Watershed Hydrology and the Ecosystem

Watershed Management using Western Science

Eco Health, Ecosystems and Watersheds

Nicola Watershed Presentation

October 19, 2011

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Outline

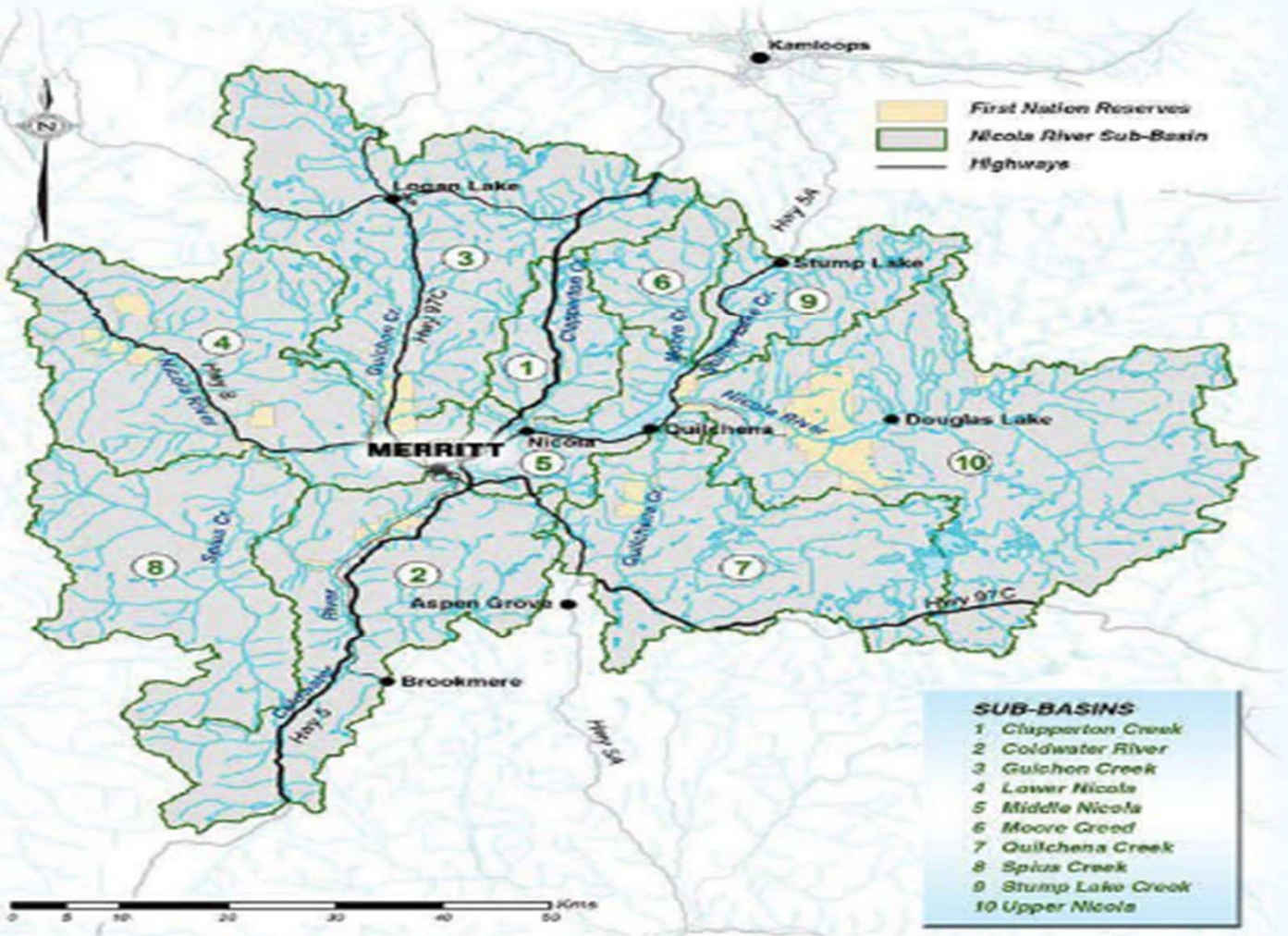
- What is "watershed management"?
- Surface water
- Groundwater
- Future desired state
- Future development
- Balancing demands and the environment
- Restoring the ecosystems

