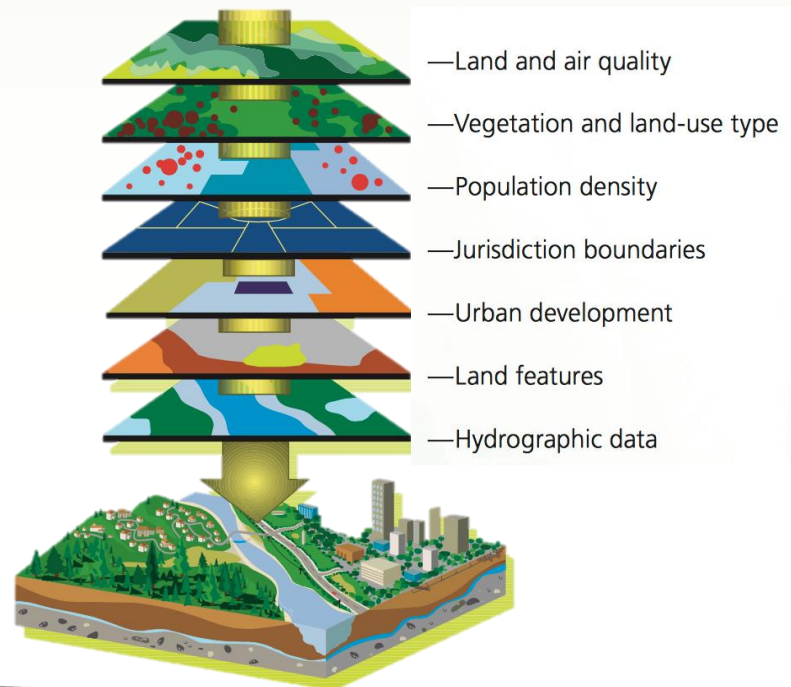




# Spatial Targeting

“The deliberate focus of particular actions on particular areas”

- Allows for more efficient use of resources
- Should theoretically produce better results than less targeted management approaches





# Spatial Targeting – Creating Tools

Important considerations and questions:

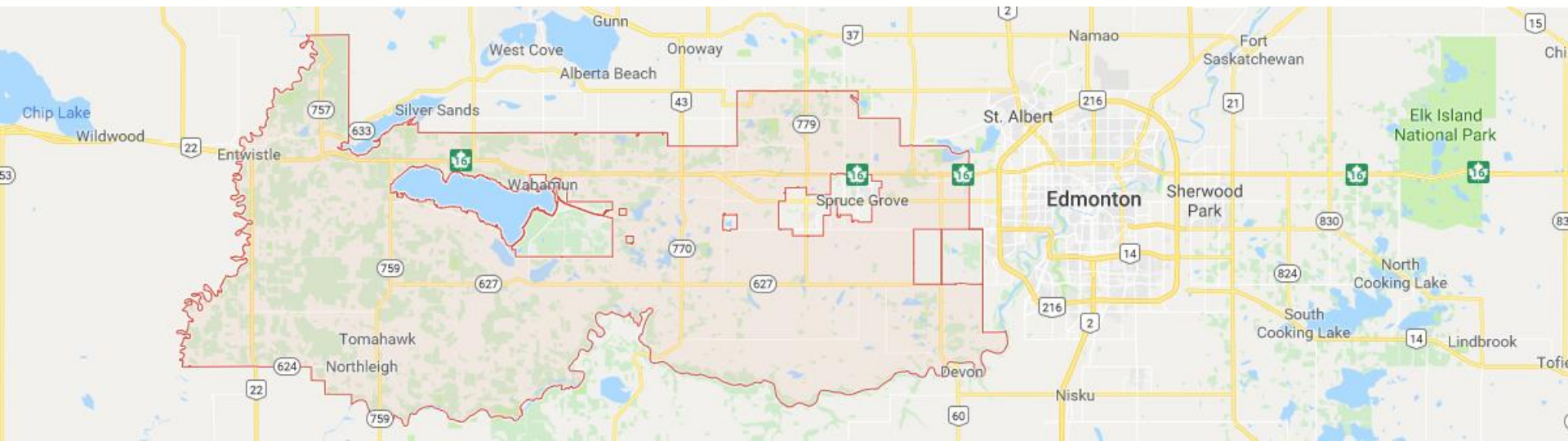
- What is the management concern?
- What are the management targets & can they be measured directly?
- What are the methods for assessing risk to or condition of management targets?
- Is there sufficient and suitable data to assess management targets?



