Soils and Agricultural Land Use Planning: Foundations for Sustainable Development

Speakers:

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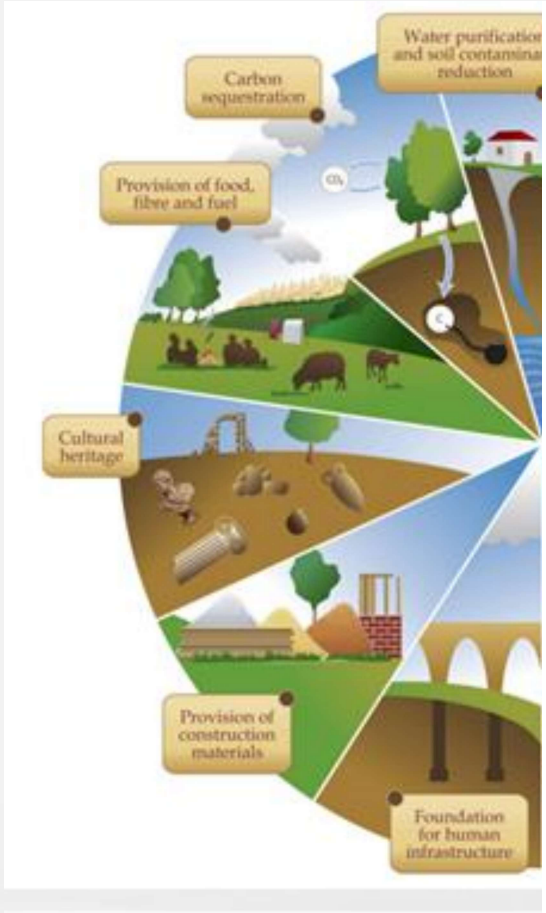
The Soil Foundation



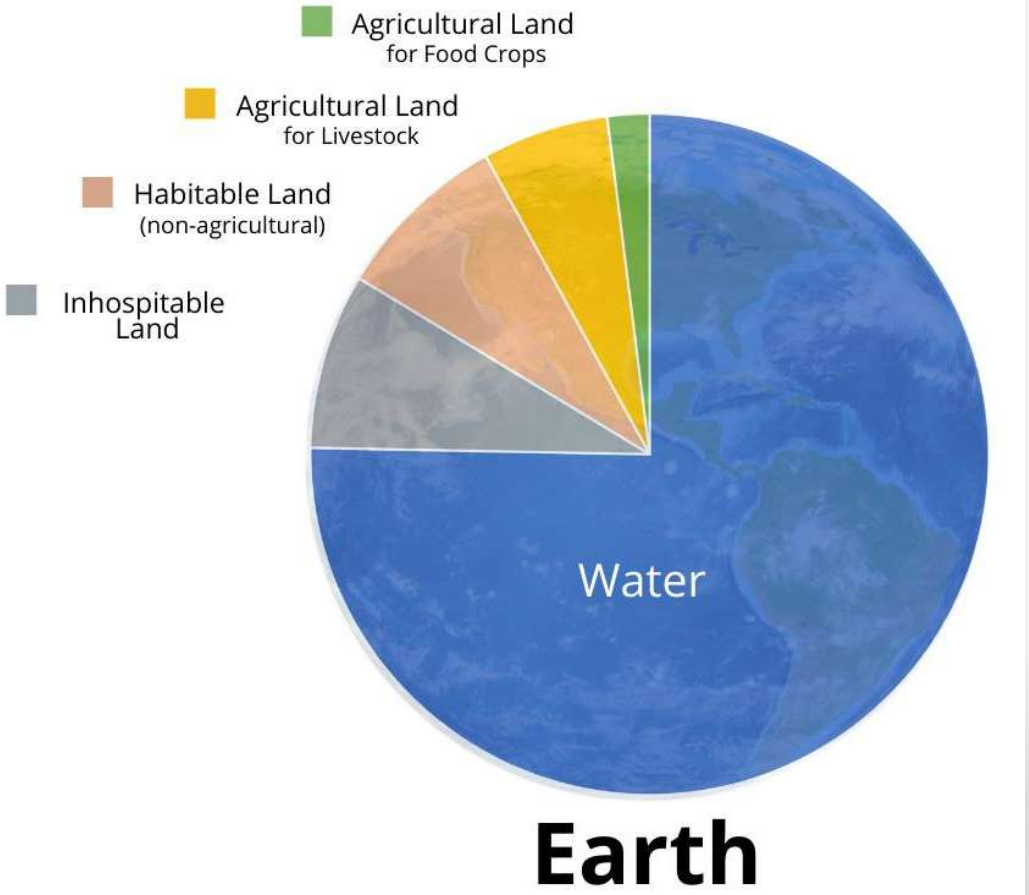
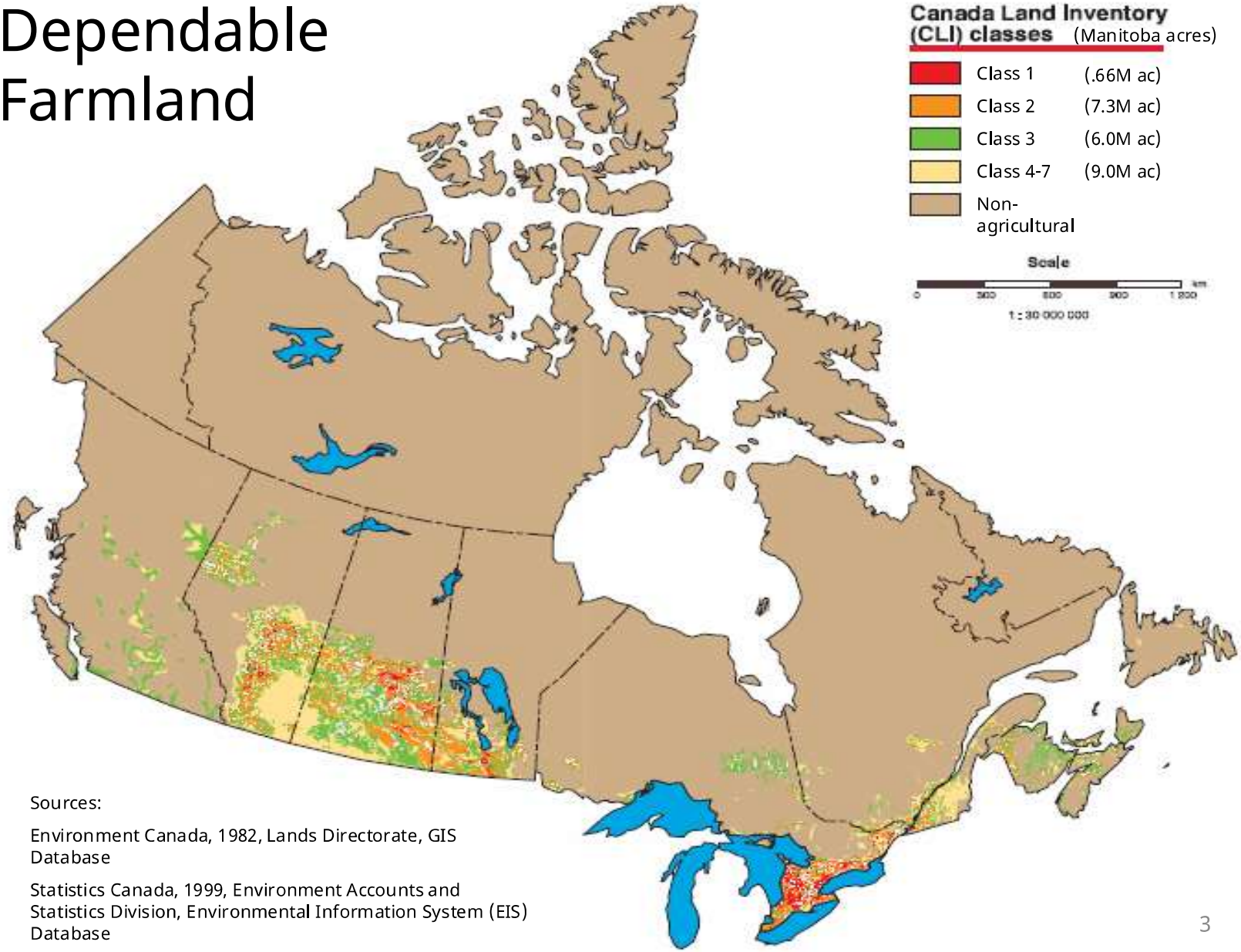