Watershed Management

The process of creating and implementing plans, programs, and projects to sustain and enhance watershed functions that affect the plant, animal and human communities within a watershed

Surface Water

Nicola River Watershed



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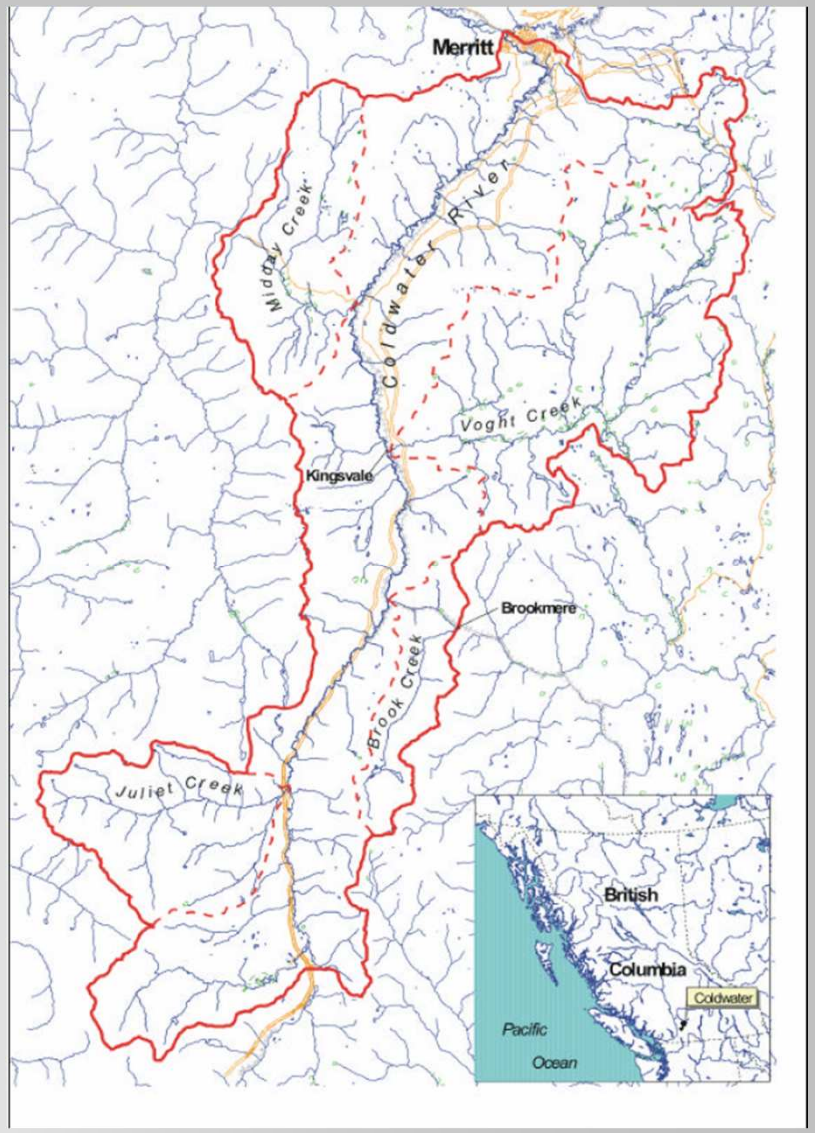
Current Watershed Condition

