Parkland County's Wetland Inventory and Historical Loss Assessment Project

Clean Air Council Green Infrastructure Workshop

April 28th 2017

TOWN OF HALTON HILLS

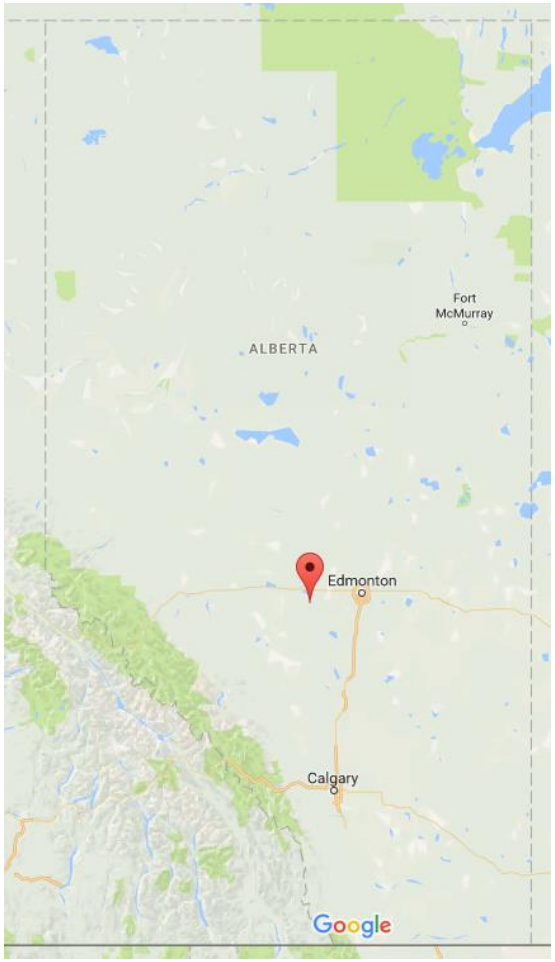
OFFICE OF SUSTAINABILITY

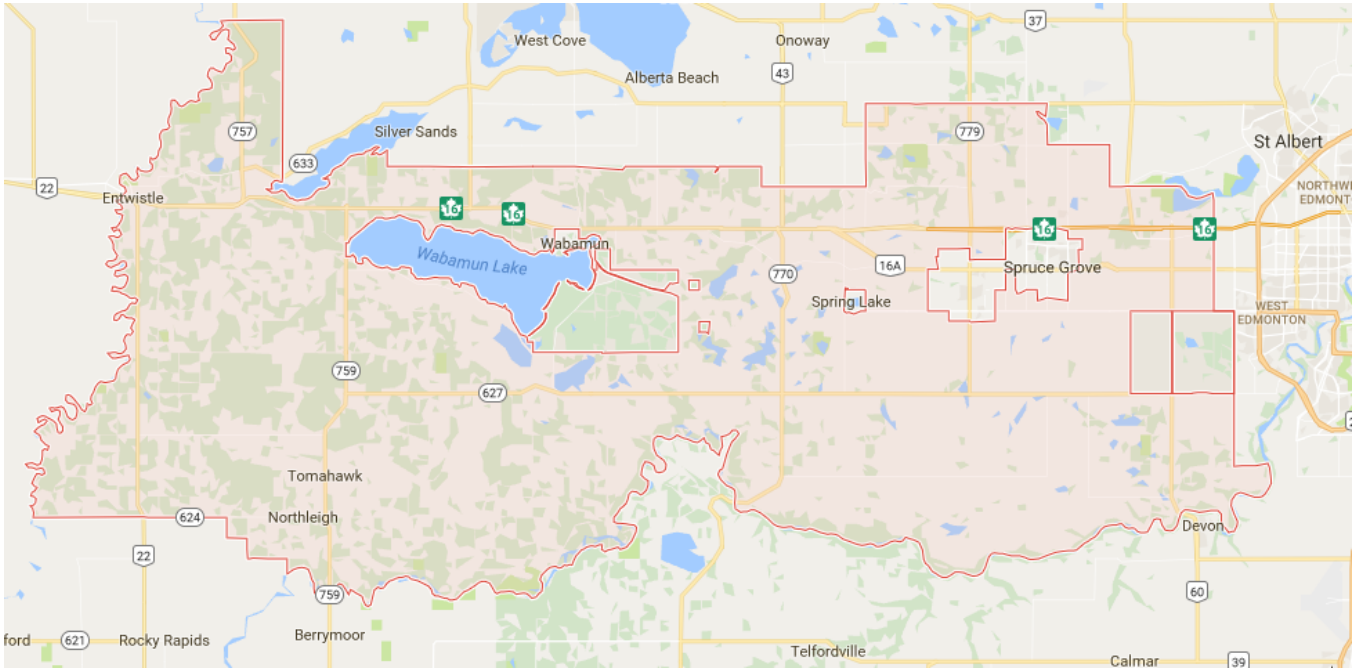
CULTURAL ECONOMIC ENVIRONMENTAL SOCIAL

TOWN OF HALTON HILLS

Working Together Working for You!

Geographical Context





240,000 Ha
