

# Introduction to Risk Management Mapping

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# Mitigation Project Ideas and Approaches

Disaster Financial  
Assistance Maps

Risk Mapping



## Education

- Water Conservation and Awareness
  - Workshops – Cover Crops, AMP Grazing, Soil Health
  - Residential Resiliency
-

# Shelterbelts

- Creating a “wall” of trees and shrubs to reduce wind speeds
  - Can provide safer driving conditions
  - Reduce wind erosion and improve air quality
  - Can be used to capture snow
- 





# Heating and Cooling Centres

- Outfitting Centres with Supplies
  - Back-up Generators
  - Education and Awareness
-



## Culvert Crossings

- Typically increasing the flow of water through roads due to some problem
- Reduces the risk of road damage or washouts
- Improve access in emergencies
- Consider reducing culvert capacity in some cases?

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## Considerations

- Moving or creating issues downstream



## Road Raising

- Reduces likelihood of overtopping
  - Higher headwaters increase culvert capacity
  - Improves access in emergencies
  - Can reduce peak flows downstream by acting as temporary retention
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# Water Retention

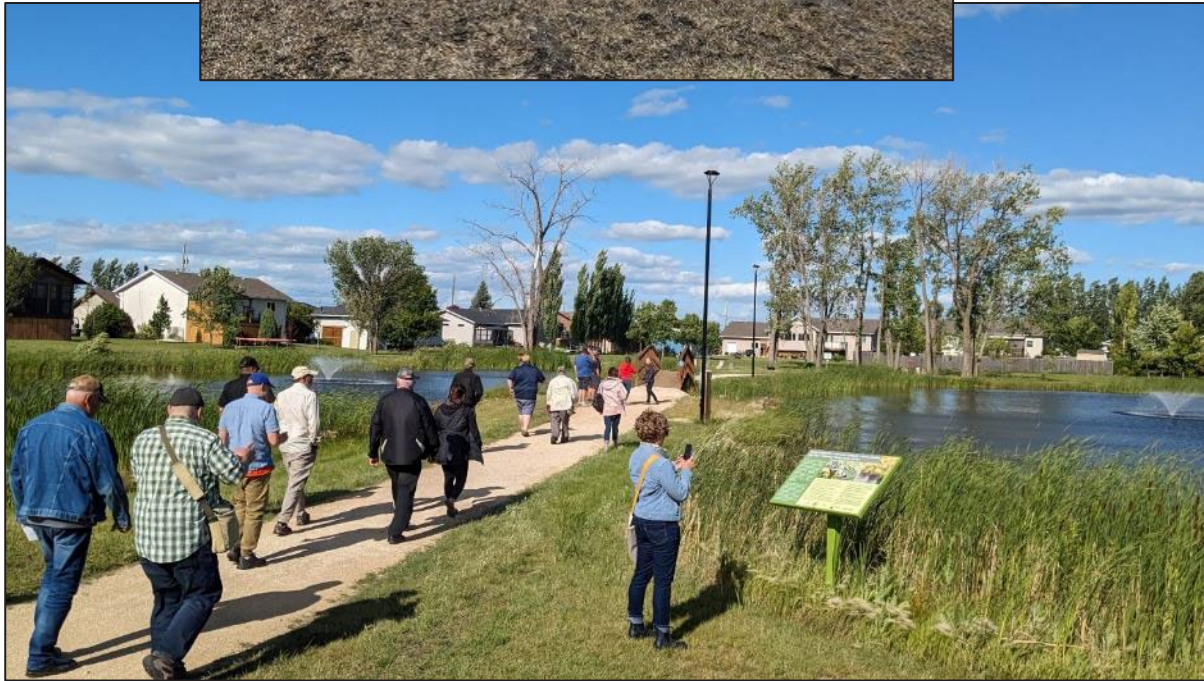
- Permanent storage, dry dams, temporary back flood, wetlands
- Can be an alternative to drainage
- Provides drought and wildfire benefits
- Can provide habitat and retain nutrients
- Can help with groundwater recharge
- Can provide direct economic benefits

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## Considerations

- Technical design and project management
- Location – Soils, topography, land ownership
- Highly variable cost







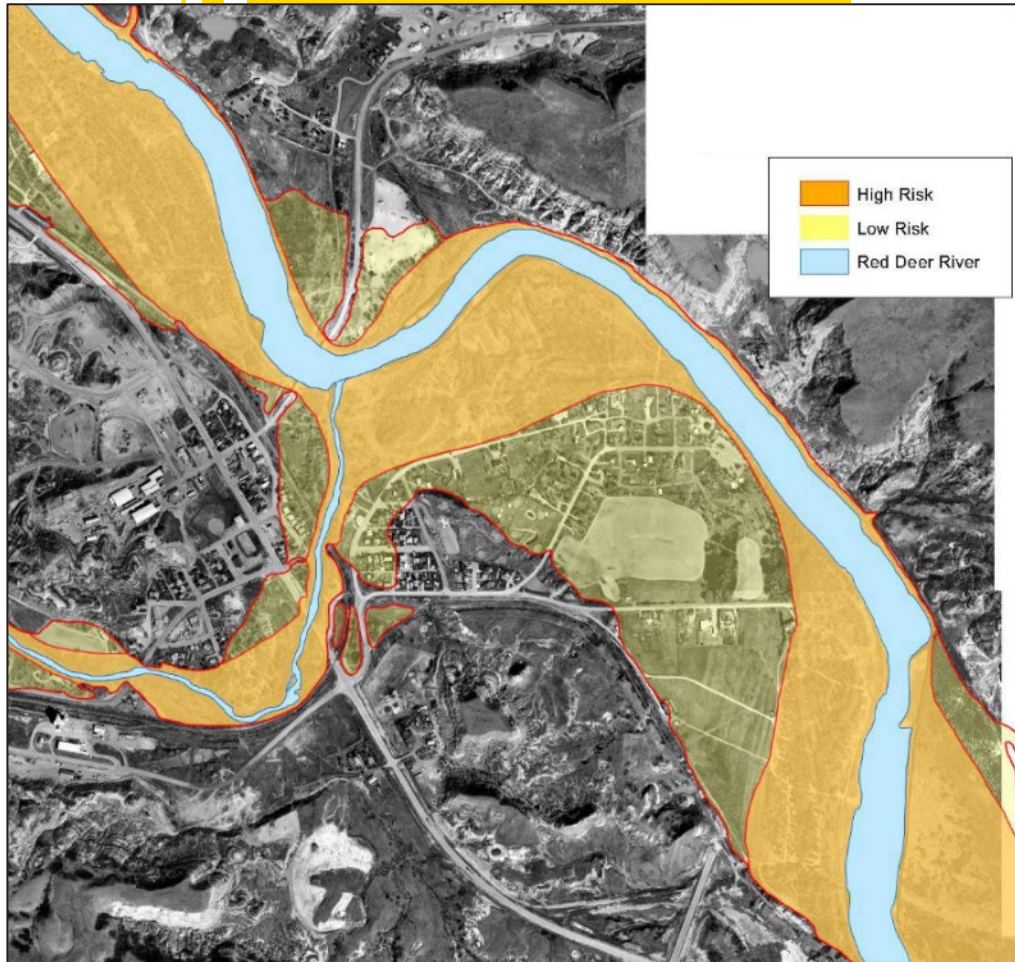
## Drainage

- Can be very effective at moving water
- Changing or enhancing the movement of water