- Assessing impacts of land use disturbances

- **Coldwater River**
  - Area ~914 km^2
  - 24 permanent and 56 intermittent streams
  - 2 biogeoclimatic zones, Interior Douglas Fir and Ponderosa Pine Bunchgrass
  - Precipitation – 255mm at Merritt to 1,000 mm in the headwaters
  - Fish species-coho, chinook, steelhead salmon, rainbow trout, bull trout, Rocky Mtn whitefish,



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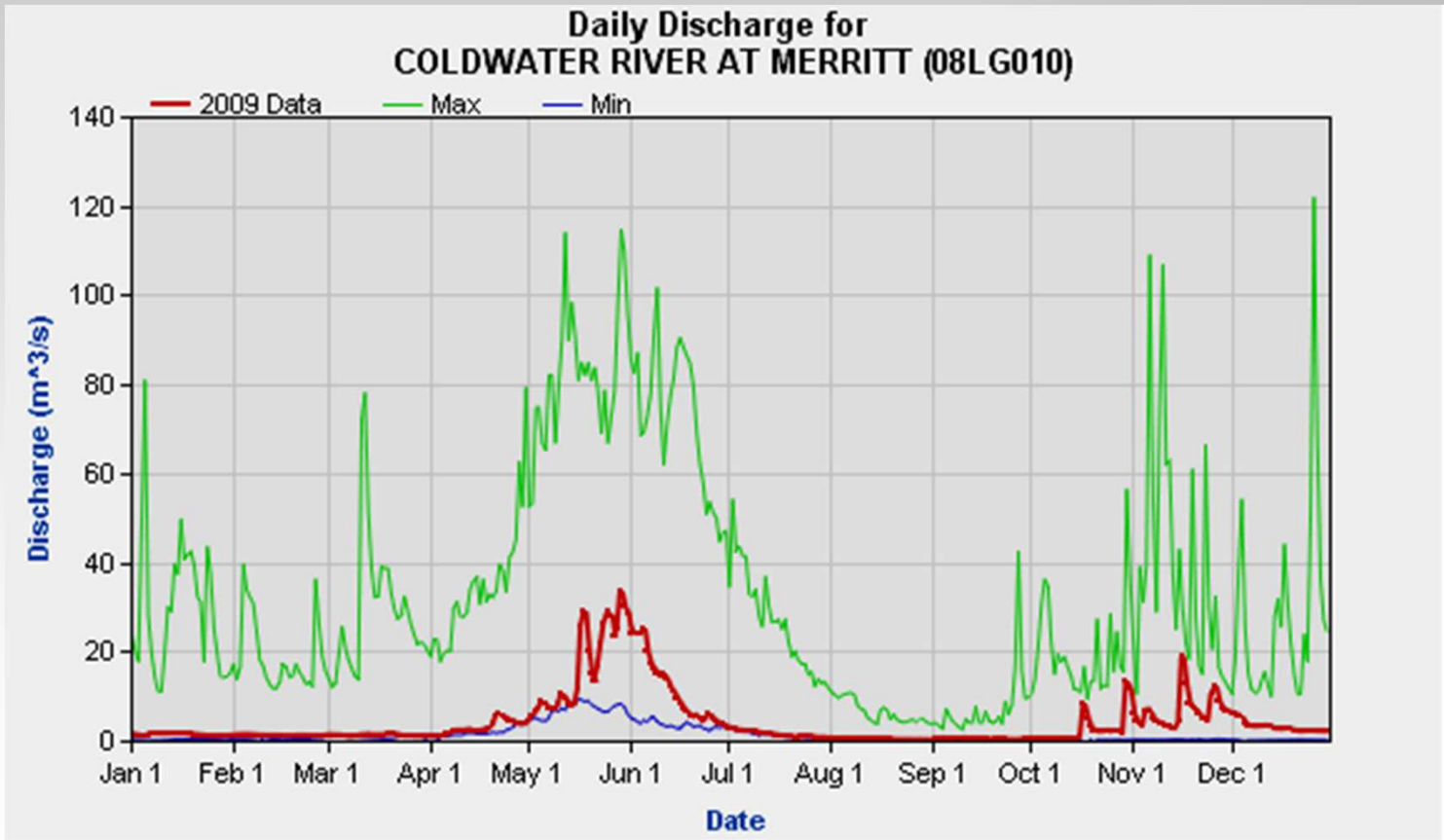
Water Cycle