Figure 1. Schematic of Soil Functions (Baveye, Baveye, Gowdy. 2016.)

Dependable Farmland

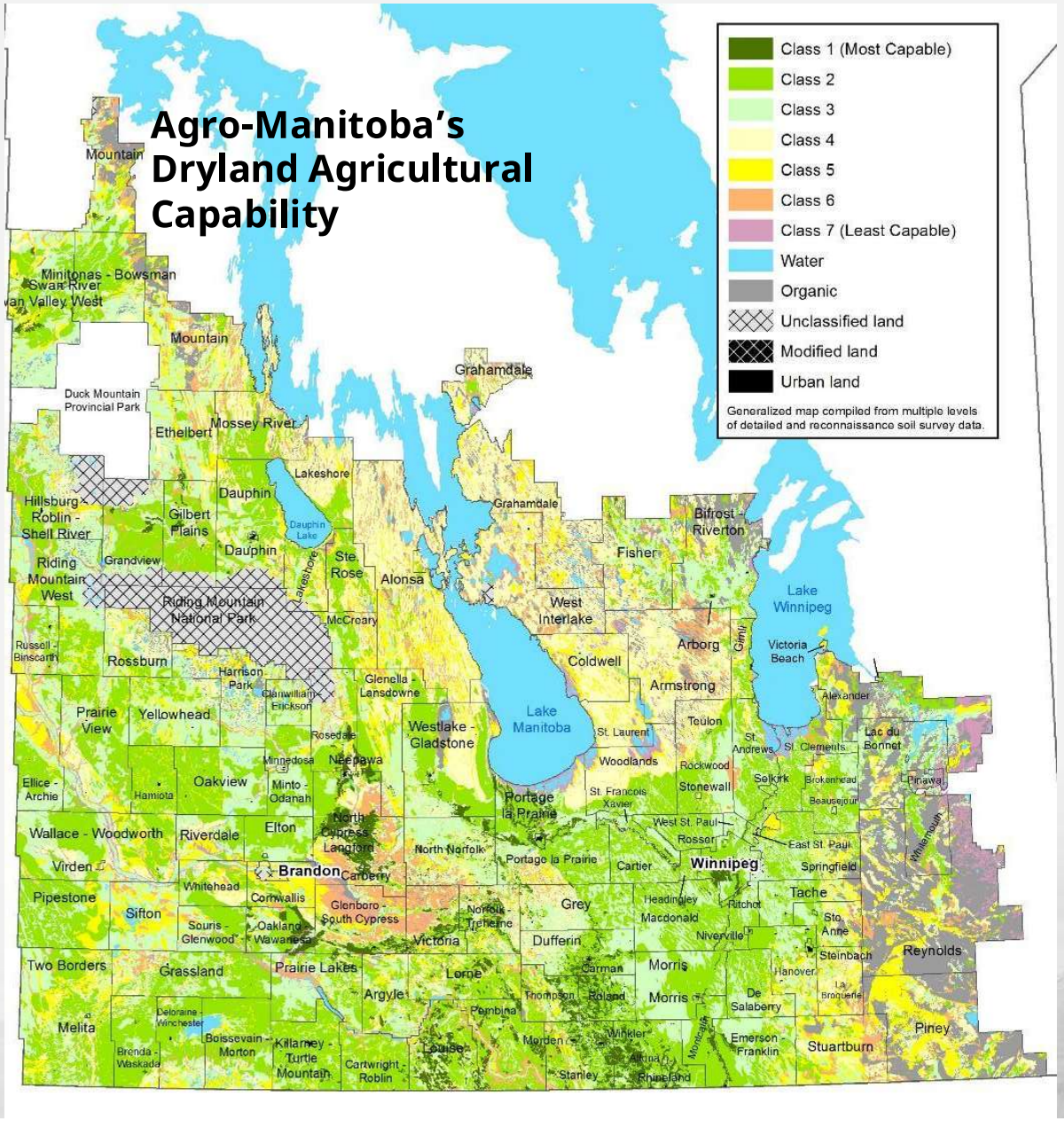


Sources:

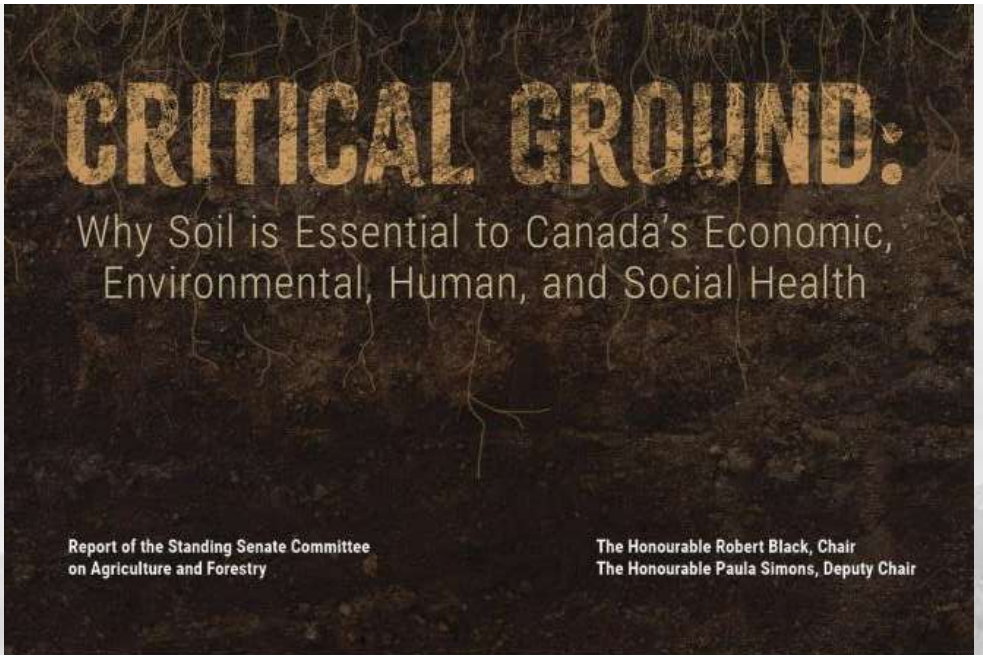
Environment Canada, 1982, Lands Directorate, GIS Database

Statistics Canada, 1999, Environment Accounts and Statistics Division, Environmental Information System (EIS) Database

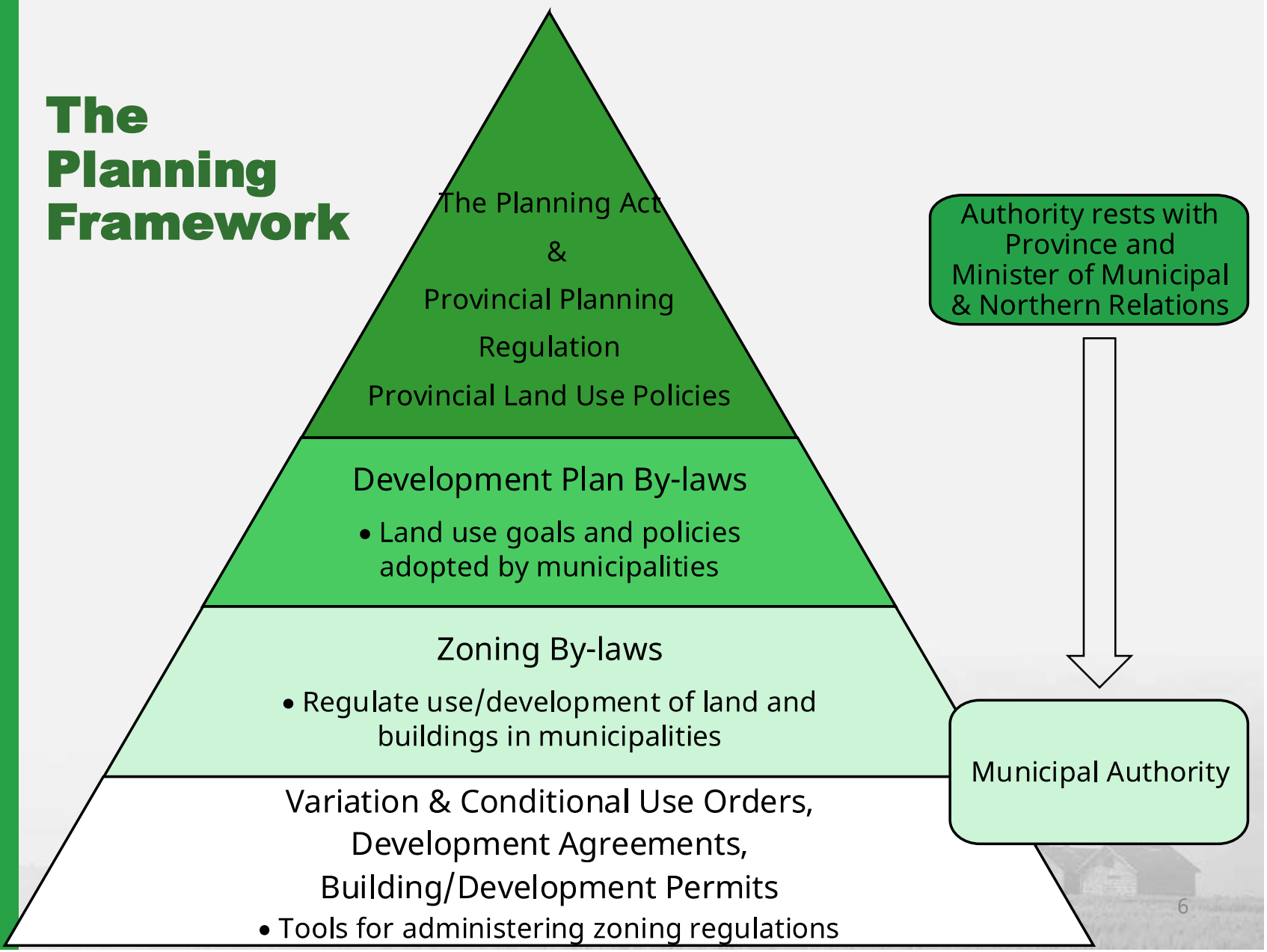
Agro-Manitoba's Dryland Agricultural Capability



7. The Government of Canada encourage provinces, territories, and municipalities to develop measures—as a form of land use planning—that best preserve and protect agricultural land in their jurisdictions.



