

# Water Use in Saskatchewan

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for

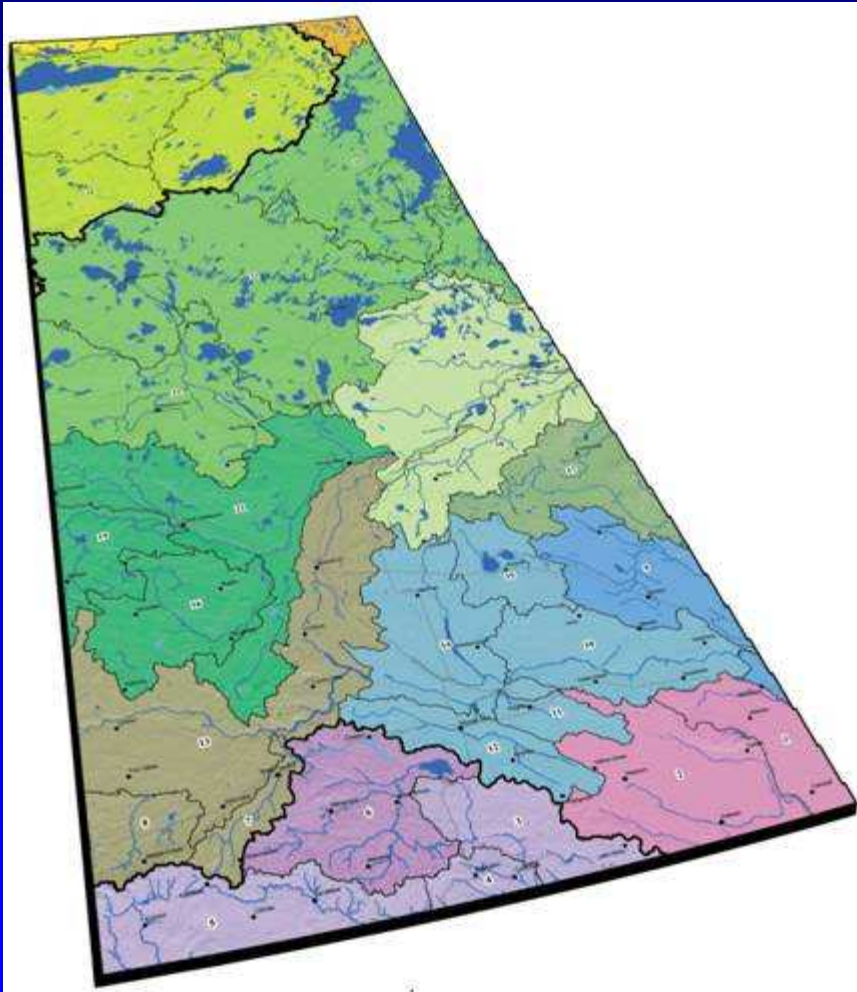
DRI Prairie Hydrology Workshop

November 18, 2009

# Outline

- Water Allocation in Saskatchewan
- Current Water Use
- Conclusions

# Saskatchewan Waters



- Three continental drainage basins
  - Arctic
  - Hudson Bay
  - Missouri
- Transboundary watersheds
- Four ecozones
  - Taiga Shield
  - Boreal Plain
  - Boreal Shield
  - Prairie