- Snow dominated watersheds



Statistics corresponding to 48 years of data recorded from 1913 to 2009.*

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Forest Health

- Mountain pine beetle
  - More water
  - More quickly
  - More often
- Other health issues
  - Other bark beetles
  - Blights, root rot…..

Climate Change

- Rising temperatures
  - More rain, less snow – less runoff???
  - Warmer drier summers – increased water demand
- Changing weather patterns
  - Intense short duration rainstorms
  - Severe electrical storms

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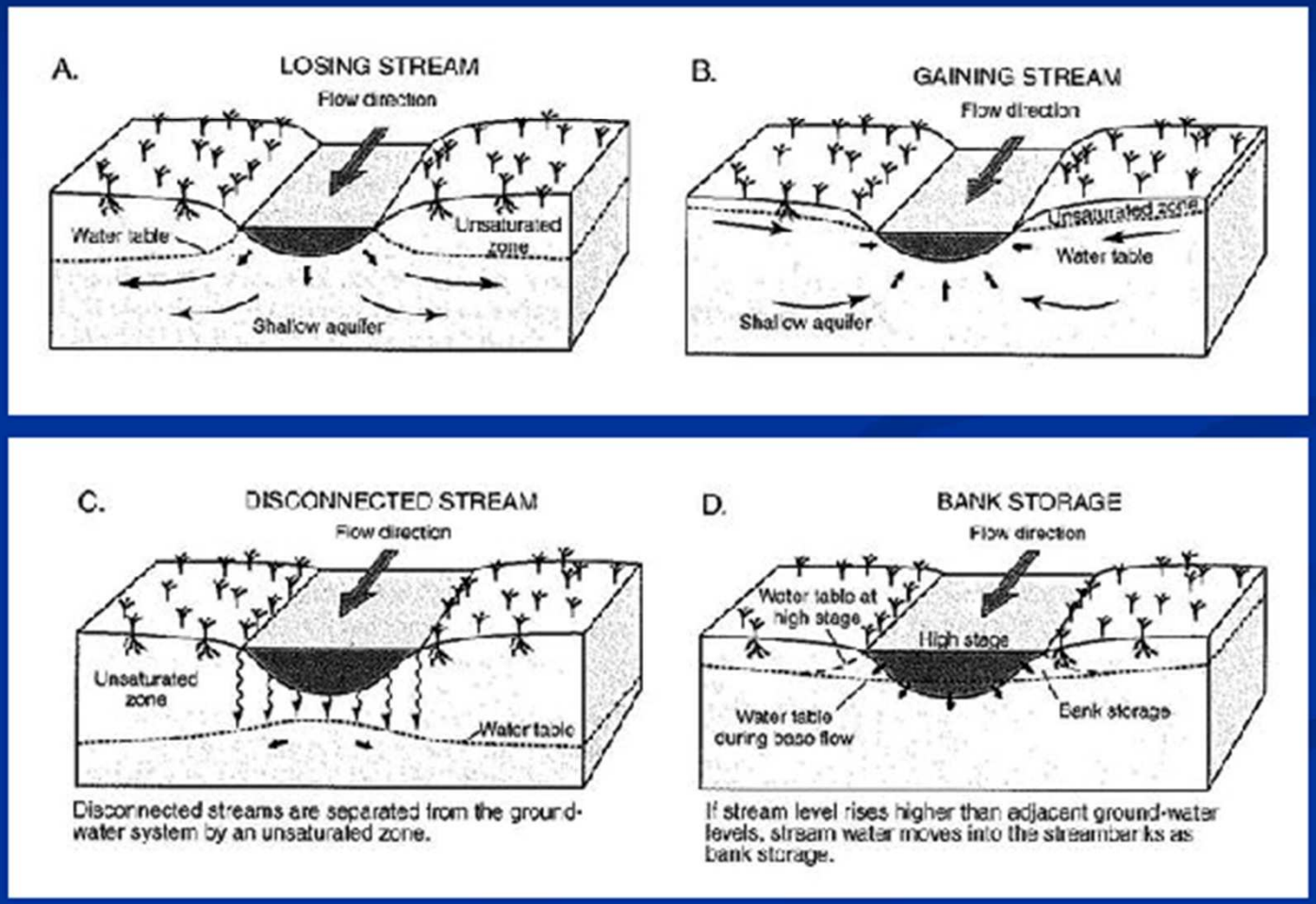
Drought Management