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## Considerations

- Can move a problem downstream
- Can have negative impacts



# Elevation and Land use Planning

- Raising structures to be above flood levels
- Setting standards for minimum build height
- Defining areas where certain development can occur

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## Considerations

- Maintenance falls to landowners
- Opposition from homeowners or developers



## Community Dikes

- Protect whole community areas

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## Considerations

- Ongoing maintenance



# Road Decommissioning

- Removing or stopping the maintenance on a section of road
- Maintenance costs can be greater than the benefits of access
- “Downgrading” to a rock ford crossing or seasonal roads

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## Considerations

- Resistance from residents



## Fire Breaks

- Vegetation/Fuel Free Lines
  - Break up large sections of land without roads
-



## MORE Mitigation Projects

- Roof Sprinklers
- Erosion Control
- Infrastructure Relocation
- Building Redundancy
- Air Quality / HEPA Filtration
- Disaster Alerting Systems
- Policy Changes



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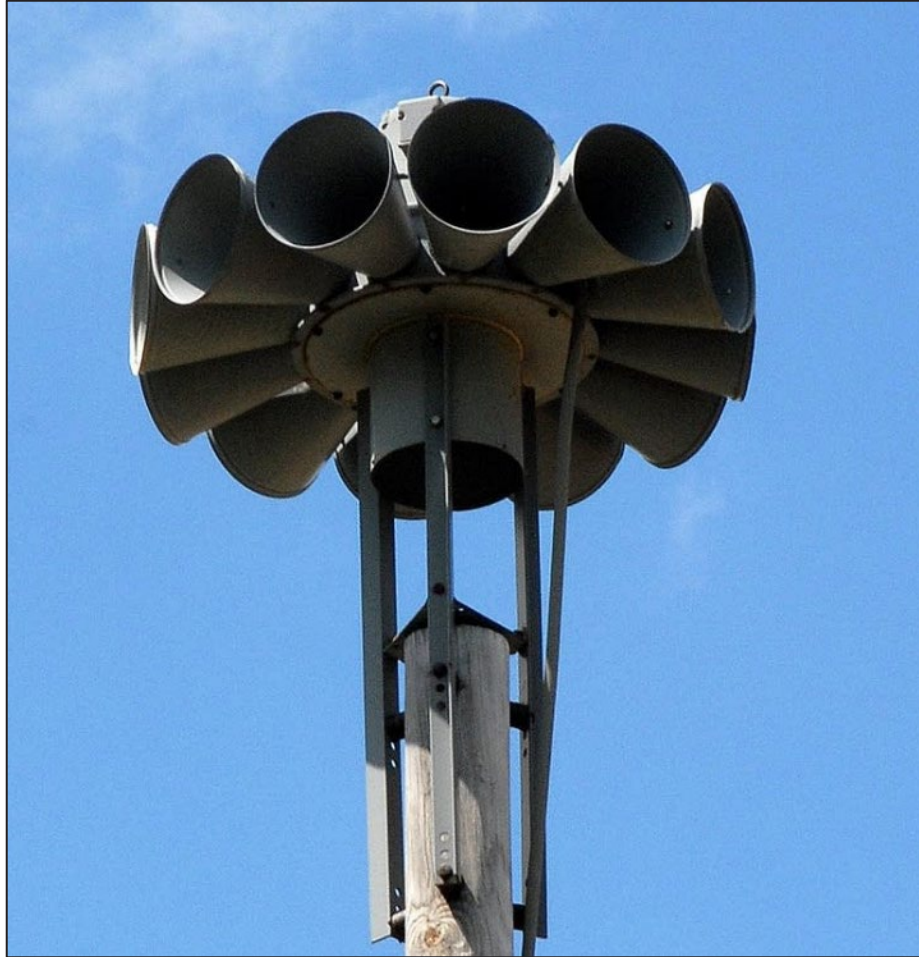
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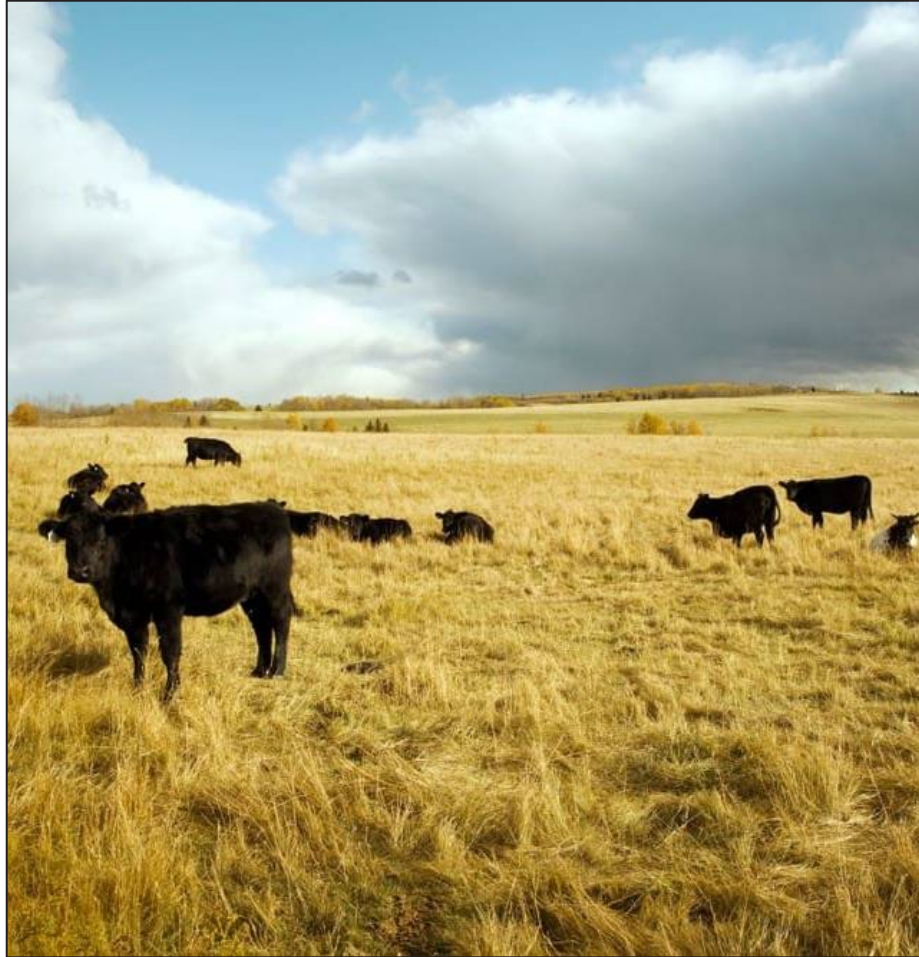
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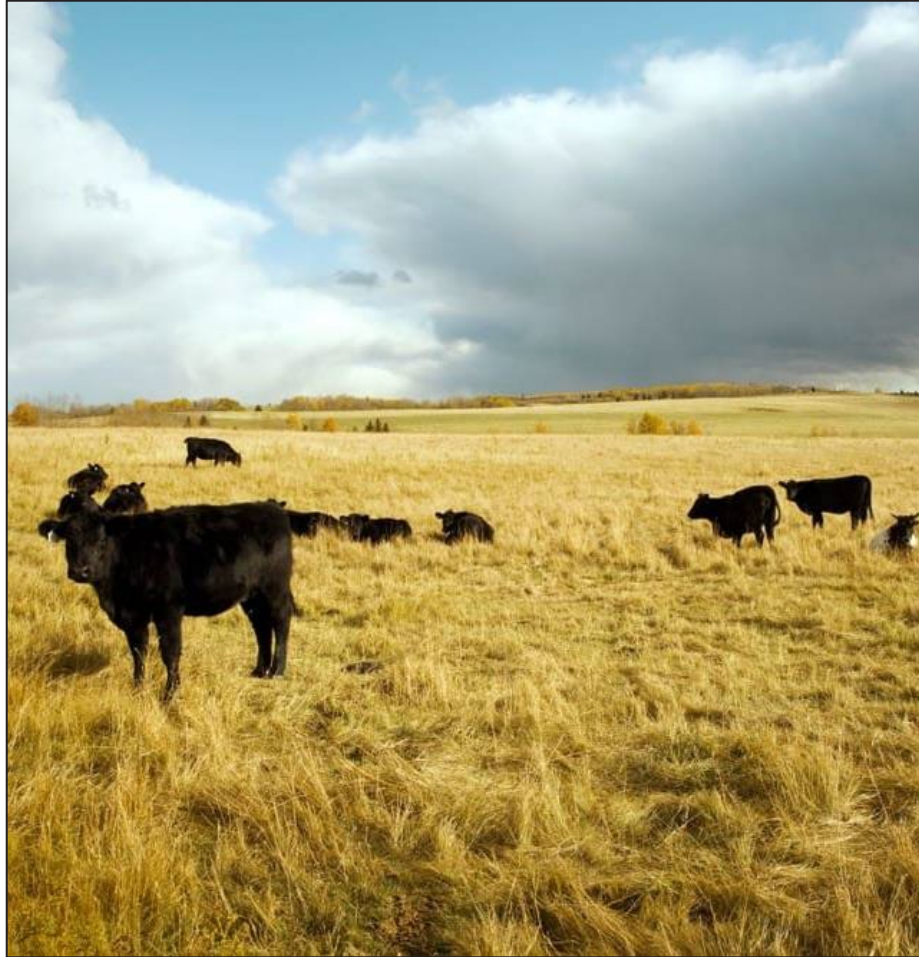
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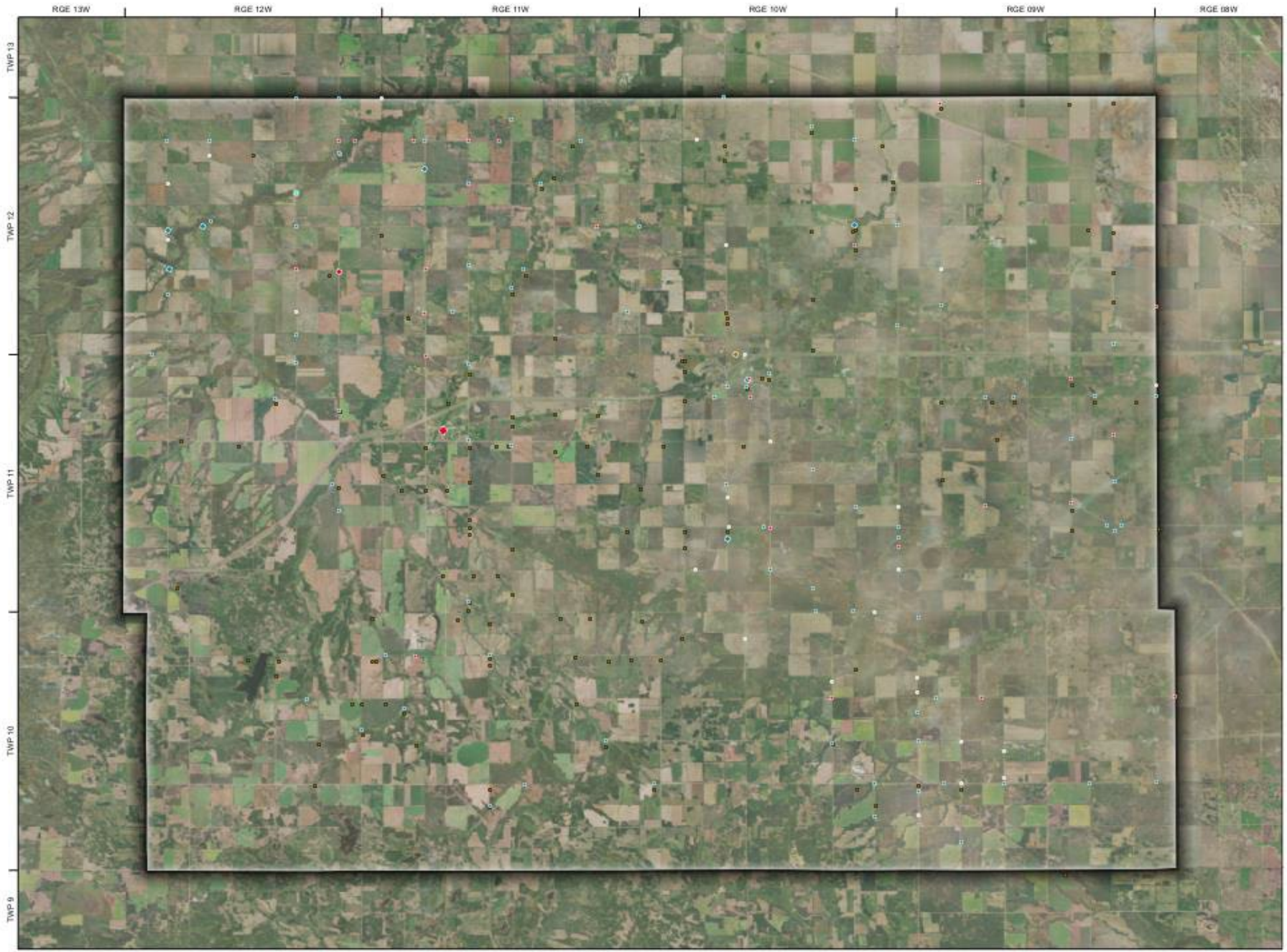
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- Erosion Control
- Infrastructure Relocation
- Building Redundancy
- Air Quality / HEPA Filtration
- Disaster Alerting Systems
- Policy Changes
  - Road Allowances
  - Fire Fighting Capacity
  - Municipal Building Codes