The Planning Framework



Provincial Land Use Policies (PLUPs)

- **Optimize investments in infrastructure -** direct residential and urban-like development towards Towns and Rural Settlement Centres
- **Minimize conflict -** direct residential and recreational development and subdivisions away from agricultural and other resource-related uses
- **Protect resources (e.g. farmland and farmers) –** designate agricultural operations and agricultural lands as Agricultural Areas and limit opportunities for subdivision

Provincial Policies for Agriculture

- Plan for agriculture, protect agricultural resources and plan for sustainable livestock development
- Designate agricultural land and agricultural operations as Agricultural Areas
  - Identify farmland (Agricultural Capability Maps from soil surveys) and areas with existing farms and protect them through policies
  - Adopt policies that maintain farmland in large parcels, limit opportunities for subdivision, support the livestock sector

Manitoba Agriculture's Role

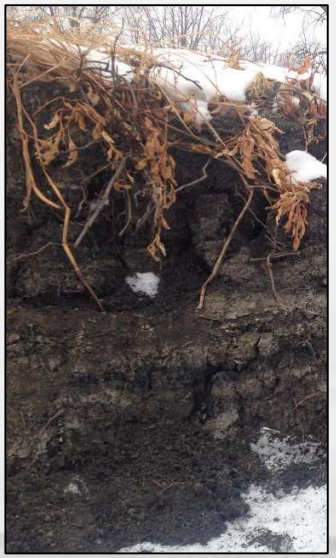
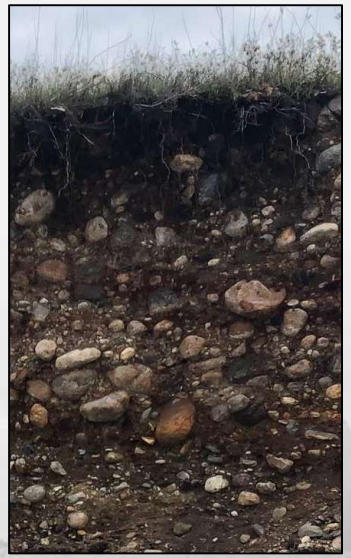
- Agriculture is a keystone of MB's economy - $29.5 billion in output (2024) generating $9.6 billion in GDP and over 81,000 jobs.
- Agricultural land is a finite resource – only about 14% of Manitoba's land base has agricultural potential.
- The planning process is the only legislative mechanism to ensure the protection of agricultural lands and operations at the local level.
- Ensure rural development is planned, balanced, and sustainable – and directed to maximize economic benefits while minimizing land use conflicts.

Agricultural considerations:

- Land base (agricultural capability; current and potential use)
- Potential for conflict (separation distance to livestock operations, nuisance factors)
- Consistency with provincial and/or development plan policies

Soil surveys – A tool in land use planning

- Soils determine the long-term capability and limitations of land.
- Soil surveys provide the baseline inventory of the land resource.
- They translate field observations into mapped information planners can use.
- Soil surveys provide a stable, defensible evidence base for land-use decisions.