image from SWA

# Interjurisdictional Arrangements

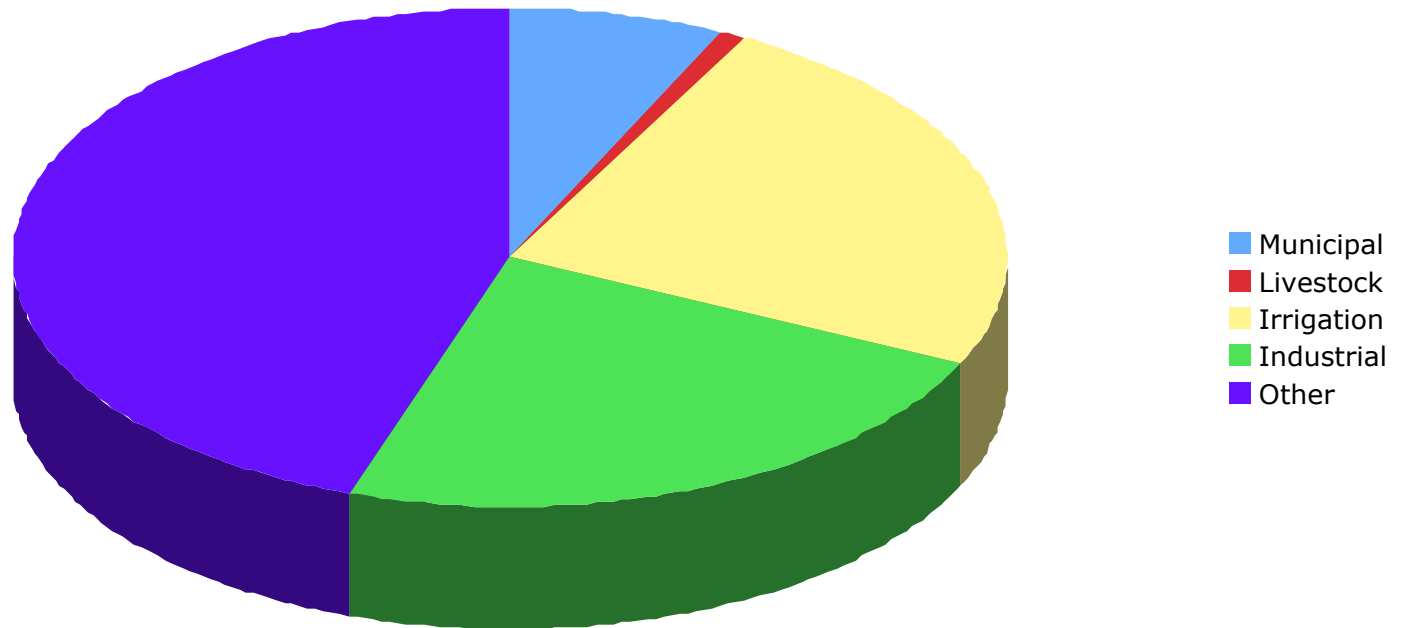
- International Joint Commission
  - St. Mary (S. Sask.), Frenchman, Battle, Lodge
  - Souris River - quantity and quality
- Canada-United States
  - Poplar River - quantity and quality
- Prairie Provinces Water Board
  - eastward flowing streams - quantity & quality
- Mackenzie Basin Board
  - Mackenzie River - quantity and quality

# Water Allocation

- Earliest licences in 1894
- Licences granted for specified purpose
- Purposes include municipal, domestic, irrigation, industrial, and other.
- Up to 5,000 m<sup>3</sup>/yr (5 dam<sup>3</sup>/yr) without licence
- Allocation by groundwater or surface water and by 14 major basins