- Planning for low flows
- Resources at risk
- Consumptive demands
- Instream requirements
- Stream health

Groundwater

SWGW INTERACTION PROCESS

- WHY ARE MONINTORING WELLS REQUIRED ?
- HOW DO YOU FIGURE OUT WHAT IS GOING ON?



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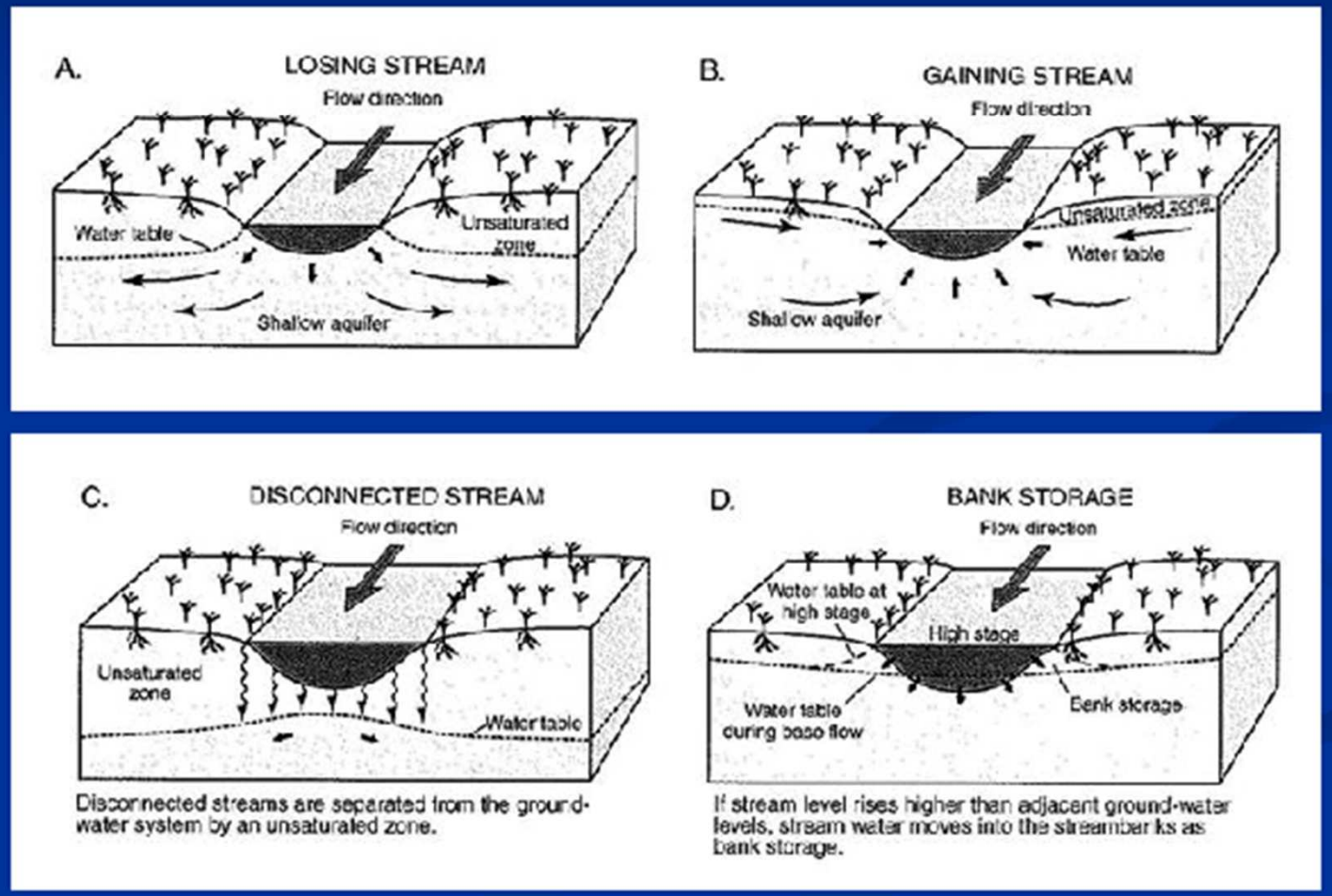