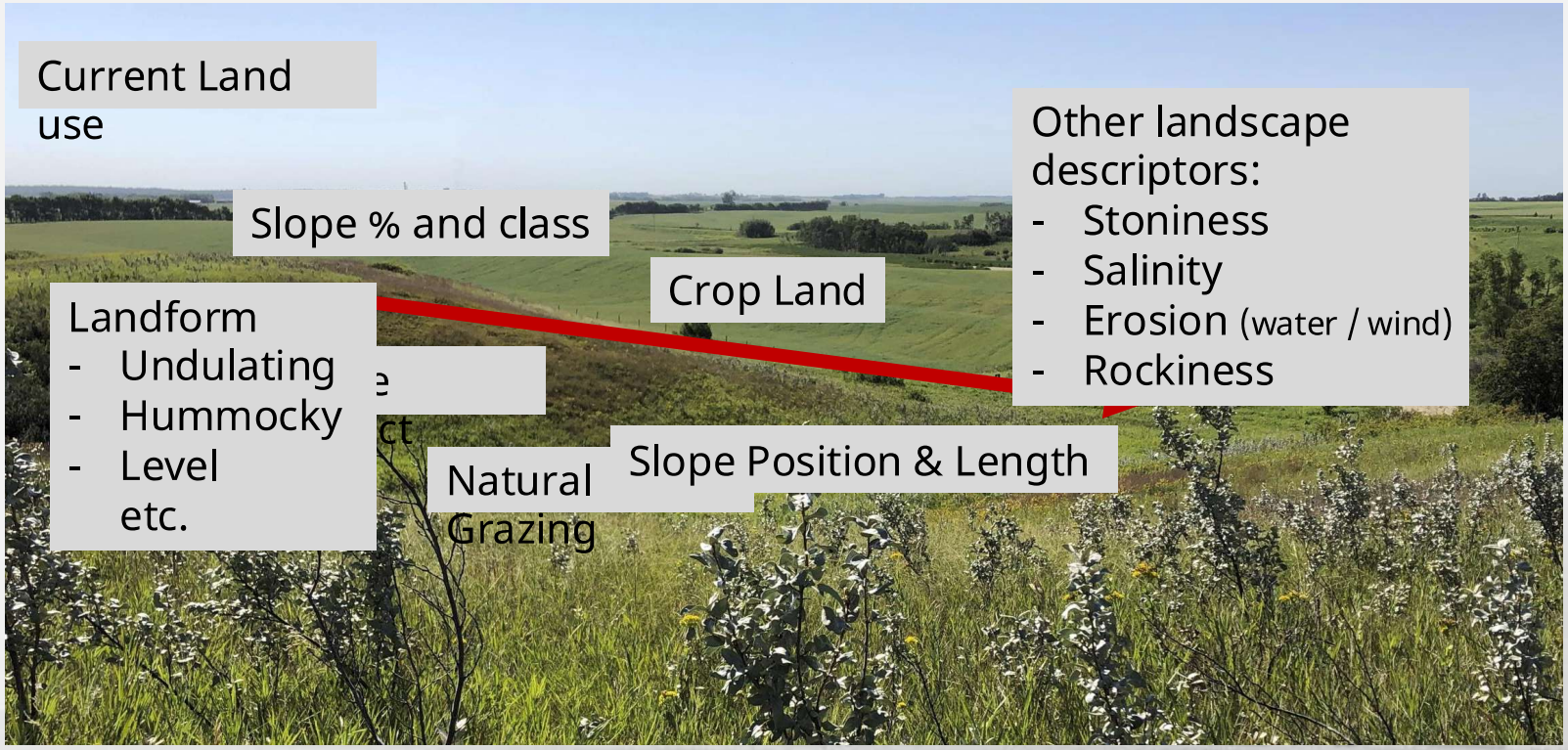





Manitoba government

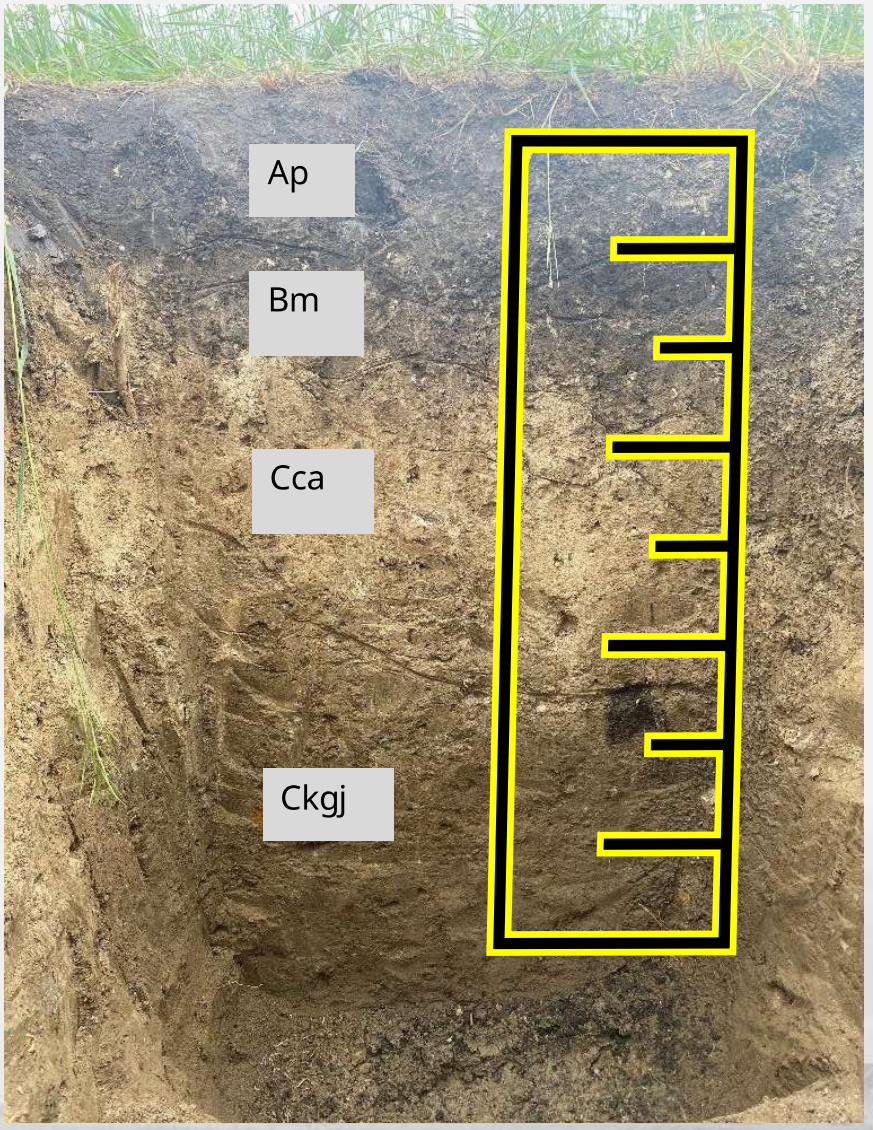
What is a Soil Survey?

- Inventory of soil properties and landscape characteristics.

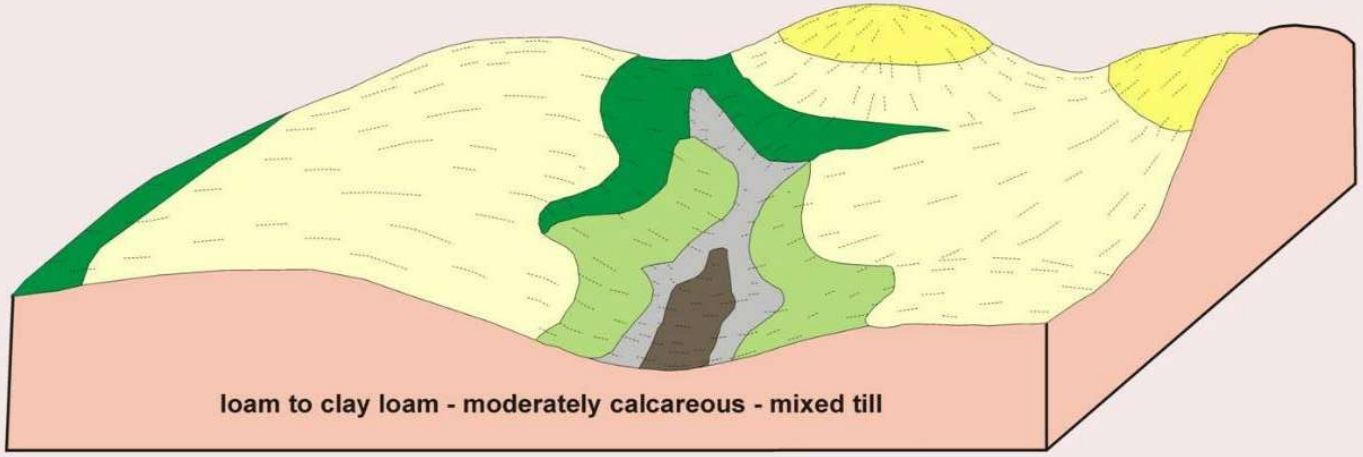
Describe the Landscape



Describe the Soil



Soil Series	Soil Classification	Drainage
Rufford	Rego Black Chernozem	Well
Newdale	Orthic Black Chernozem	Well to Moderately Well
Angusville	Gleyed Eluviated Black Chernozem	Imperfect
Varcoe	Gleyed Rego Black Chernozem	Imperfect
Penrith	Humic Luvic Gleysol	Poor
Drokan	Rego Humic Gleysol	Poor



Soils of the Newdale Association and their Position in the Landscape

Scale Matters!