Mitigation  
Project Ideas

# **Disaster Financial Assistance Maps**

Risk Mapping



- Road
- Bridge
- Culvert
- Ditch
- Black Outer Ring = Site Claim at \$0
- Dams & Dikes
- Building
- Sewer & Water Lines
- Undefined

**Disaster Financial Assistance: 2011-2022**

Total Claims:	100	Claim Sum:	\$1,000,000
Highest:	\$60,000	Average:	\$10,000
Roads:	\$50,000	Dam/Dikes:	\$0
Bridges:	\$99,000	Buildings:	\$0
Culverts:	\$500,000	Sewer/Water:	\$0
Ditches:	\$350,000	Undefined:	\$1,000

**About This Map**  
 This map shows Disaster Financial Assistance (DFA) damage sites from the MUNICIPALITY OF NORTH NORFOLK, if a local authority was amalgamated in 2015. For previous DFA damaged sites would still be shown on this map. Location information was gathered from individual Site Damage Reports produced by an engineering service provider (ESP). Damage costs only show DFA eligible expenses reimbursed by Manitoba Emergency Management Organization (EMO). DFA damage sites between 2011 and 2022, submitted to EMO before Oct. 2023, are shown on this map.

**Please Note:** This data is collected by Manitoba through an ESP on behalf of each local authority. Manitoba treats this data as confidential to each local authority. This map is intended to be viewed by the local authority for which the displayed data was produced.

To display stacked points, the tool "Display Points" was used to allow for all points to be partially visible. Points are scaled by the value field. The largest point represents all values above \$5K, while the smallest represents all values below \$2,500.

**WORK INFORMATION**

More information on this map can be obtained by contacting:  
 Recovery and Mitigation Branch  
 Emergency Management Organization  
 Manitoba Transportation & Infrastructure  
 1325-605 Broadway  
 Winnipeg MB R3C 3L6  
 Phone: (204) 945-3050  
 Toll Free: 1-888-267-8298  
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 EMOMitigation@gov.mb.ca

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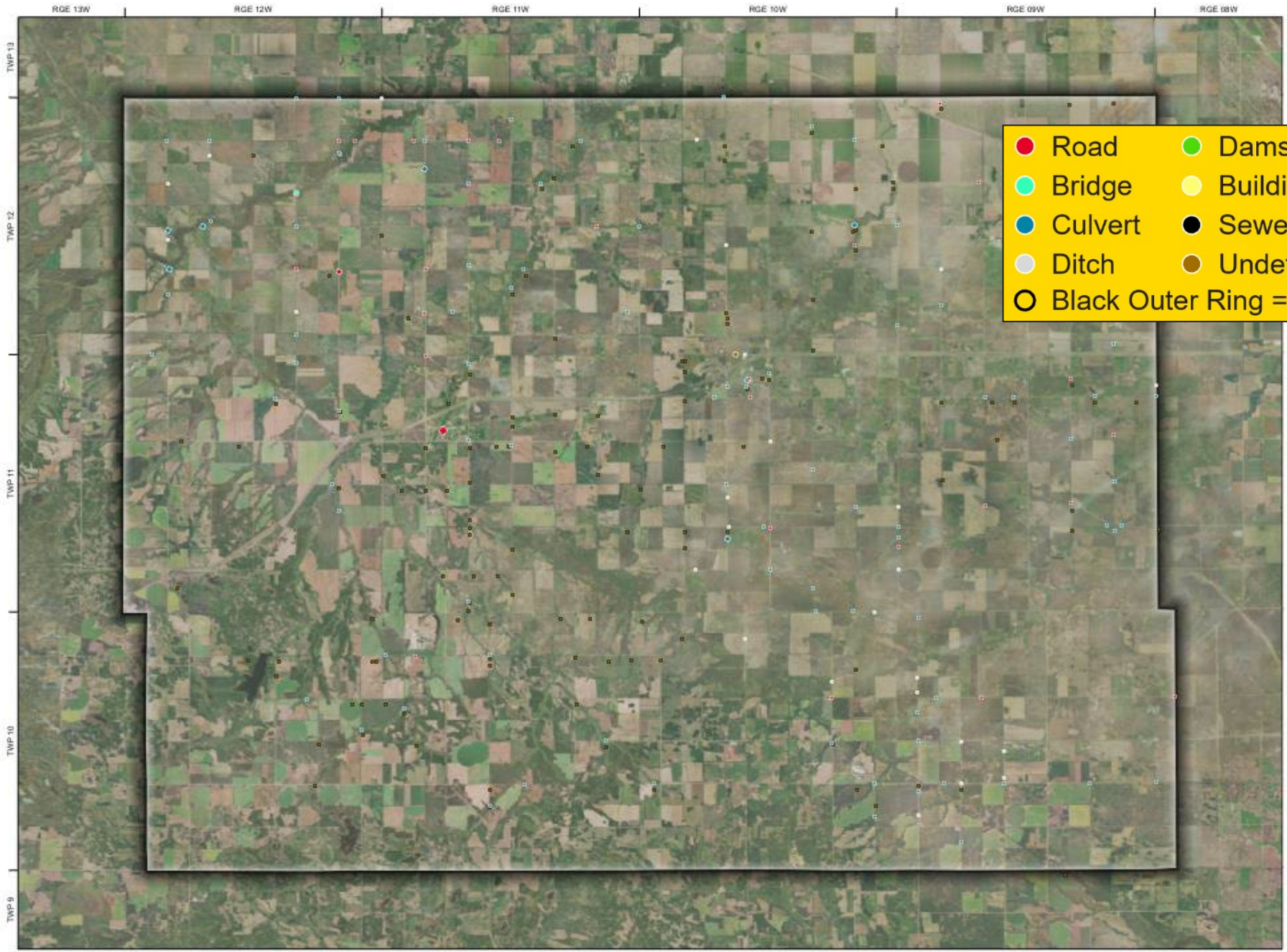
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**MUNICIPALITY OF MANITOBA**  
 Public Sector Disaster Financial Assistance Claims







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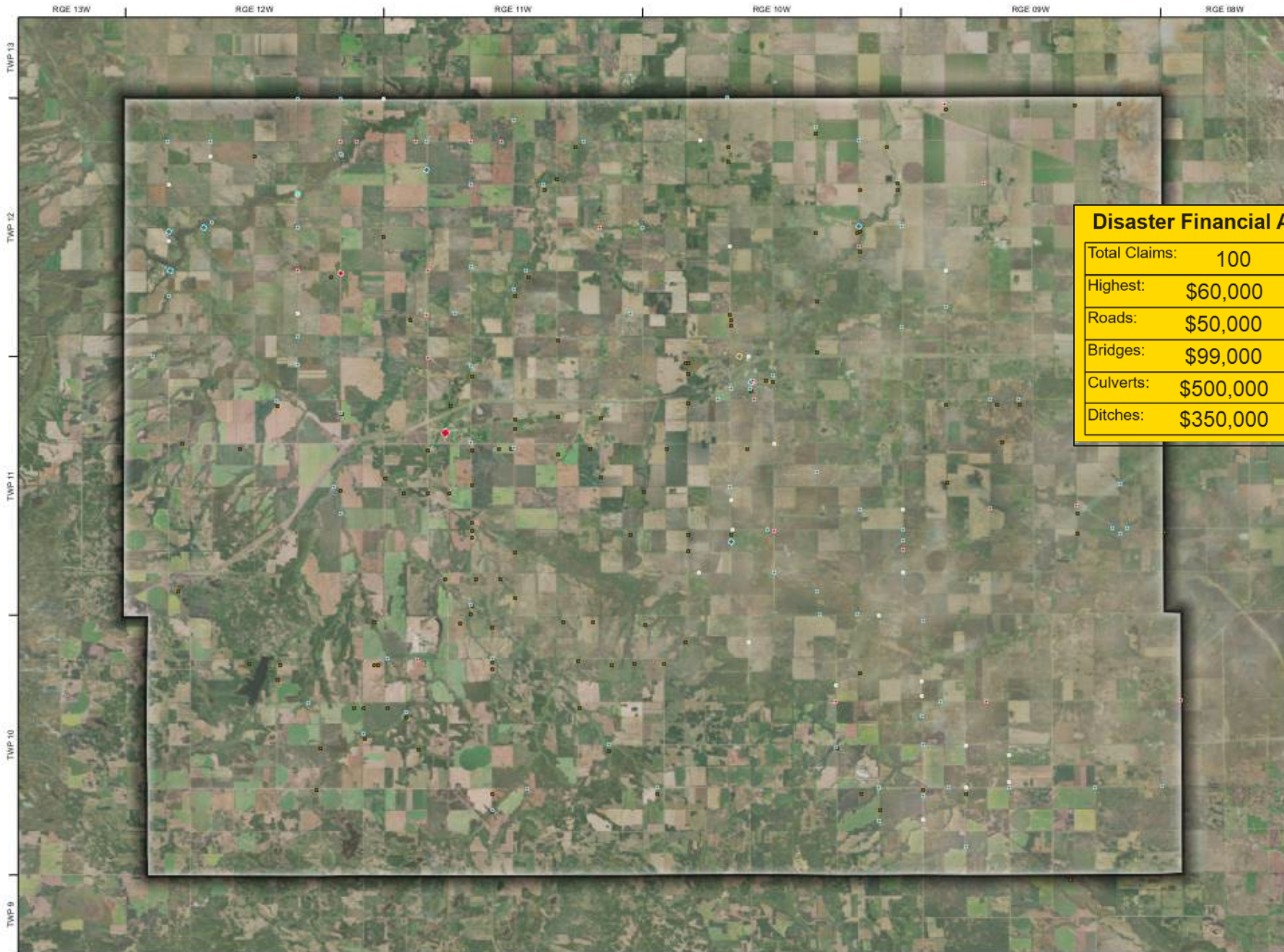
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**MUNICIPALITY OF MANITOBA**  
 Public Sector Disaster Financial Assistance Claims