# Parkland County Wetland Study

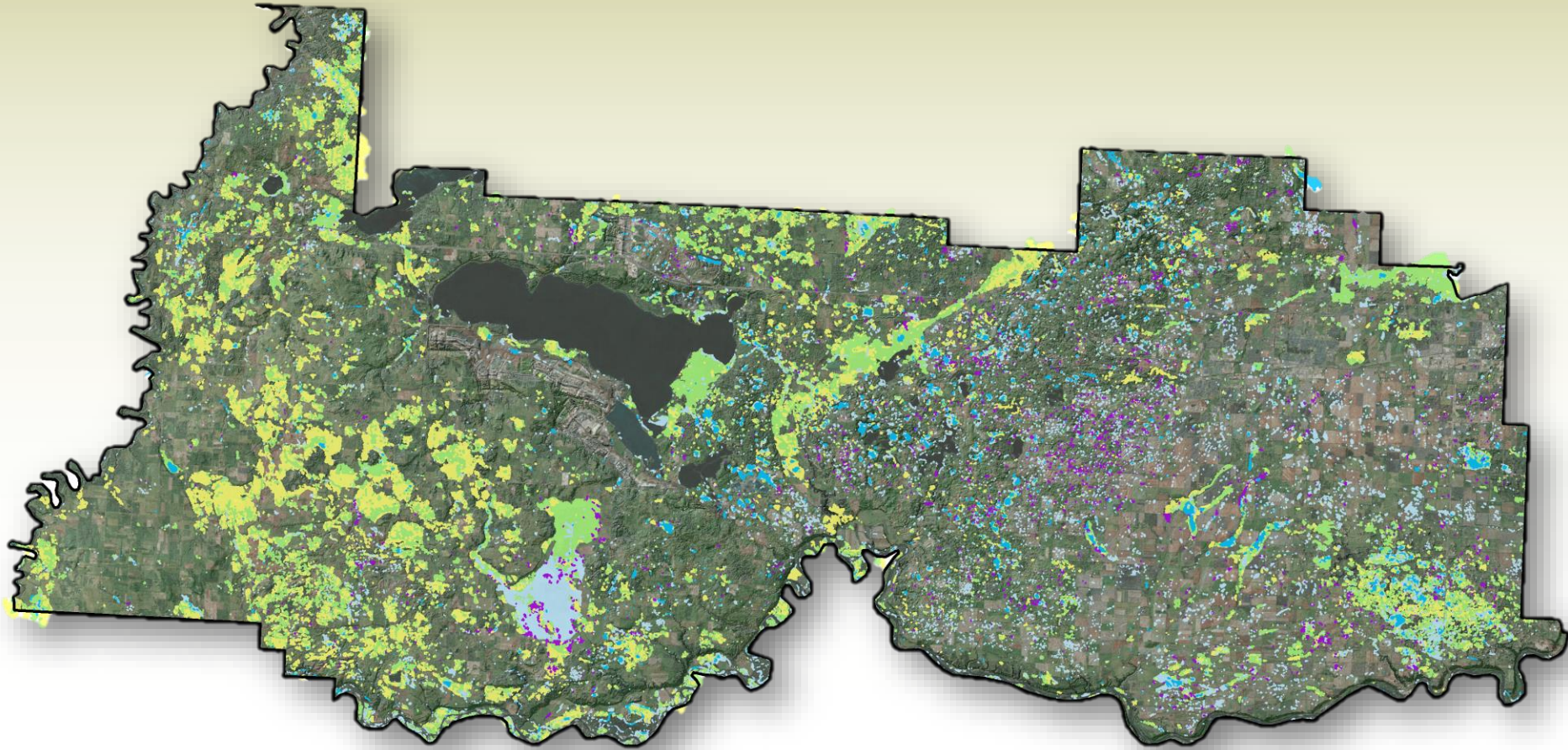
This study included four major steps:

- 1) Create a current wetland inventory
- 2) Assign ecological value to wetlands in the current inventory
- 3) Create a historic wetland inventory
- 4) Assess change in wetland area