- Detailed Soil Surveys (1:50,000 or 1:20,000) - 16 – 34 inspection pits / section.
- Generalized or Reconnaissance Soil Surveys (1:126000) – 6 pits/section

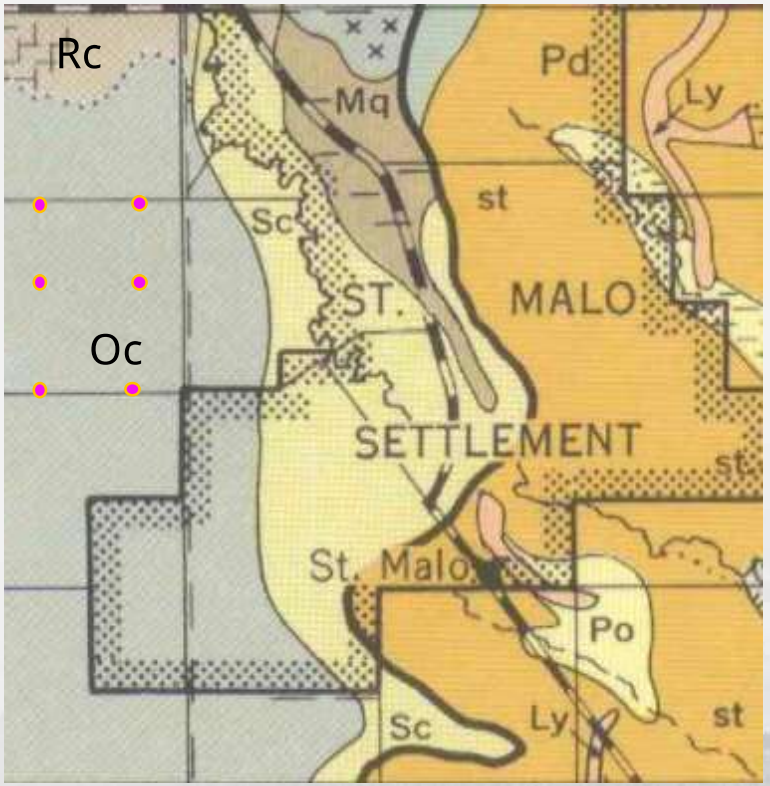


Image: Report of Reconnaissance Soil Survey of Winnipeg and Morris Map Sheet Area

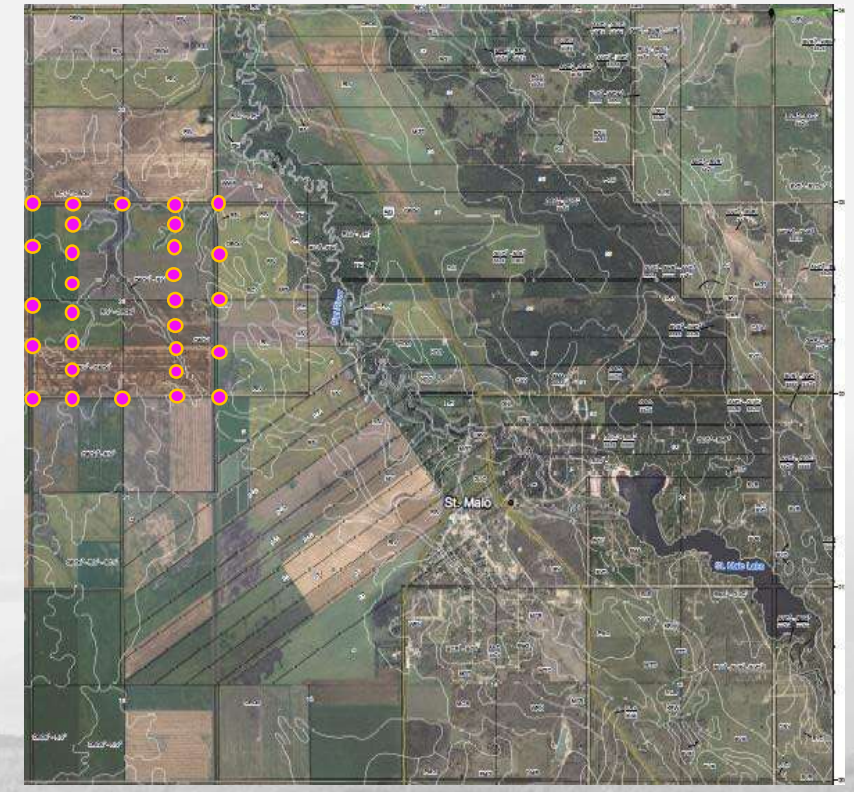
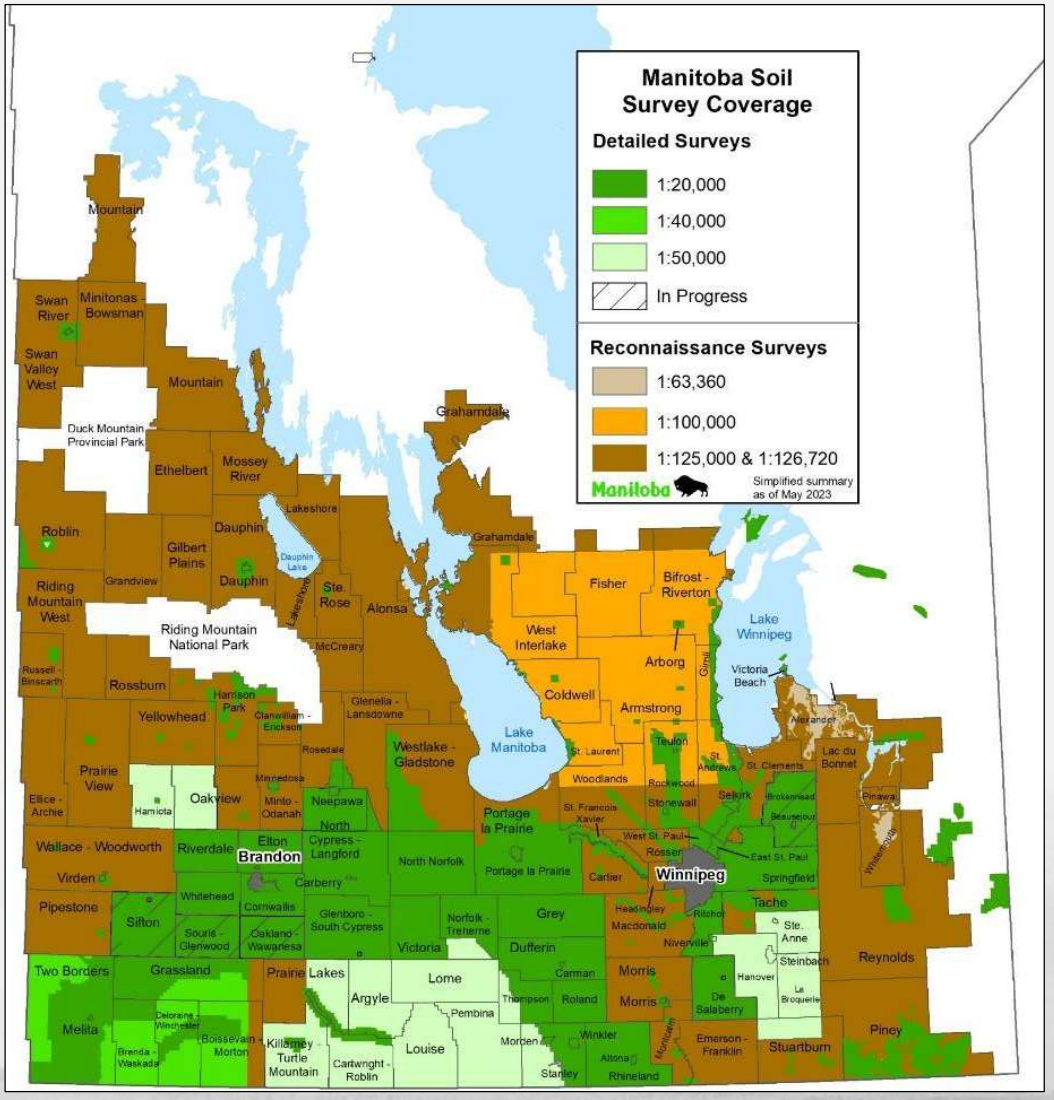