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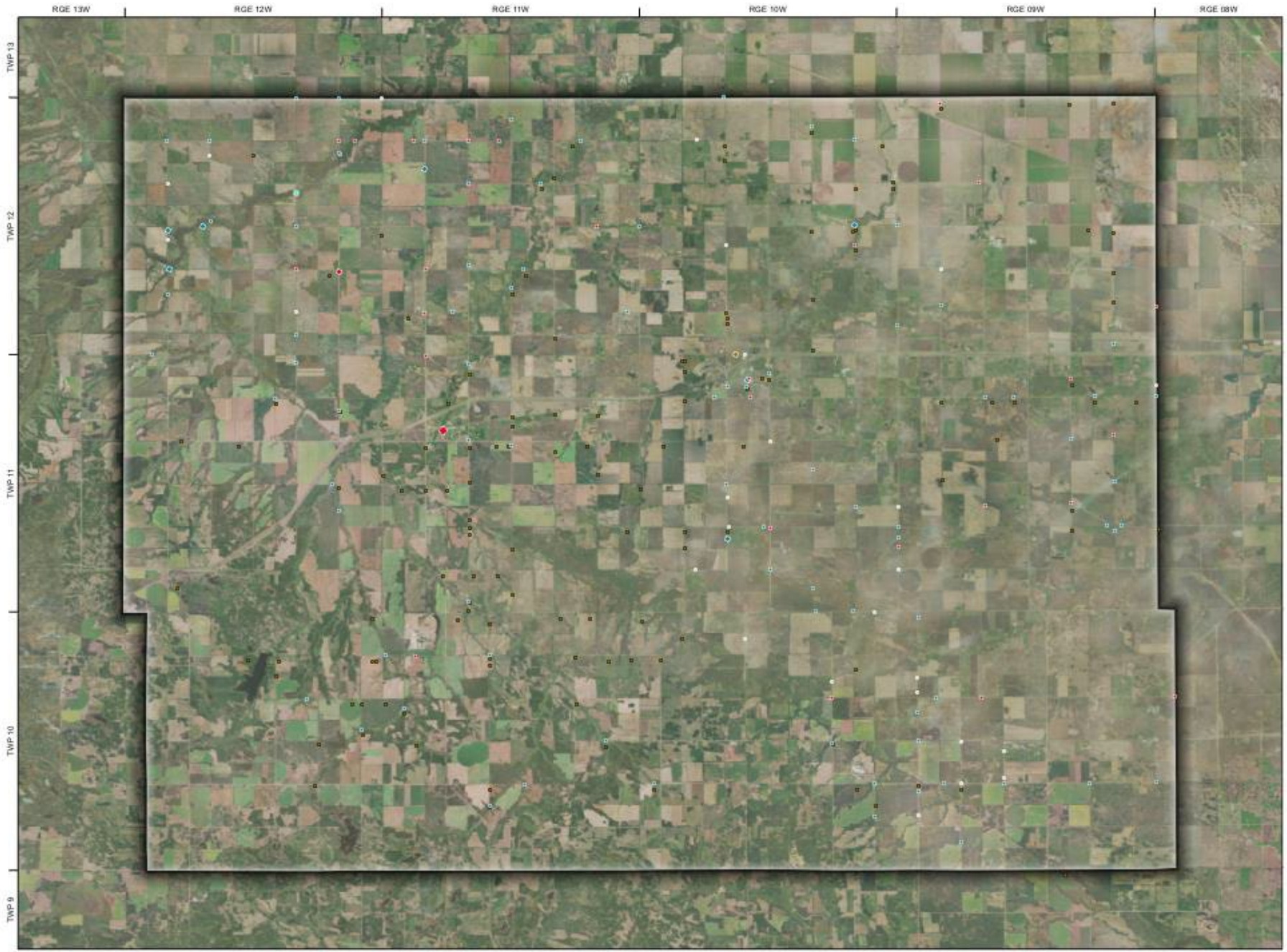
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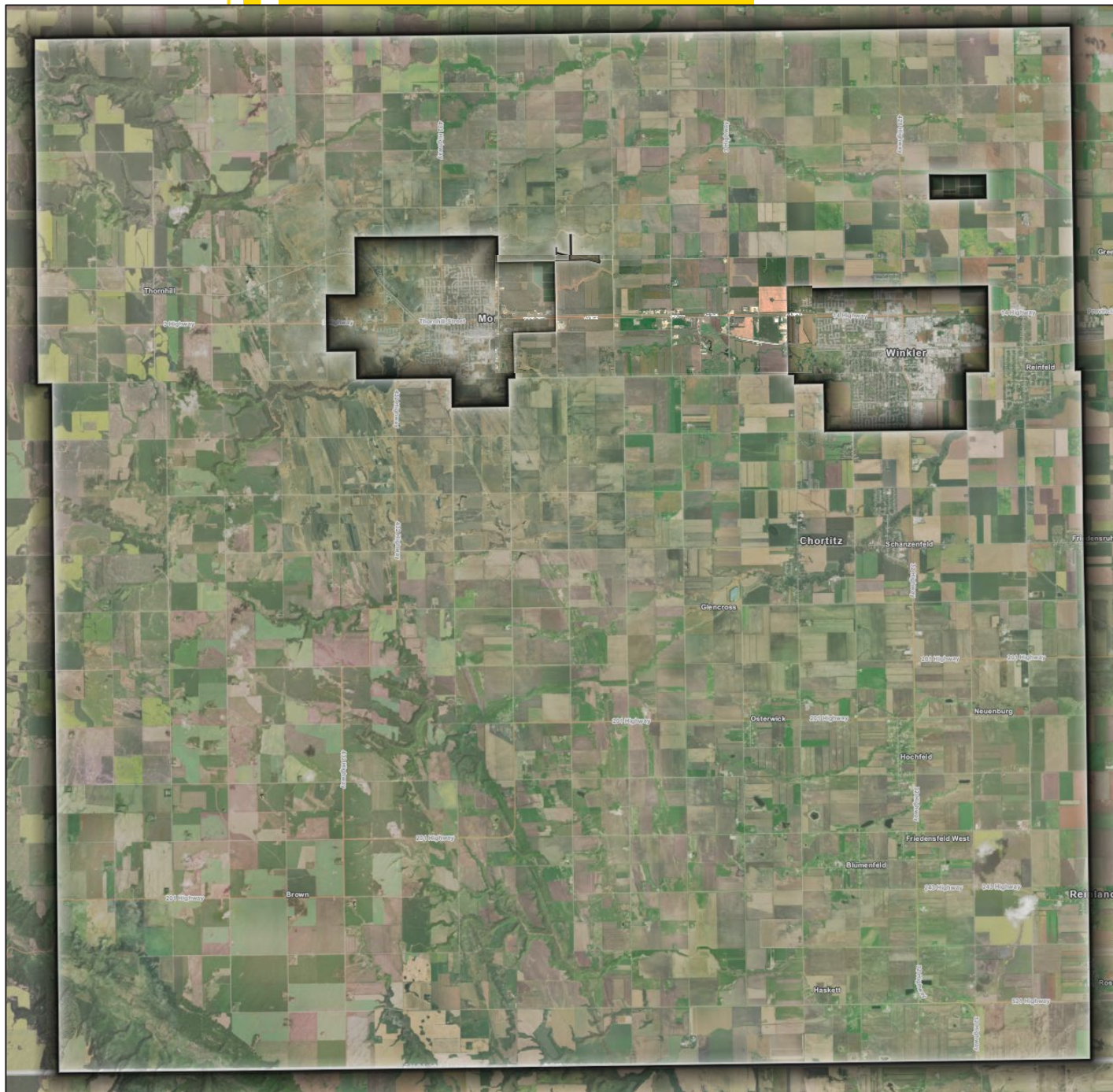
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Project Ideas