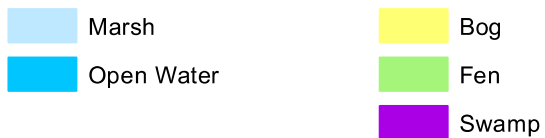




# Parkland County Wetland Inventory



2013 Wetland Invenotry - Parkland County





# Assessing Wetland Ecological Value

## CRITERION

### 1.0 Biodiversity value

1a

Sub-criterion 1a: Fish habitat

1a(i): Surface connection to fish

1b

Sub-criterion 1b: Amphibian habitat

1b(i): Road density within 300m

1b(ii): Wetland-wetland connection

1b(iii): Wetland density within 300m

1b(iv): Cover of natural upland habitat

1c

Sub-criterion 1c: Waterbird habitat

1c(i): Road density within 500m

1c(ii): Area of open water within 1km

1c(iii): Waterfowl staging areas\*

1c(iv): Waterfowl breeding areas\*

1d

Sub-criterion 1d: Songbird, raptor habitat

1d(i): Stepping stone habitat\*\*

1d(ii): Sensitive raptor habitat\*

1e

Sub-criterion 1e: Rare species habitat

1e(i): Known locations of Rare, Threatened or Endangered species\*

## CRITERION

### 2.0 Ecological function

2a

Sub-criterion 2a: Habitat patch size

2a(i): Wetland or wetland connection

2a(ii): Wetland-upland connectivity

2a(iii): Wetland shoreline complexity

2a(iv): Wetland habitat richness

2b