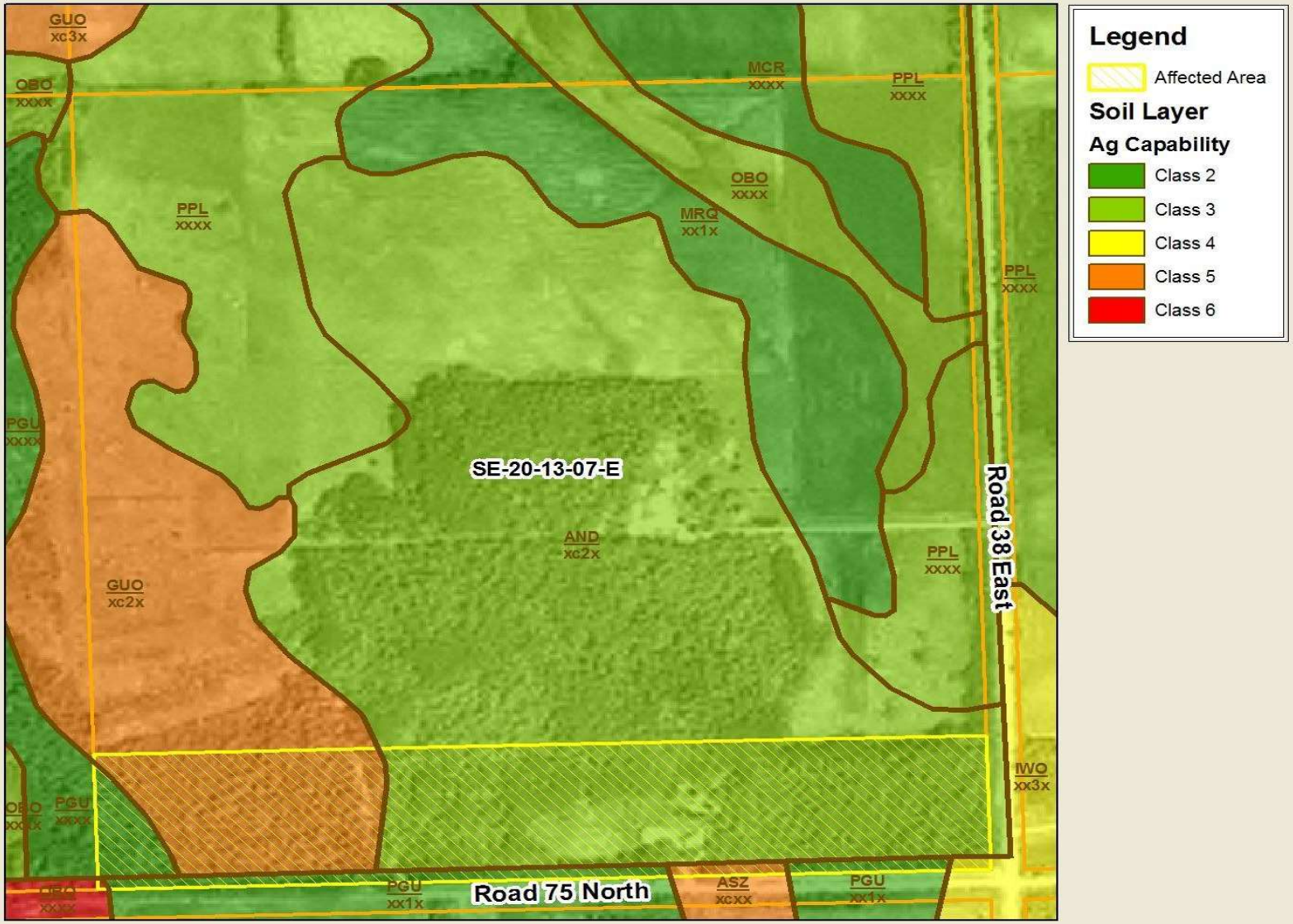
Image: Soils of the Municipality of De Salaberry D94

Current State of Soil Survey in Manitoba



Interpretations & Uses

- *Agricultural Capability for Dryland Agriculture*
- *General Irrigation Suitability*
- *Irrigated Potato Suitability*
- *Suitability for selected engineering and recreational uses (i.e. for buildings, building with basements, roads, septic fields, parks etc.)*
- *Technical Review of Livestock Operations*
- *Manure Management Planning*
- *Nutrient Management Planning and the Water Quality Management Zones*
- *Watershed Management Planning*


GUO
xc3x
OBO
xxxx
MCR
xxxx
PPL
xxxx
OBO
xxxx
PPL
xxxx
MRG
xx1x
PPL
xxxx
PGU
xxxx
SE-20-13-07-E
AND
xc2x
Road 38 East
PPL
xxxx
GUO
xc2x
IWO
xx3x
OBO
xxxx
PGU
xxxx
PGU
xx1x
Road 75 North
ASZ
xcxx
PGU
xx1x
Legend
Affected Area
Soil Layer
Ag Capability
Class 2
Class 3
Class 4
Class 5
Class 6

Viable Lower Class Land

Viable lower class land = *land other than prime agricultural land, that is used for agriculture or has been in the past and continues to have the potential to be used for that purpose*

Land Use Planning in Manitoba

- Municipalities and Planning Districts are required to adopt a Development Plan to guide land use planning.