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**Risk Mapping**

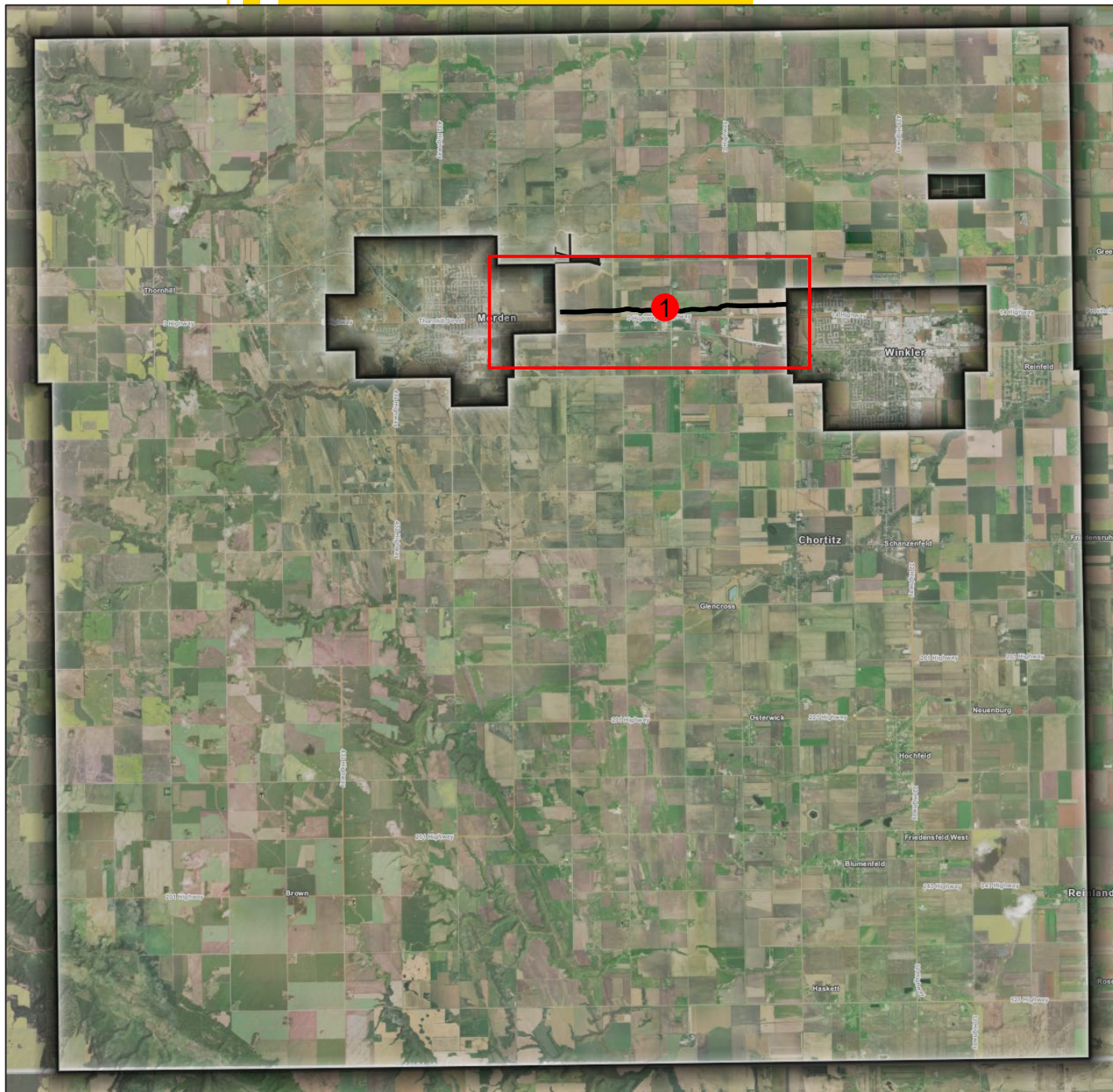


## Goal

- Identify Mitigation Projects
- Think Proactively
- Consider New Approaches
- Utilize Disaster Financial Assistance Data

## Feel Free To

- Draw All Over the Map
- Identify Problem Areas
- Dream Big
- Put Up What You Want
- Look at Other Maps