Sub-criterion 2b: Landscape connectivity

2b(i): Linear disturbance within 1km

2b(ii): Road density within 1km

2b(iii): Distance to developed land

2b(iv): Distance to developed land

2b(v): Land use intensity within 1km

2c

Sub-criterion 2c: Landscape Habitat

2c(i): Wetland-upland connectivity

2c(ii): Wetland-wetland connectivity

2c(iii): Wetland density within 300m

2c(iv): Cover of natural upland habitat within 1km

## CRITERION

### 3.0 Hydrologic function & water quality improvement

3a

Sub-criterion 3a: Water storage

3a(i): Depressional basin area

3a(ii): Groundwater recharge areas\*

3a(iii): Wetlands upslope of flood risk areas\*

3a(iv): Relative wetland elevation within watershed

3b

Sub-criterion 3b: Stream flow support

3b(i): Springs & groundwater discharge areas\*\*

3b(ii): Surface channel connection\*

3b(iii): Riverine & lacustrine wetlands\*\*

3c

Sub-criterion 3c: Stream flow support

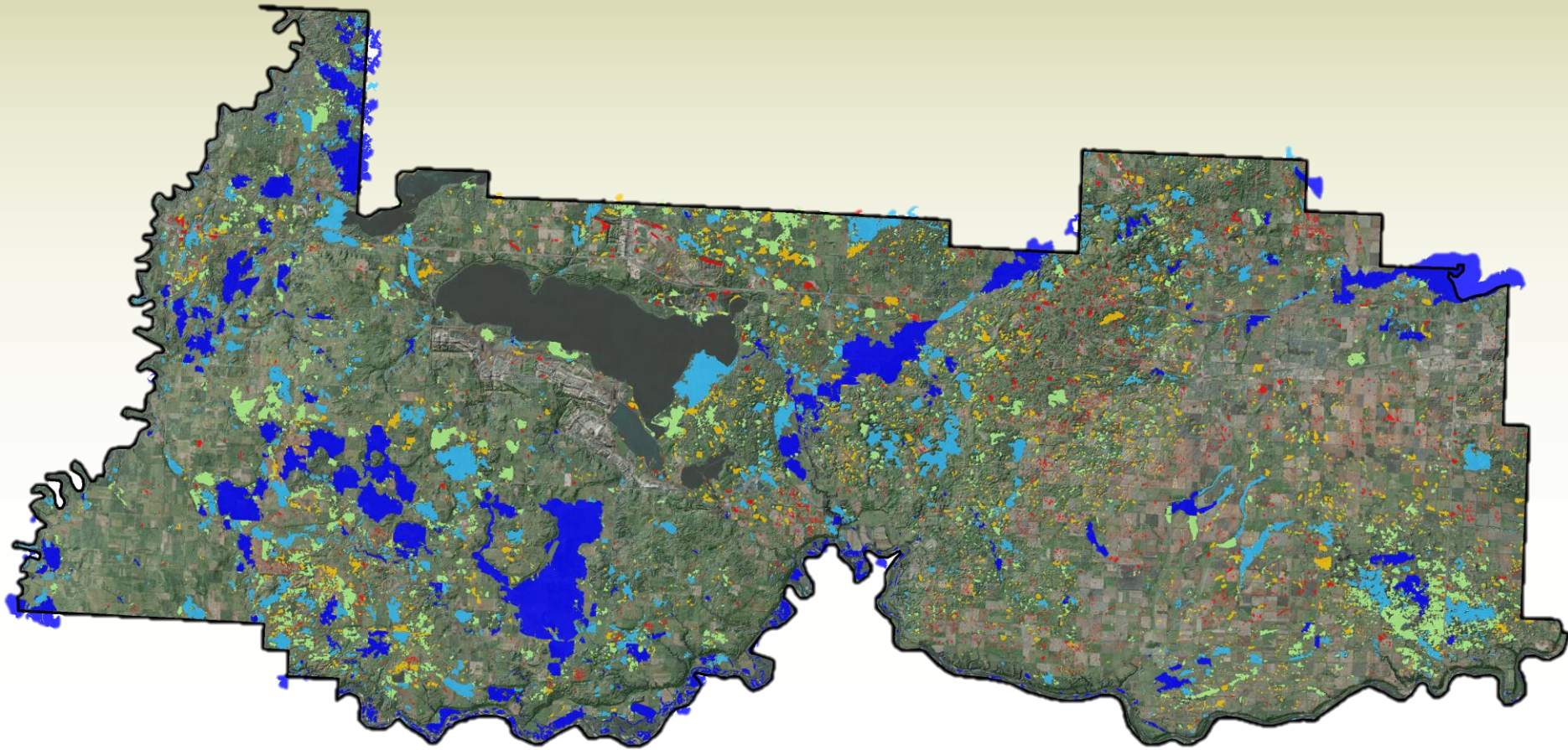
3c(i): Slope surrounding wetland\*\*

3c(ii): Vegetated area within basin\*

3c(iii): Wetlands located in floodways or riparian areas\*