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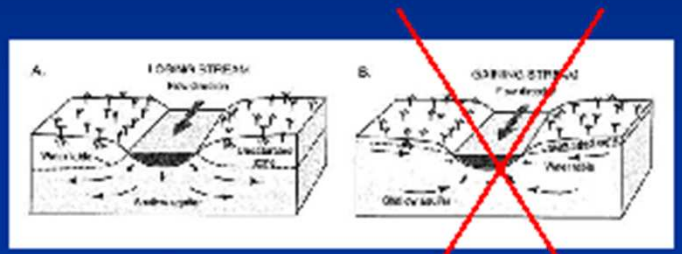
INTERPRETATIONS
POTENTIAL FOR RIVER DEPLETION

NICOLA RIVER

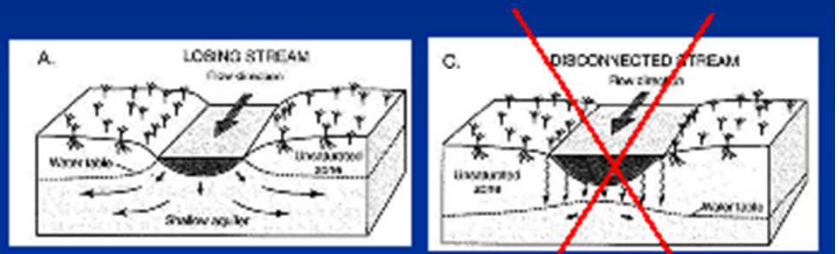


LIONS PARK
KEY AQUIFER
RECHARGE AREA ?

MAX. DEPLETION
< 5% LOW FLOWS

POTENTIAL IMPACTS
CONSIDERED NEGLEGIBLE ?

COLDWATER RIVER



ASPEN MILL &
VOGHT PARK
KEY AQUIFER
RECHARGE AREAS ?
(IF CONNECTED TO W.T.)