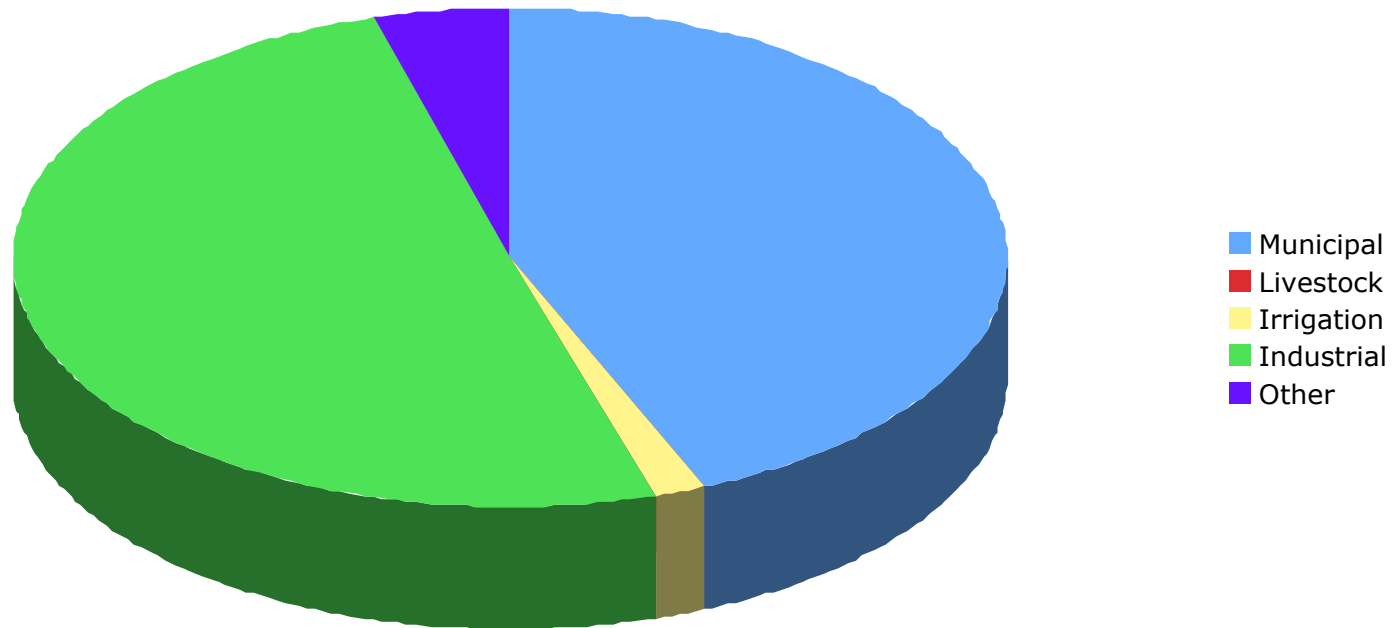
# Surface Water Allocation

Surface Water Allocation



# Groundwater Allocation

Allocation from Groundwater

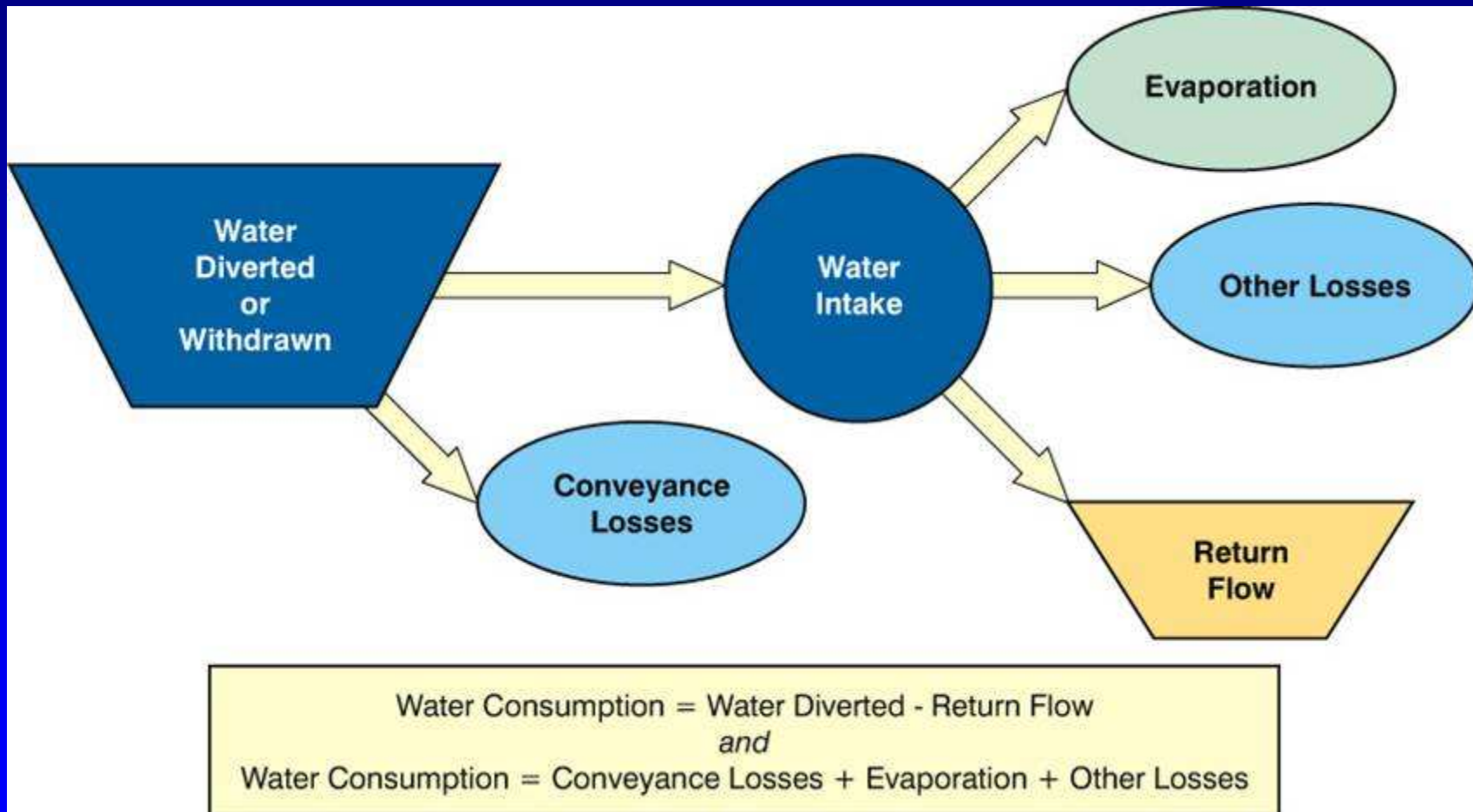


# Allocation Summary

- Licensing system is robust
- Use from non-contributing drainage
- Firm and percentage allocations
- Water withdrawal and consumption data generally poor
- Southern basins are highly allocated
- Qu'Appelle and SSEWS diversions