1. Highway Shelterbelt

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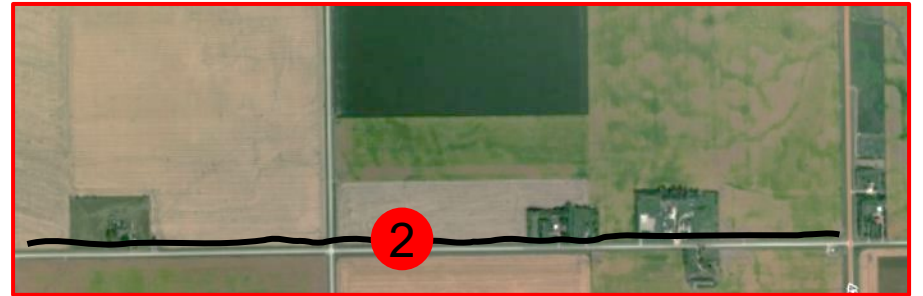
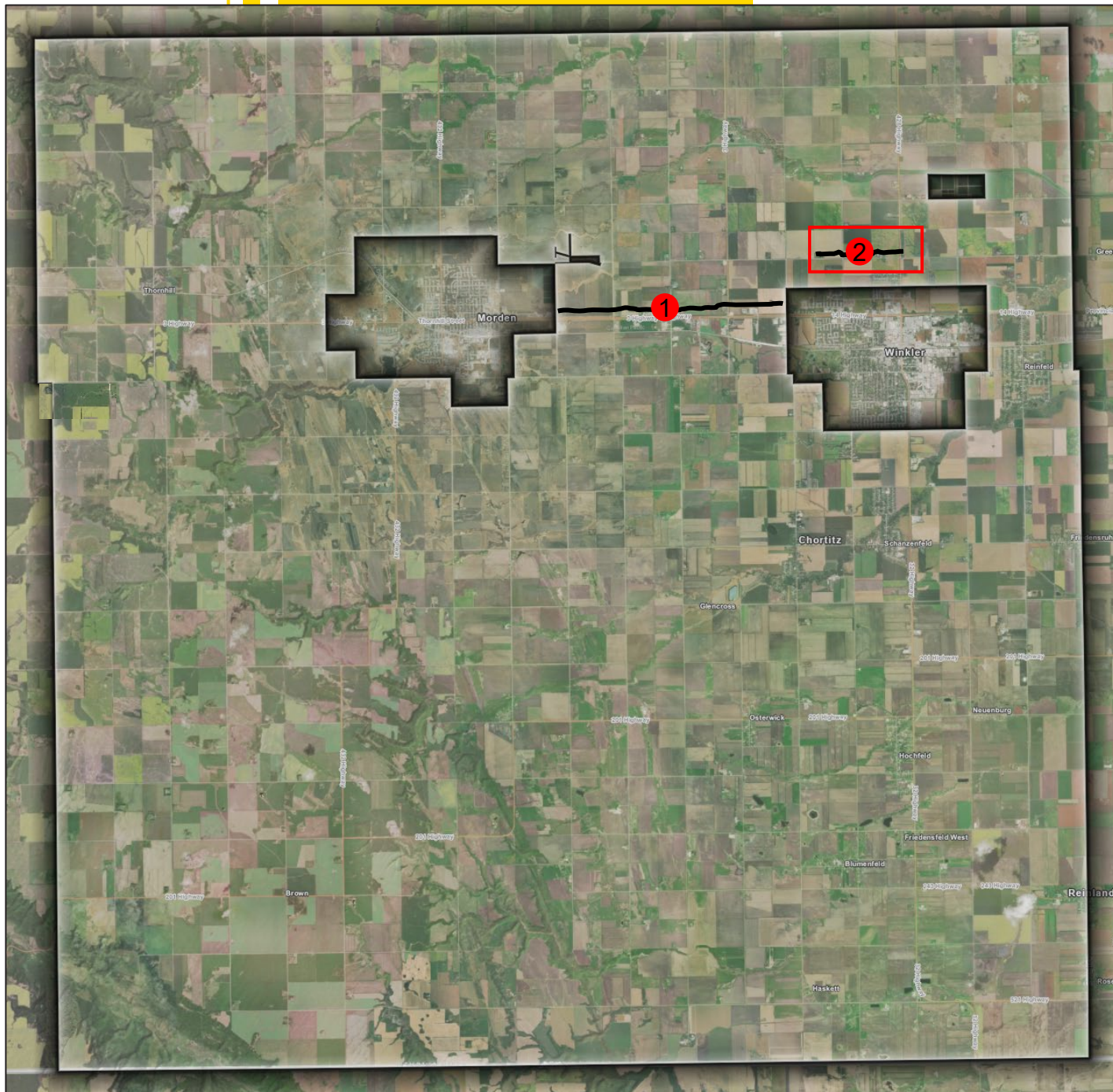
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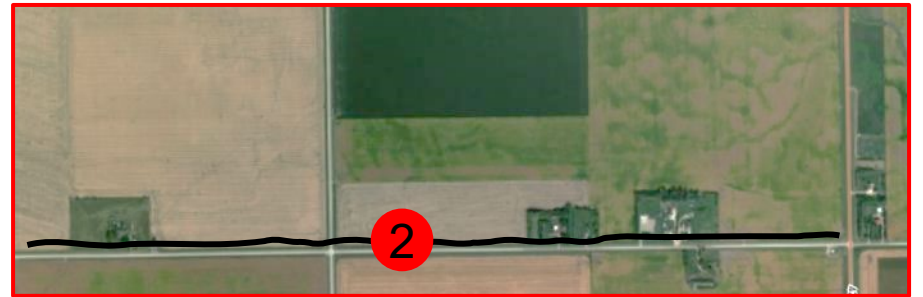
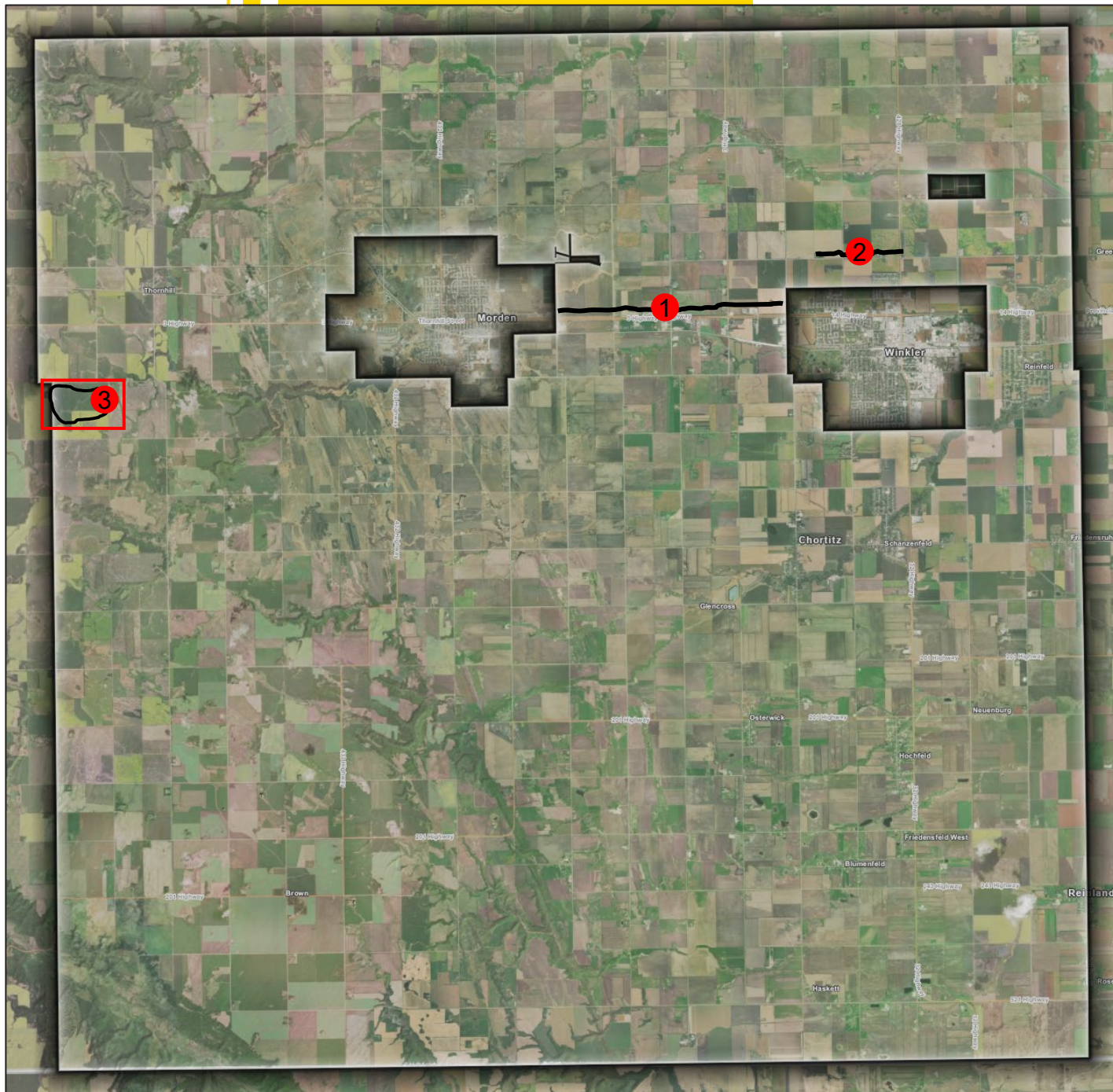
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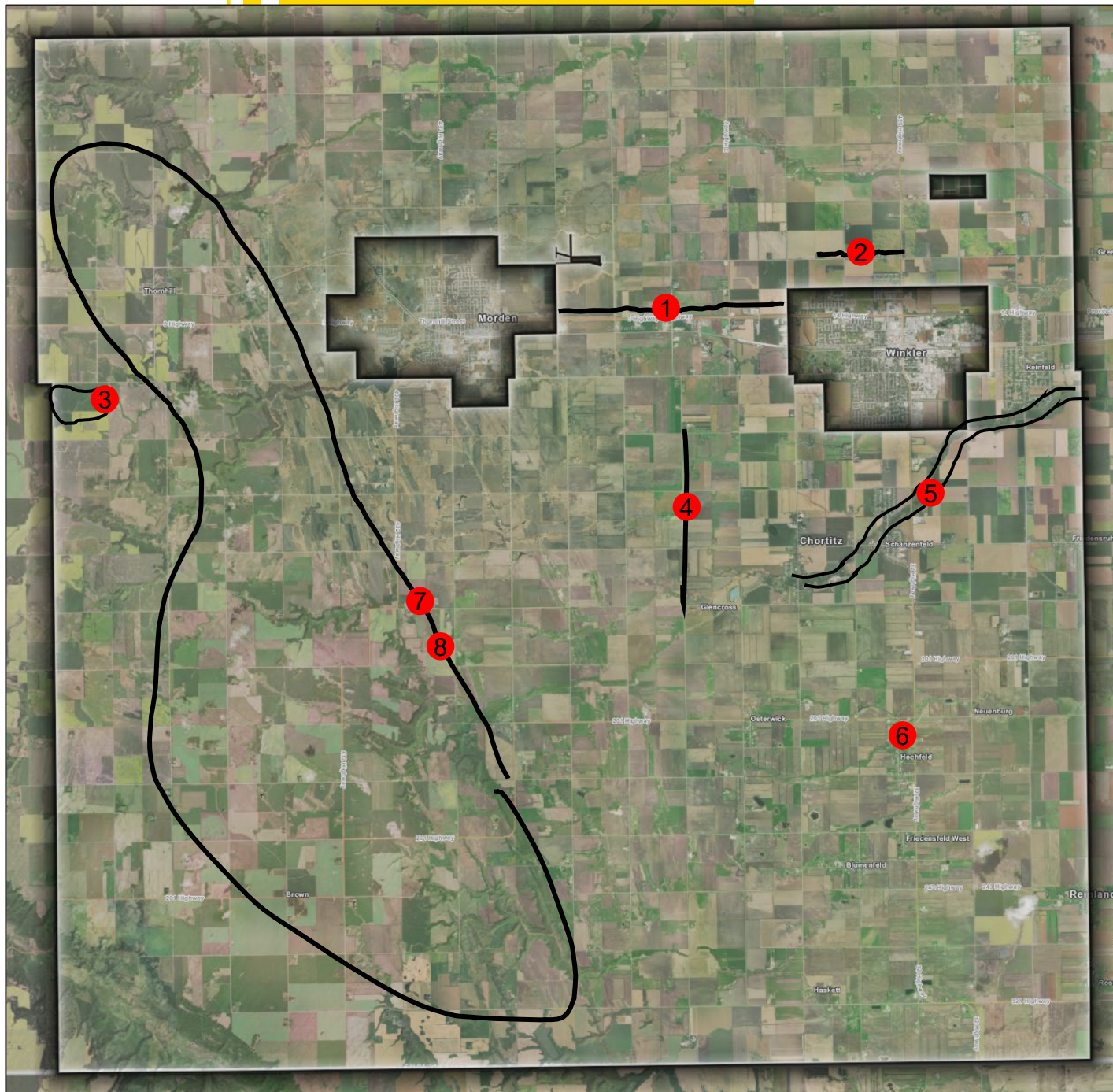
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- 1. Highway Shelterbelt
- 2. Road 14N Drainage







