



City of

VERNON

British Columbia, Canada

City of Vernon Reclaimed Water Irrigation Program

Demand Management Strategies
- Achieving a Water Balance -
Technology Transfer Program
April 20, 2005

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Environmental Issues

Early 1970's

- Eurasian Milfoil becoming a major problem
- Interfering with recreation uses of lakes
- Cause: Phosphorus from municipal wastewater discharges

Solutions

- Kelowna, Penticton: Upgraded wastewater treatment facilities (BNR) with continued discharge
- Vernon: Land based **disposal** of **effluent**
- Current Focus: **Beneficial** reuse of **reclaimed water**



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How Did It Work ?

- Secondary treatment using trickling filters
- Pumped to large storage reservoir 7 km south of treatment facility (10,000,000 m³ capacity)
- 60 days storage (Category 1: Unrestricted Public Access)

May – September

- Reclaimed water from reservoir used for irrigation

October – April

- Reclaimed Water stored for future use



How Will It Work ?

- Tertiary treatment using BNR process
- Direct irrigation following filtration and UV disinfection + chlorination prior to irrigation (0.5 mg/l Cl residual)
- Pumped to large storage reservoir, 60 days storage

May – September

- Reclaimed water from treatment facility **OR** from reservoir used for irrigation

October – April

- Reclaimed water stored for future use



Irrigation Season May – September

- Reclaimed water distributed to a land base of approximately 970 Ha.

Agriculture

- Grazing and hay production

Silviculture

- Seed orchard, seedling nursery, research

Recreation

- Golf courses, playing fields



Reclaimed Water Use

Treatment Plant Flow:

- 13,500 m³/day
- 5,000,000 m³/year

Annual Reclaimed Water Use

- 4,000,000 m³ – 5,500,000 m³
- Highest: 5,700,000 m³
- Lowest: 3,200,000 m³
- Weather Dependent



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Benefits of Reclaimed Water Irrigation

- Formerly Dry, Unproductive Areas transformed into green, productive areas
- Can reduce potable water demands by displacing potable water
- No Discharge to water body
- Use the water twice
- Free or low cost water



Challenges

- City of Vernon Policy: Lake discharge only under emergency circumstances (full storage reservoir)
- Need for expanded land base
- Need for Winter Storage
- Need for Emergency Back-up (lake discharge)
- Costs (pumping)
- Public Acceptance
- Viewed as a Resource with Value, not something to “get rid of”



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Water Conservation / Demand Side Management Initiatives

- Meters required in all new construction: Early 1980's
- Universal water metering program: 1992
- Water saving devices
- Toilet rebate program
- Amalgamated water utility (Greater Vernon Water)
- Irrigation restrictions
- Rates
- Water treatment
- System separation