30,000 people
330+ Country Residential Subdivisions

The Questions

1. How many, where are they, what type?
2. All wetlands are not equal, are some “worth” more than others?
3. What did we used to have
4. How much have we lost?

Project Goals:

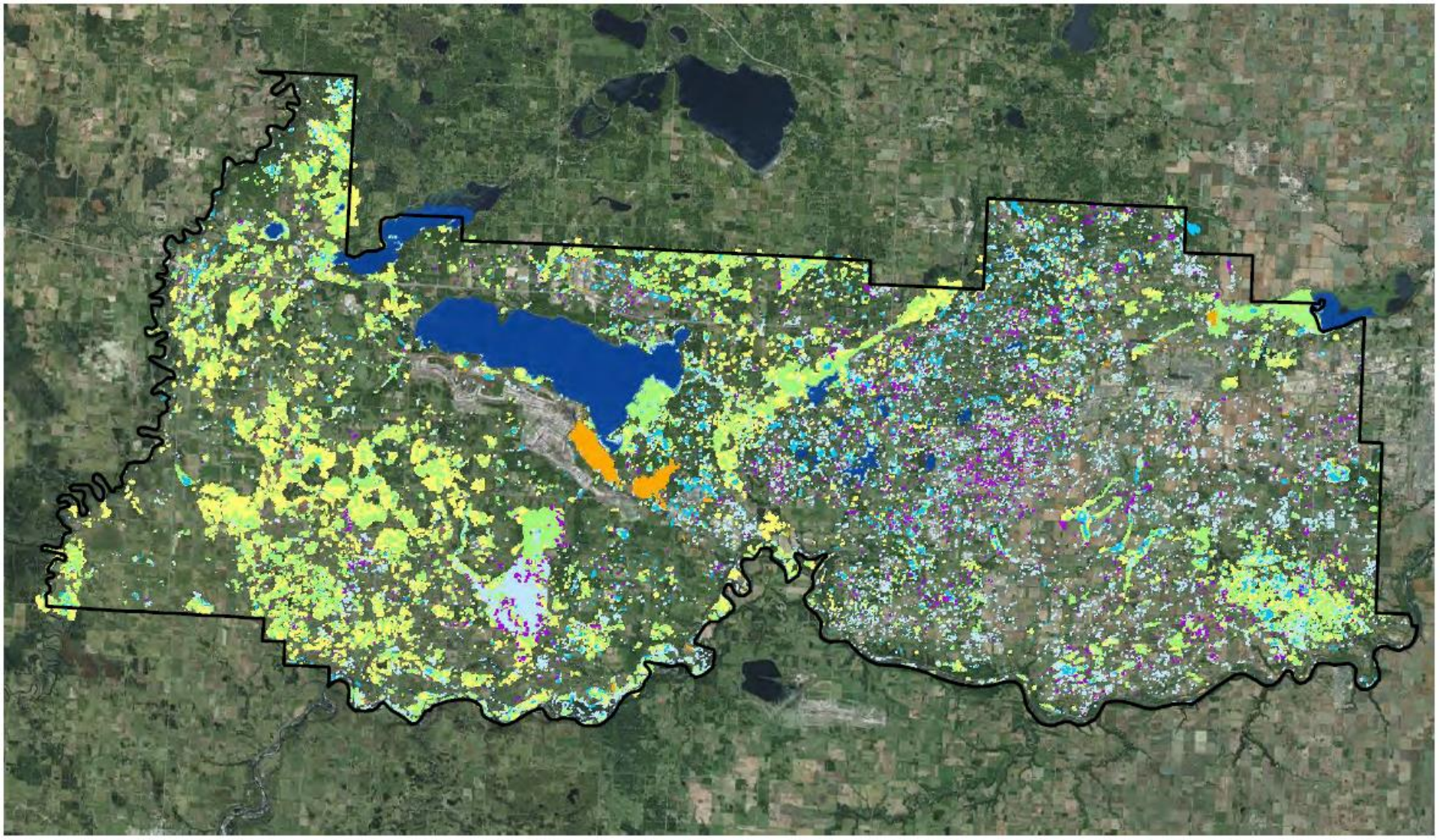
1. Inform the County's stewardship programs.
2. Inform the County's development decision-making process.
3. Track changes over time