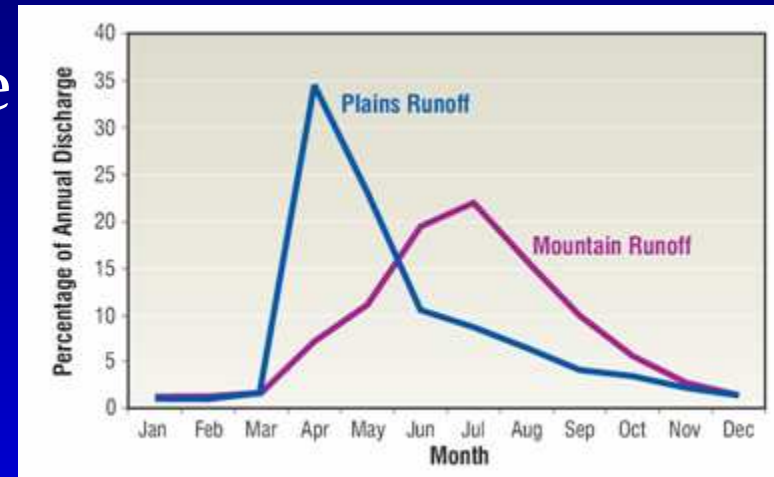


# Water Use



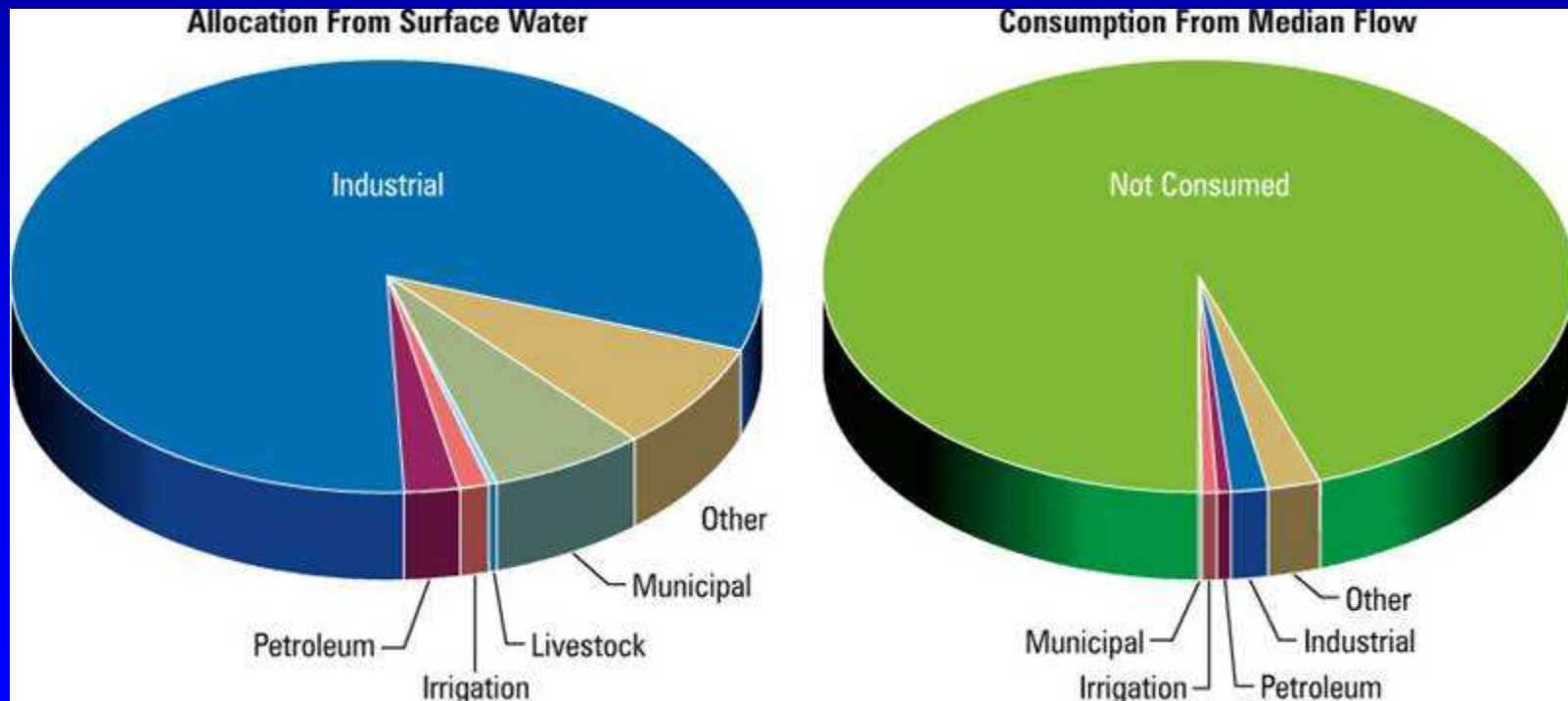
# Water Quantity

- Mountain-fed streams have much more reliable flow than plains-fed streams
- Runoff is largely the result of spring snowmelt
- Spring/summer rains enable crop production
- Runoff is influenced by land use
- Groundwater use is small, but
- Groundwater is important to small communities and farmsteads



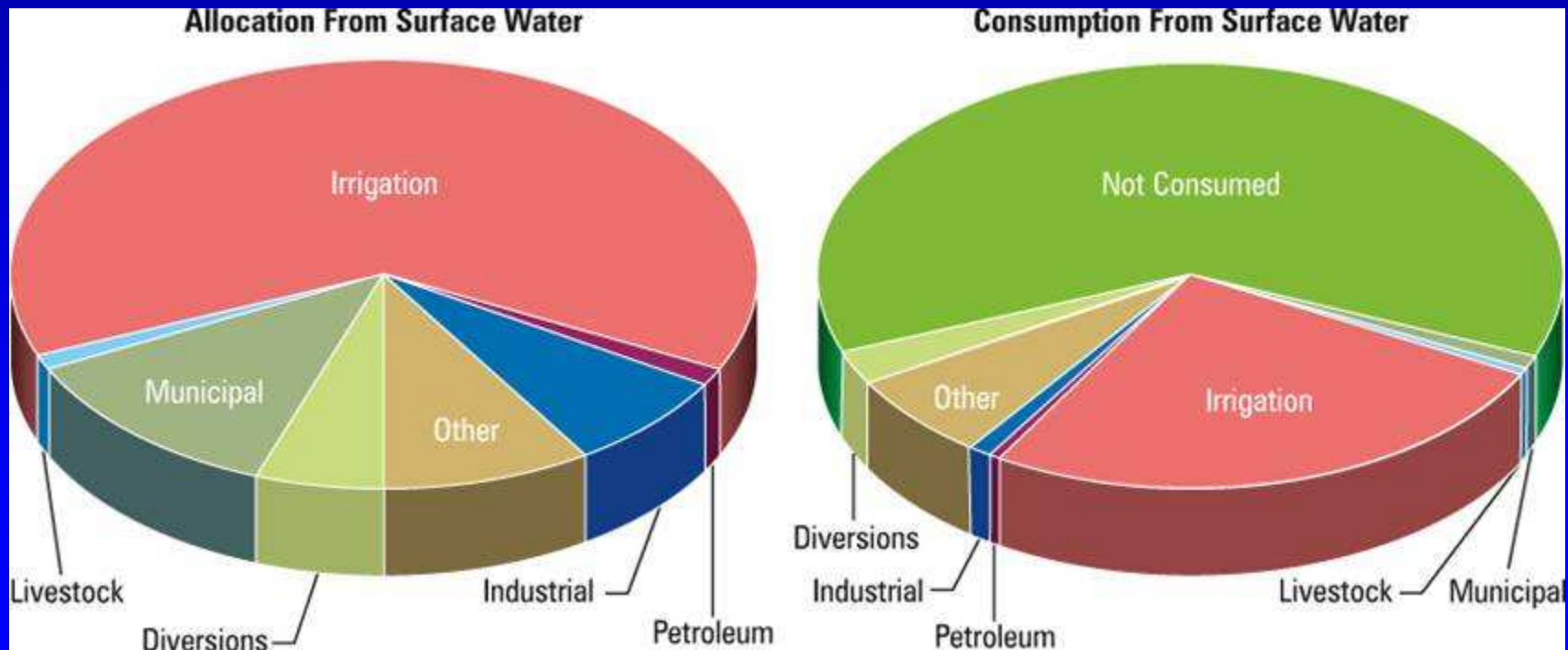
# Water Consumption

- Very low consumption in northern basins
- North Saskatchewan River



# Water Consumption

- High: SW - agricultural; Souris - other
- South Saskatchewan River



# Conclusions

- Good fit between allocation/hydrology
  - basin as spatial unit
  - allocated to median flow
  - considers contributing/non-contrib.
  - firm and percentage allocations
  - surface and ground water
- Water withdrawal and consumption data needed
- In-stream flow needs