**3 Criteria**  
**11 Sub-Criteria**  
**35 Indicators**

# Wetland Ecological Value

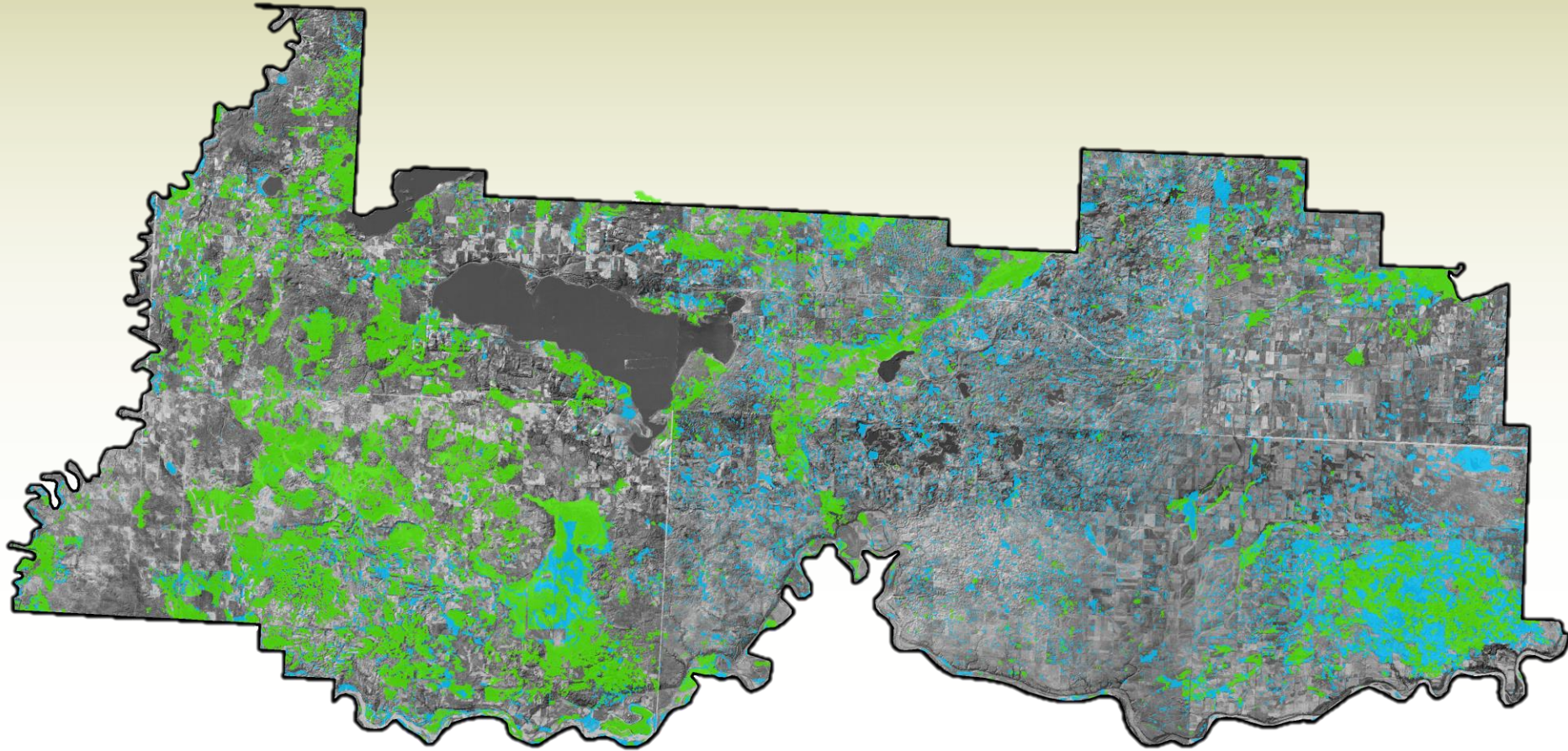


## FINAL AGGREGATED SCORE






# Historic Wetland Inventory



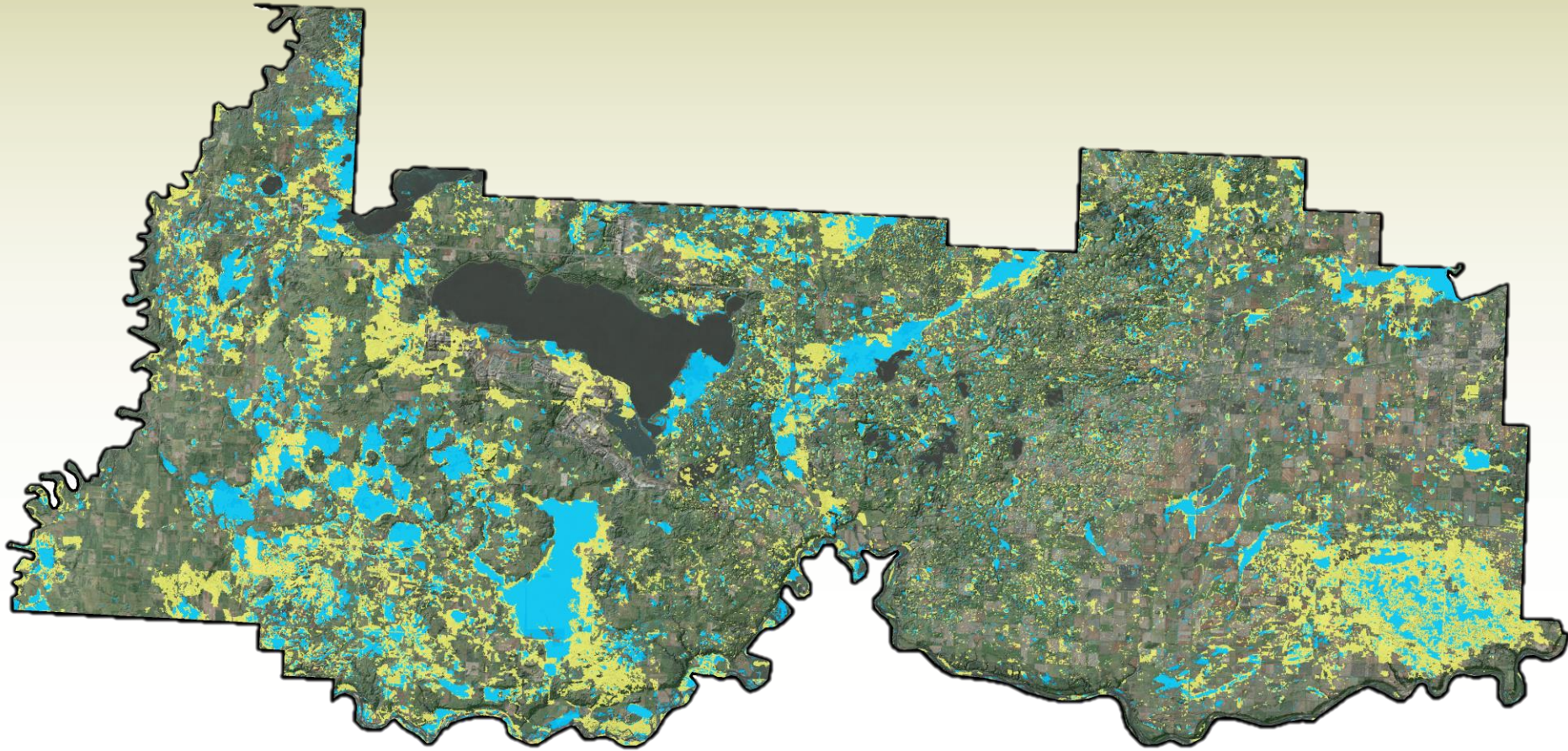
## Historic (circa 1950) Wetland Extent

 Bog/Fen

 Marsh/Open Water



# Historic Wetland Loss Assessment



## Comparison of Historic & Current Wetland Extent



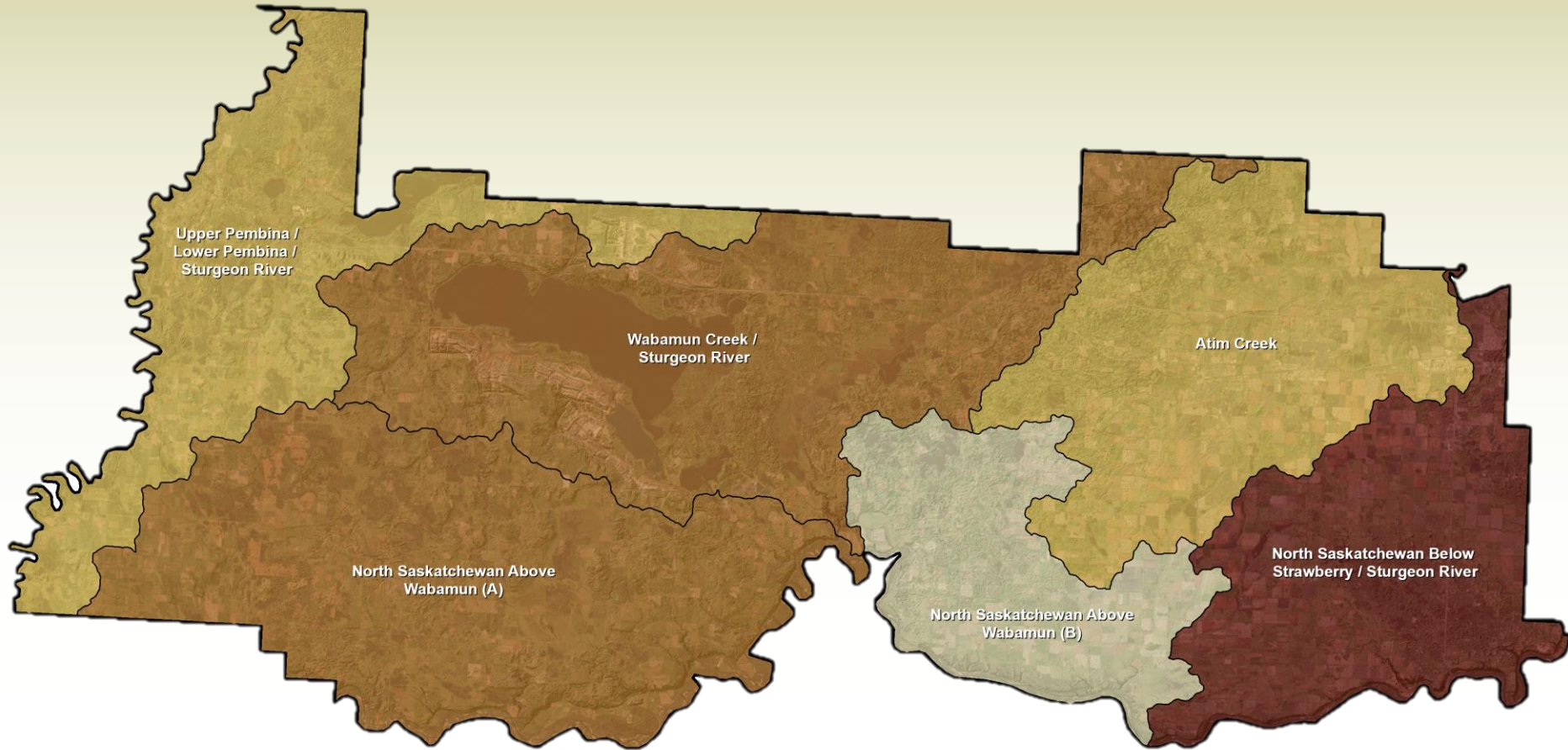
Current (2013) Wetland Extent



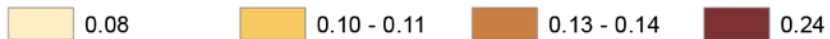
Historic (circa 1950) Wetland Extent



# Historic Wetland Loss Assessment

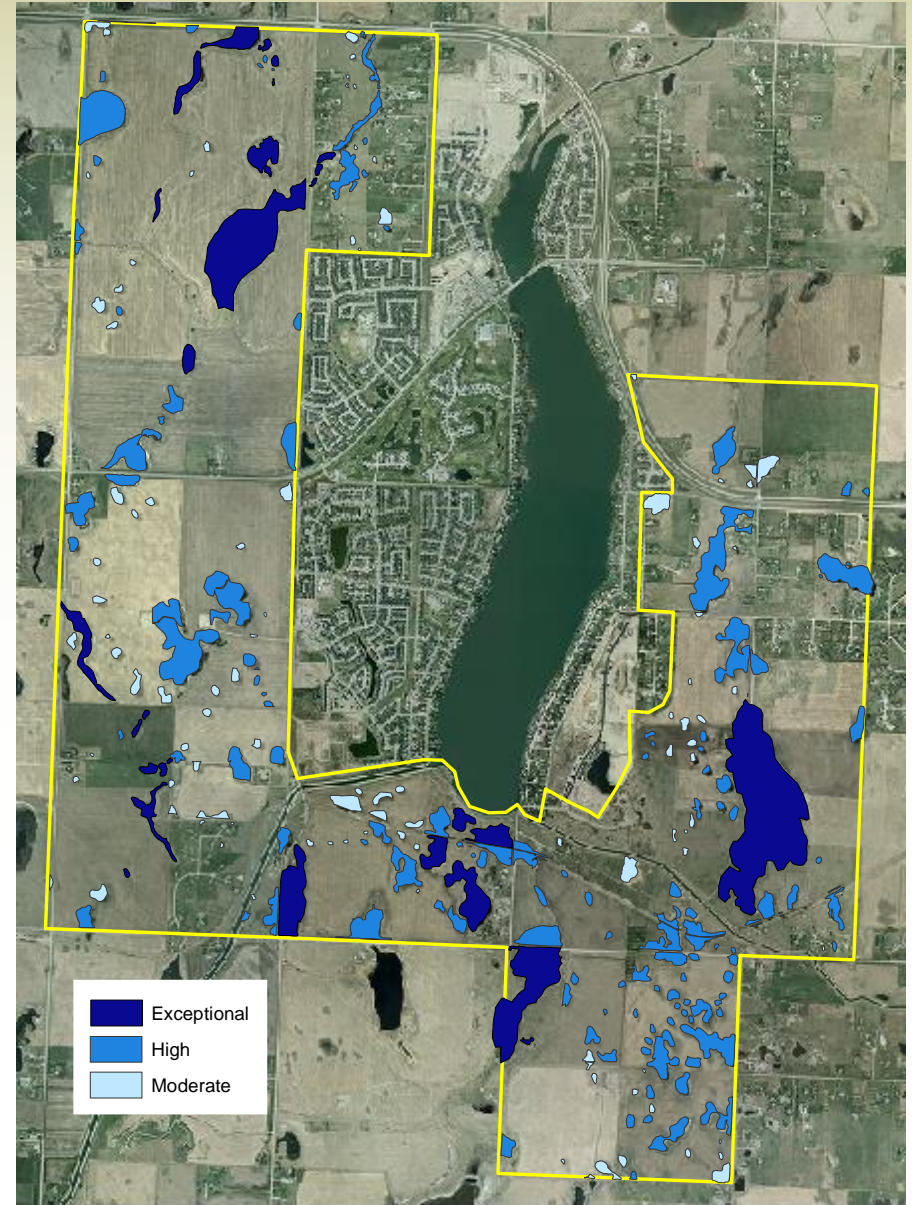
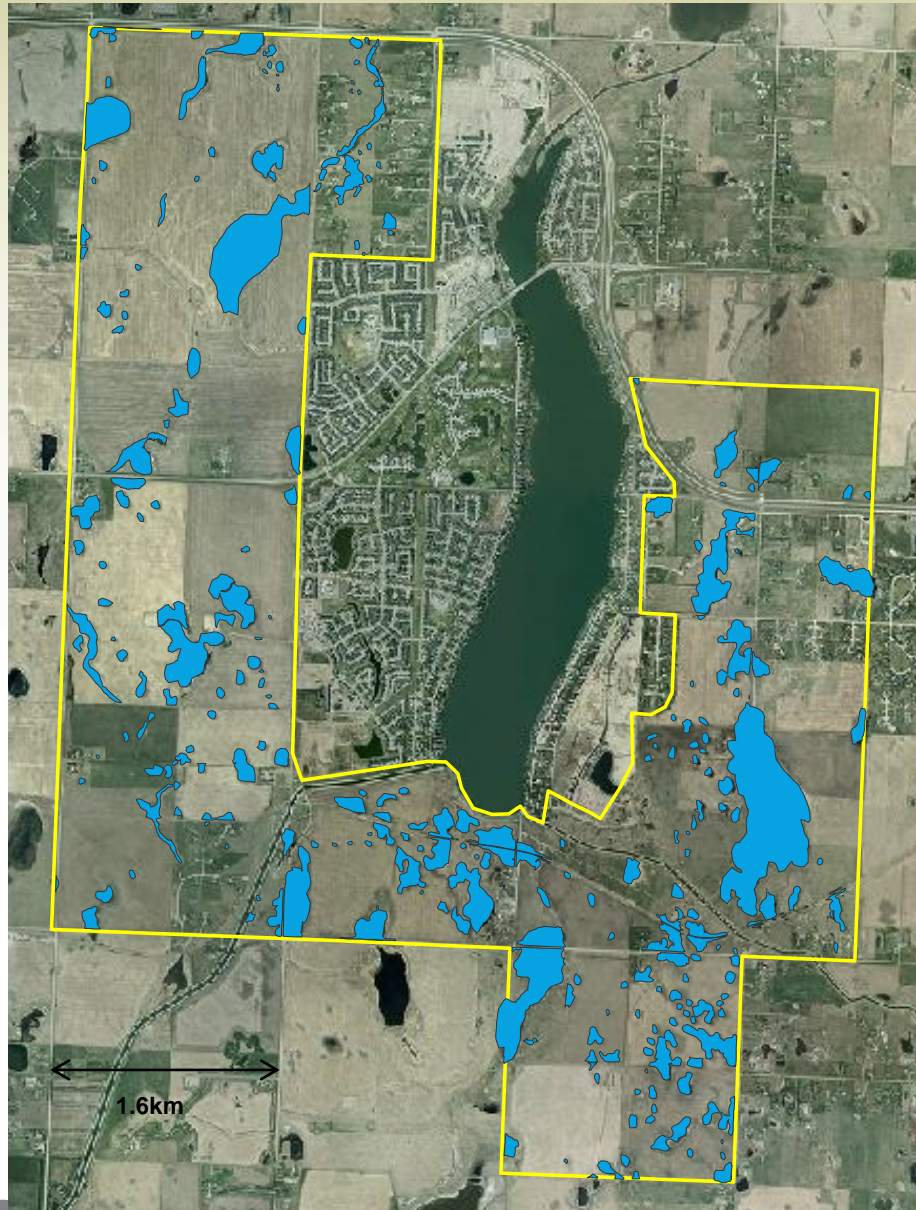


Complete and Partial (>40%) Wetland Loss by Watershed Unit  
(Loss/ha)





# Chestermere Wetland Inventory





## **TOWN OF CHESTERMERE**

### **POLICY HANDBOOK**

<b>EFFECTIVE DATE: 7 October 2013</b>	<b>POLICY: 311</b>
<b>APPROVED BY: Council</b>	<b>SUBJECT: Wetland Policy</b>
<b>REVISED DATE:</b>	<b>PAGE NO.:</b> <b>1 of 8</b>
<b>EXPIRY DATE: 7 October 2018</b>	<b>POLICY TYPE: Town Policy</b>

## **2.1 Policy Goal**

This municipal policy follows the principals set out by the provincial wetland policy and the Town of Chestermere Municipal Development Plan (2009) by prioritizing wetland avoidance over impact minimization and compensation for habitat loss. Thus, the goal of this policy is to provide a policy framework to:

*Promote the conservation of wetland and riparian land of exceptional value in order to sustain the ecological function of these habitats, such that they may be enjoyed by present and future residents and visitors of Chestermere.*

# 2015 Wetland Bylaw

- Prioritizes retention of exceptional wetlands
- For all other wetlands, requires demonstration that retention is not practicable
- Impacts must be minimized and/or compensated and impacts must be monitored
- Specifies setbacks and appropriate land use adjacent to wetlands





# Final Thoughts

- Municipalities are critical to better wetland management outcomes
  - Many rural municipalities have extension agents who know and are trusted by agricultural community
- Spatial targeting can be an effective tool for focusing efforts when conservation and restoration resources are limited