Project Milestones

1. Current wetland inventory & classification
2. Assess wetland ecological value
3. Historical wetland inventory
4. Wetland loss assessment

Milestone 1: Current Wetland Inventory & Classification

1. Probability of depression/slope analysis
2. Probability of open water analysis
3. Vegetation analysis
4. RGBI ortho-photo analysis
5. A.W.C.S.


2013 Wetland Invenotry - Parkland County
Marsh
Open Water
Bog
Fen
Swamp
Named Lake
Anthropogenic
0 2.25 4.5 9 13.5 18
KM

Milestone 2: Wetland Ecological Value

Biodiversity value score

+

Ecological function value score

+

Hydrological value score

==========

Overall value score

CRITERION

1.0 Biodiversity value

1a

Sub-criterion 1a: Fish habitat

1a(i): Surface connection to fish-bearing waterbody**

1b

Sub-criterion 1b: Amphibian habitat

1b(i): Road density within 300m**

1b(ii): Wetland-wetland connectivity within 300m

1b(iii): Wetland density within 300m**

1b(iv): Cover of natural upland habitat within 300m

1c

Sub-criterion 1c: Waterbird habitat

1c(i): Road density within 500m**

1c(ii): Area of open water within 500m**

1c(iii): Waterfowl staging areas*

1c(iv): Waterfowl breeding areas*

1d

Sub-criterion 1d: Songbird, raptor & mammal habitat

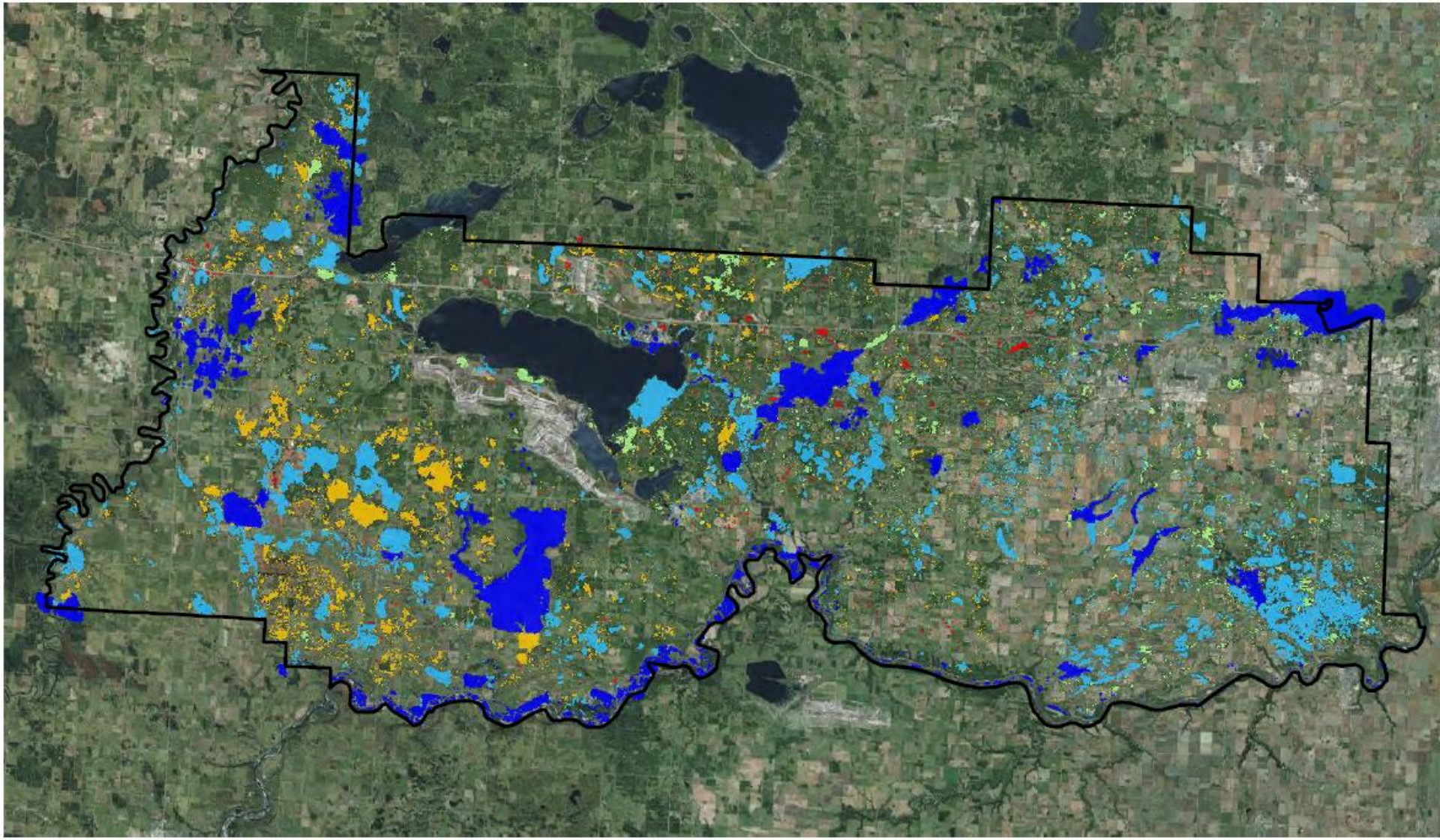
1d(i): Stepping stone habitat**

1d(ii): Sensitive raptor habitat*

1e

Sub-criterion 1e: Rare species habitat

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


Parkland County: Wetland Ecological Value
CRITERION 1: Biodiversity Value
Excellent
Very Good
Good
Moderate
Poor
0 2.25 4.5 9 13.5 18
KM