- Development Plans must be generally consistent with Provincial Land Use Policies (aka “PLUPs”).

- The PLUPs identifies provincial interests which include: General Development, Settlement Areas, Agriculture, Renewable Resources, Heritage & Recreation, Water, Infrastructure, Transportation, Mineral Resources and Capital Region.

PLUPs: Land Use Categories

Resource-Related Use = *a use that is directly dependent on the land or resource base, such as agriculture, quarrying, forestry, fishing, trapping, hunting, outdoor recreation and hydro and wind energy production.*

Non-Resource-Related Use = *land use or development whose location is not dependent on a particular natural resource, e.g. residential, commercial, industrial, indoor recreational uses etc.*

PLUPs: Land designated for Uses

- As residential population and industries grow in Manitoba, the desire for municipalities to identify new lands in their Development Plans for non-resource related uses, increases.

- The PLUPs want to ensure that the amount of land designated for non-resource-related uses is not only consistent with the rate of change (demand) for those uses, but takes into account the existing designations of such lands within the Municipality.

Abundance of Existing Developable Land

- Many municipalities have a decent supply of land that could be developed for non-resource-related uses.
- However, there are often several constraints that limit development of these areas.

Development Constraints

- Water: location of waterbodies, flood prone areas, poor drainage
- Sensitive areas: riparian areas, organic soil areas, wetlands, heritage sites etc.
- Pipelines or hydro servicing
- Location of existing roads/accesses
- Mineral resources
- Adjacent uses requiring buffers: livestock operations, lagoons, airports etc.
- Landowner is not interesting in developing or selling land

Development Plans

- Municipalities want to grow their communities but have lots of existing designated land that has not been, or cannot be, developed.

- In order to grow, they start looking at new lands to designate for development when adopting/reviewing their Development Plans.

Example: Designation “Swapping”

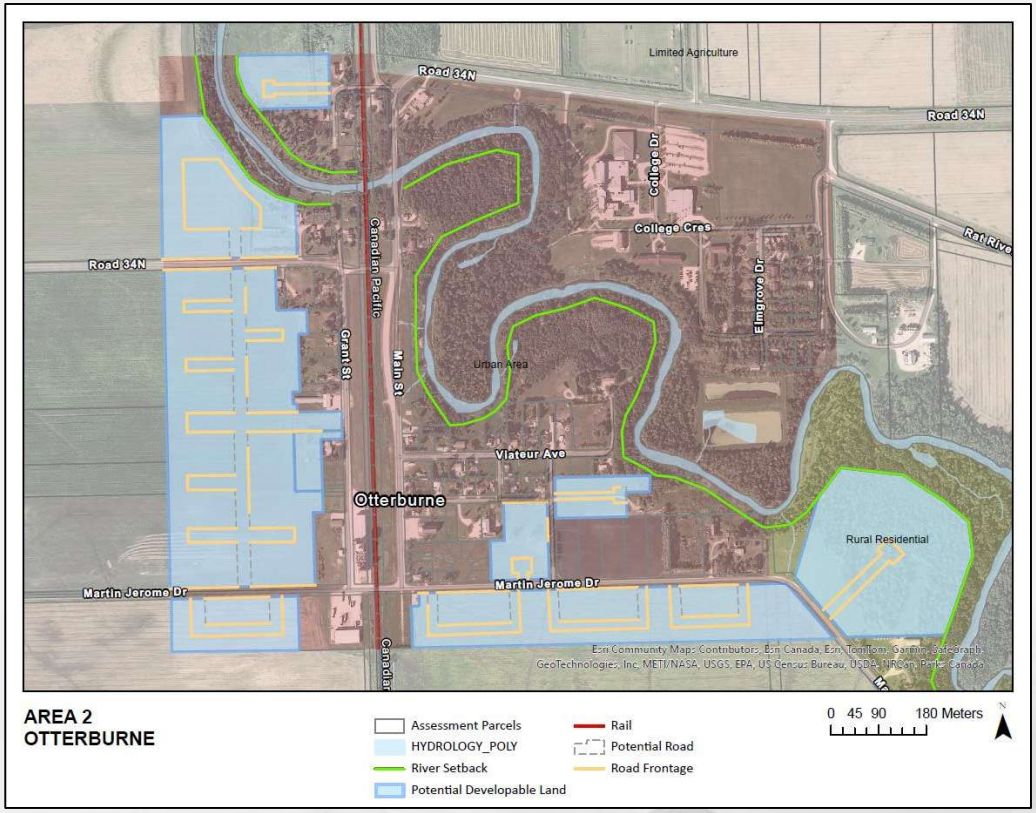
- Maintain the same amount of designated land in a Municipality, i.e. no “new” lands are designated.
- Appropriately allocates lands for specific uses, e.g. limits development potential on constrained land and allows for development on land where a land owner is willing to develop.

Figure 1: Map of proposed redesignation and rezoning swap

Example: Mapping Exercise

Gross developable land = 1,445 acres

Actual developable land = 926 acres



Example: Mapping Exercise

Area #	Current designation	Current Area (acres) of designation	Roll #	Gross Developable Area (acres)	Road Area (acres)	Lot Dimensions	Net Developable Area (acres)	Notes
North of Otterbourne								
1	Rural Residential	54.707	52200 149500 51800	23.223	1.044	RR Site width is min. 200 feet. Length of road is 1,434.52 feet. 1,434.52 feet divided by 200 feet is 7 lots. 7 lots multipled by 2 acres is 14 acres.	14	Public Road req'd as Poirier Road ends here.
Otterbourne								
2	Urban	321.274	150100	4.099	0.603	RS Site width is min. 50 feet. Length of road is 942.06 feet. 942.06 feet divided by 50 feet is 18 lots. 18 lots multiplied by 5,500 sq.ft. is 99,000 sq.ft.. 99,000 sq.ft. is 2.272 acres.	2.272	Extend grant road.
			228700 52400 51300	12.499	2.44	RS Site width is min. 50 feet. Length of road is 2,341.07 feet. 2,341.07 feet divided by 50 feet is 46 lots. 46 lots multiplied by 5,500 sq.ft. is 253,000 sq.ft. 253,000 sq.ft. is 5.808 acres.	5.808	North of Road 34N.

Thank you!

Questions?

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