## Contact Information:

Shari Clare

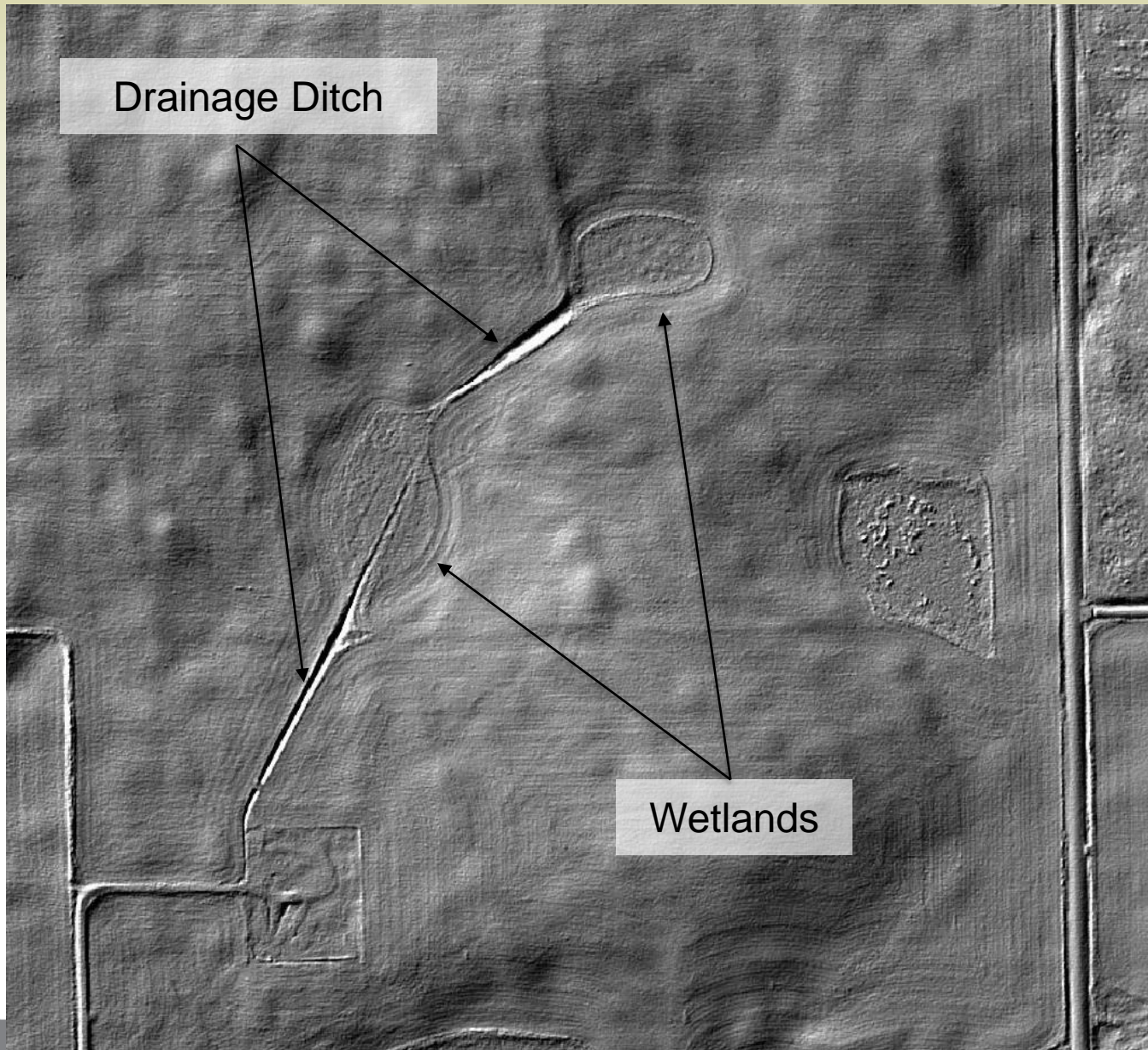
[sclare@fieraconsulting.ca](mailto:sclare@fieraconsulting.ca)