CRITERION

2.0 Ecological function

2a

Sub-criterion 2a: Habitat patch size & complexity

2a(i): Wetland or wetland complex size*

2a(ii): Wetland-upland complex size

2a(iii): Wetland shoreline complexity*

2a(iv): Wetland habitat richness within 1km*

2b

Sub-criterion 2b: Habitat intactness

2b(i): Linear disturbance within 1km

2b(ii): Road density within 1km*

2a(iii): Distance to nearest road*

2a(iv): Distance to developed land*

2a(v): Land use intensity within 1km*

2c

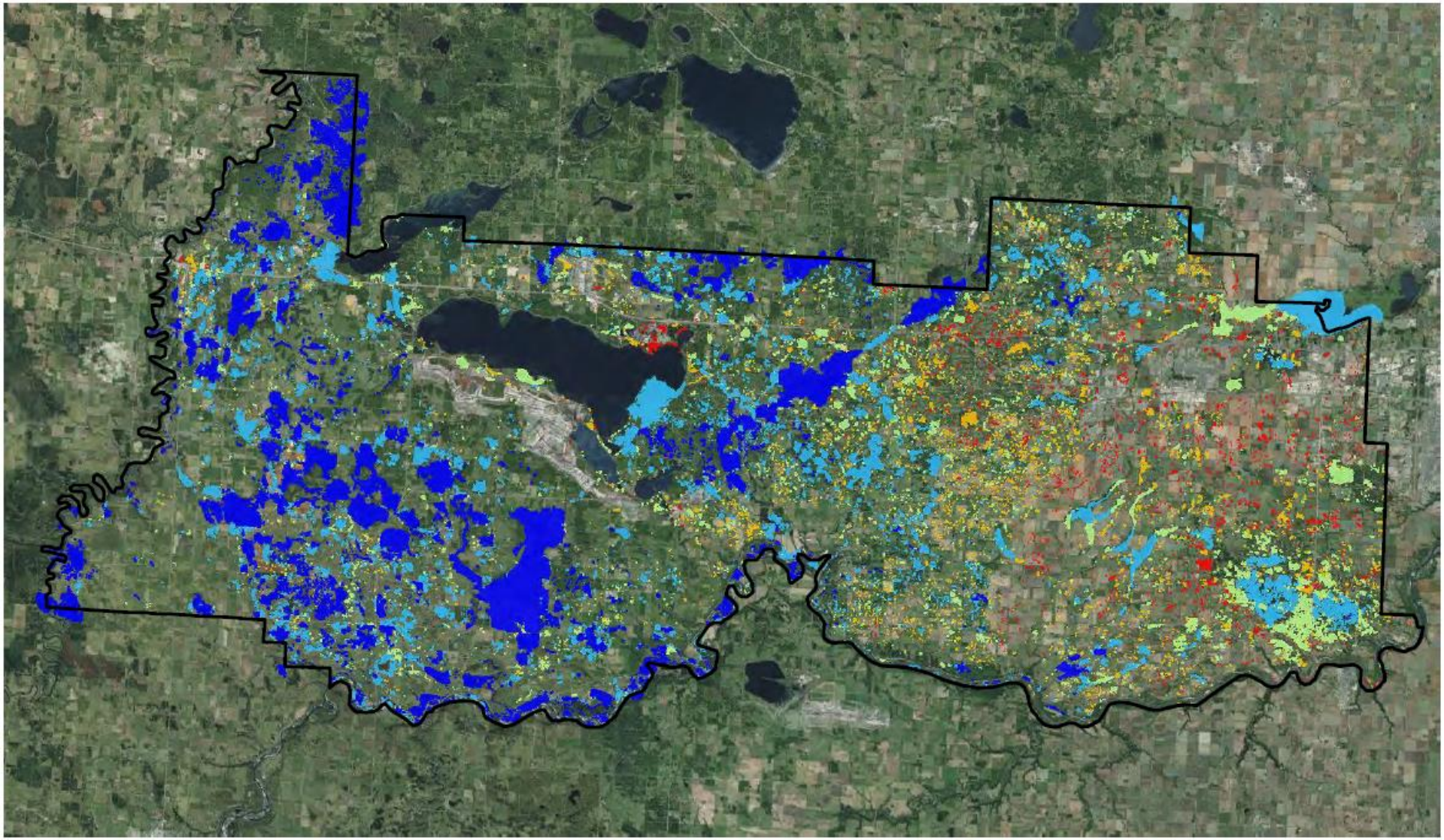
Sub-criterion 2c: Landscape Habitat Connectivity