## Mitigation Projects

1. Highway Shelterbelt
2. Road 14N Drainage
3. Bob's Small Dam
4. Road Raising
6. School Air Filtration
7. Escarpment Water Retention
8. Forestry Management

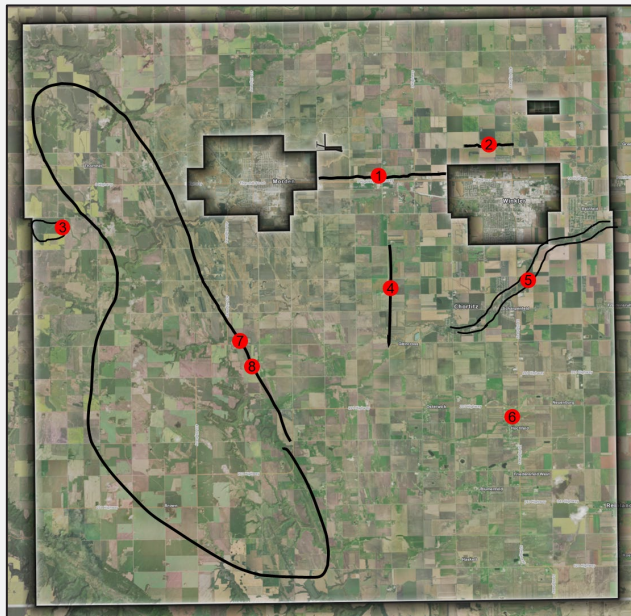
## Mitigation Approaches

5. Development Requirements
- Increase Firefighting Capacity
- Manage / Retain Crown Lands
- Road Allowance Use

## Mapping Exercise Instructions

1. Locate and move to your local authority's map
2. Think of a mitigation project or approach
3. Draw project location with a sharpie marker
4. Place a numbered sticker on the map where you drew
5. Write the sticker number and title of the project on the paper next to the map.
6. Think of more projects!

\*There will be an exercise after lunch where we go into project details



Mitigation Projects	
1.	Highway Shelterbelt
2.	Road 14N Drainage
3.	Bob's Small Dam
4.	Road Raising
6.	School Air Filtration
7.	Escarpment Water Retention
8.	Forestry Management
General Approaches	
5.	Development Requirements
	Increase Firefighting Capacity
	Manage / Retain Crown Lands
	Road Allowance Use

## Prompts

- Where is water accumulating, what is upstream?
- Changes in land use, drainage, cover cropping, bluff removal
- Where have recent projects been built? Did they help?
- Are there landowners who may be open to project partnership?
- Think of recent events and historic events
- Where is development occurring or being planned?

## Project and Approach Ideas

- Water Retention
- Road or Home Raising
- Dikes
- Land Use Planning
- Fire Breaks
- Roof Sprinklers
- Shelterbelts
- Heat/Cool Centres
- Air Quality
- Crown Land Management
- Culvert Crossing
- Drainage
- Forest/Woodlot Management
- Infrastructure Relocation
- Decommission Road/Bridge
- Erosion Controls
- Culvert Crossing
- Education
- Alarm Systems
- Policy / By-Laws