780-466-6554





# Emerging Tools - LiDAR



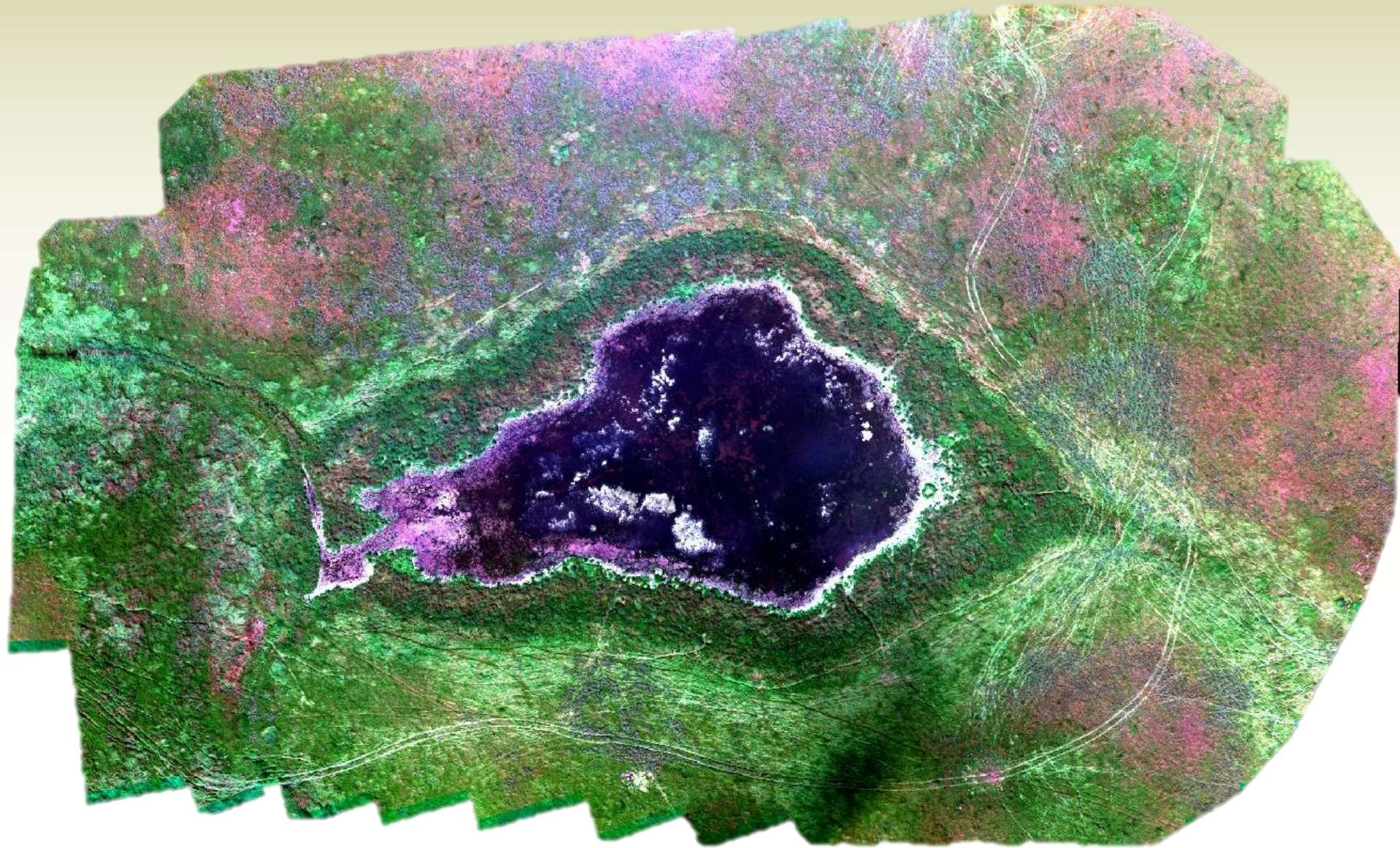


# Emerging Tools – Unmanned Aerial Vehicles



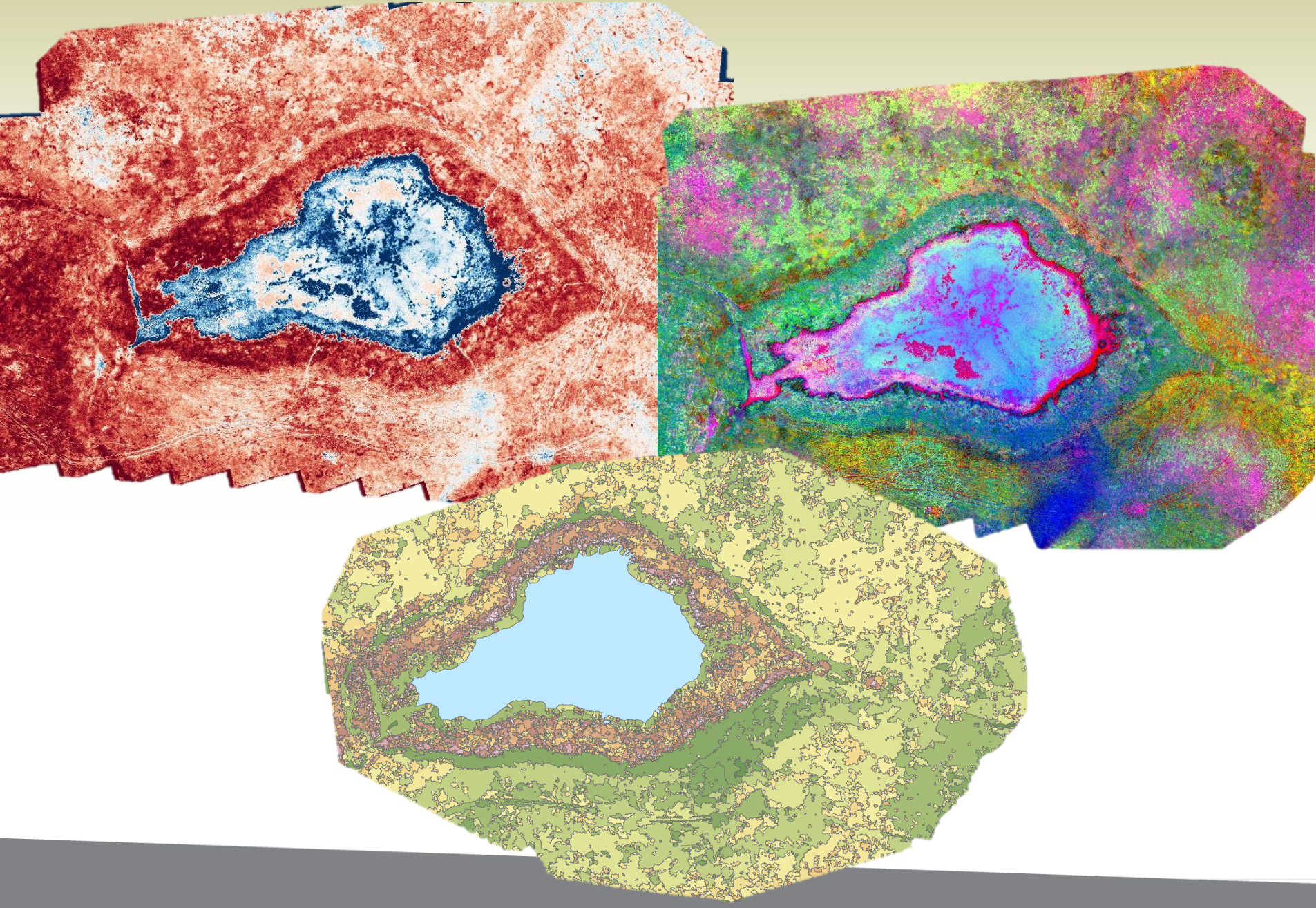


# Emerging Tools





# Emerging Tools





# Wetland Loss by Land Use