2c(i): Wetland -upland connectivity

2c(ii): Wetland-wetland connectivity within 1km

2c(iii): Wetland density within 1km*

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


Parkland County: Wetland Ecological Value
CRITERION 2: Ecological Function
Excellent
Very Good
Good
Moderate
Poor
0 2.25 4.5 9 13.5 18
KM

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

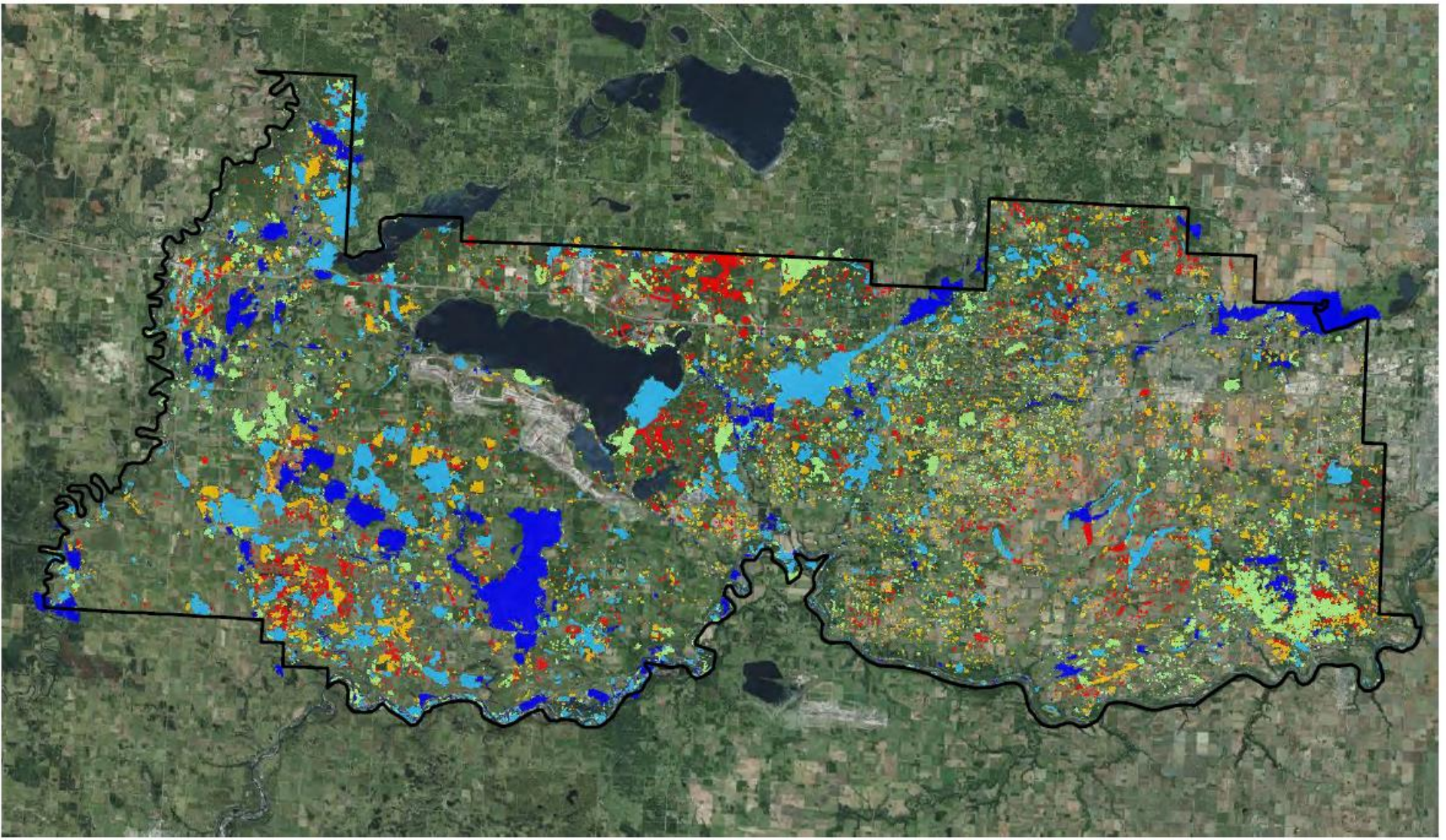
Sub-criterion 3b: Stream flow support

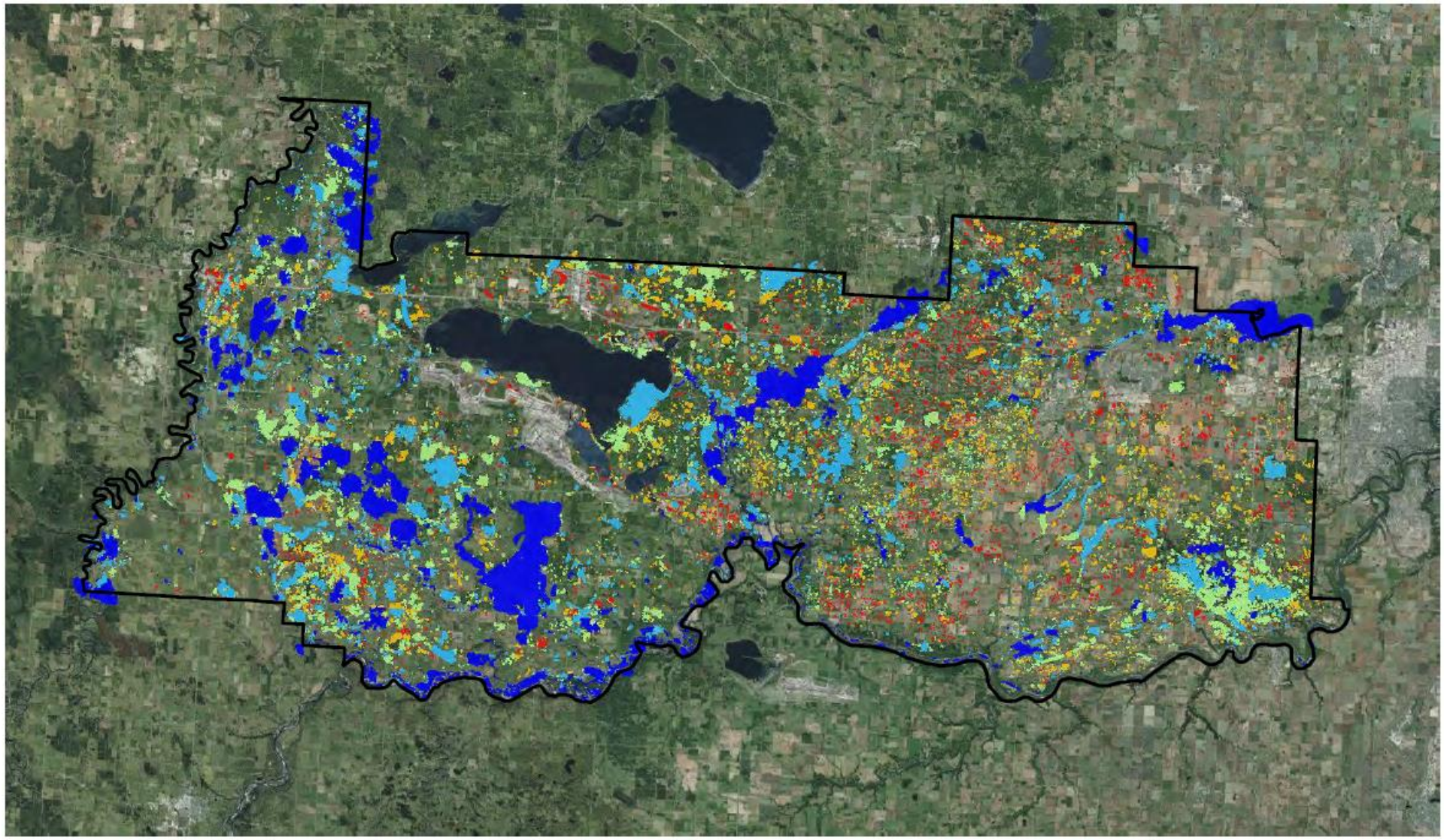
- 3b(i): Springs & groundwater discharge areas**
- 3b(ii): Surface channel connection*
- 3b(iii): Riverine & lacustrine wetlands**