MAX. DEPLETION
UP TO 100% OF LOW FLOWS

POTENTIAL IMPACTS
CONSIDERED SIGNIFICANT

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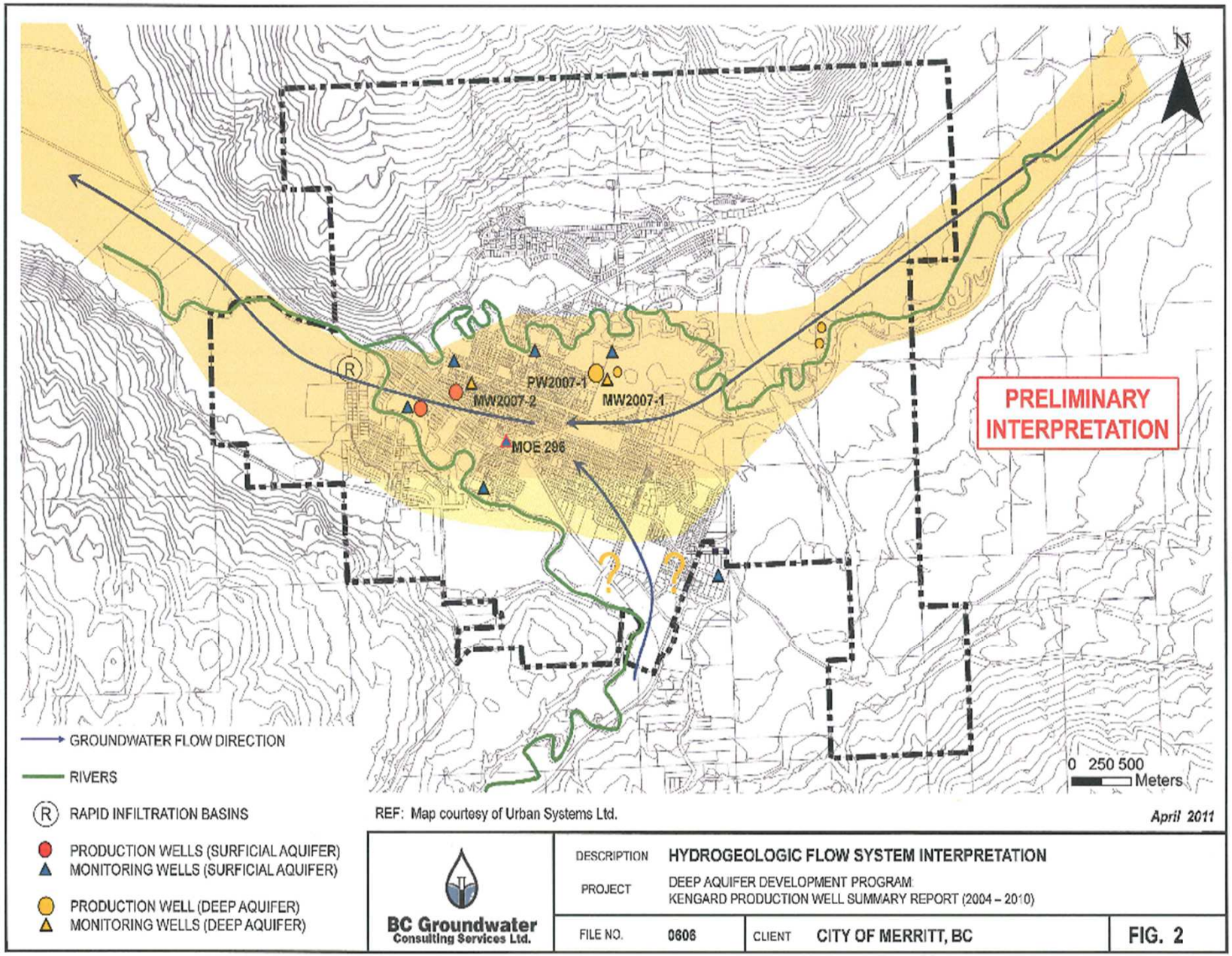

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Other Information

- Fish studies
- Forest stewardship plans
- Grazing plans
- Recreation plans
- Regional district plans
- Merritt OCP
- Mineral development

Future Desired State

- What are the desired watershed values?
  - Plants
  - Wildlife
  - People
- What is the watershed's capacity?
  - Climate change
  - Water supply
  - Water quality
  - Development

Future Development

- Balancing our demands and the environment's needs

Restoring the Ecosystems

- Developing a plan
- Setting priorities
- Collaboration
- Funding
- Integrating key information
- Building for success

Thank you

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