3c

Sub-criterion 3c: Sediment & nutrient reduction

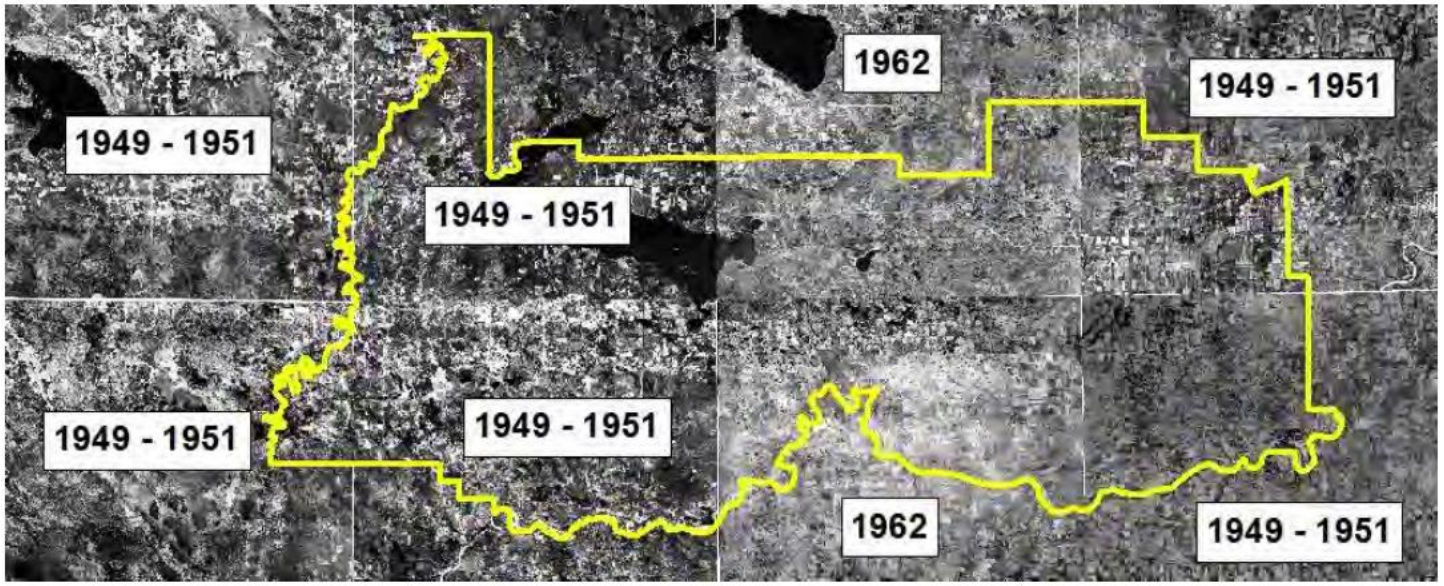
- 3b(i): Slope surrounding wetland**
- 3c(ii): Vegetated area within basin*
- 3c(iii): Wetlands located in floodways or riparian areas*


Parkland County: Wetland Ecological Value
CRITERION 3: Hydrologic Function & Water Quality Improvement
Excellent
Very Good
Good
Moderate
Poor
0 2.25 4.5 9 13.5 18
KM


Parkland County: Wetland Ecological Value
FINAL AGGREGATED SCORE
Excellent
Very Good
Good
Moderate
Poor
0 2.5 5 10 15 20
KM

Milestone 3: Historical Wetland Inventory

1. Historical ortho-photo mosaic + georectification
2. Object-based Image analysis
    1. Eliminate non-wetland pixels
    2. Manual wetland delineation



Milestone 4: Wetland Loss Assessment