

SUSTAINABILITY 2003
CITY of KAMLOOPS
RIVER STREET WATER TREATMENT PLANT

1. PROJECT DESCRIPTION

- 160 mega-litres per day membrane filtration treatment plant
- Design and construction budget of \$48.5 million
- Under construction with Fall 2004 completion date

2. VISION

"The City of Kamloops River Street Membrane Treatment Plant will provide high quality treated water from a facility developed and operated:

- to demonstrate the City's innovative leadership in the use of membrane filtration technology and the integration of infrastructure and community enhancement;
- to achieve life-cycle economic efficiency, and
- to advance understanding of the provision of safe drinking water, water conservation and environmental stewardship."

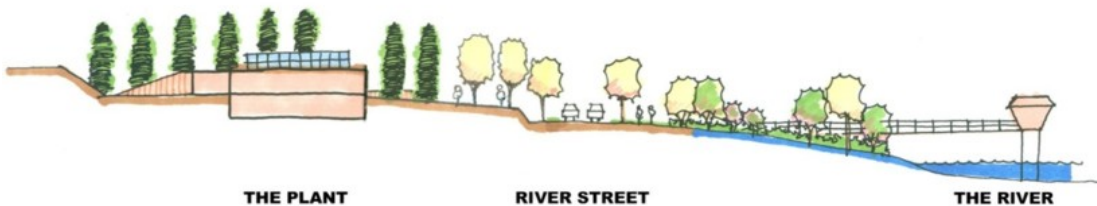
3. DESIGN PROCESS

- **COLLABORATION:** Client, Consultants, Sub-consultants, Project Partners
- **DESIGN MANAGEMENT:** City Water Committee and Consultant Team
- **SUSTAINABILITY STUDY:** Feasibility of options to minimize environmental impact and integrate the plant in the community
- **VALUE ANALYSIS:** Review of preliminary design proposals considering stated objectives, alternative solutions and construction and operation costs
- **INTEGRATION:** Process, civil, electrical and mechanical engineering, architecture, landscape architecture, and "green" building requirements through all project phases
- **PUBLIC CONSULTATION:** On-going public consultation and communication utilizing a full range of media and meeting formats

4. SUSTAINABLE DESIGN INTENT

□ **INTEGRATED INFRASTRUCTURE AND COMMUNITY DEVELOPMENT**

- Building community pride and understanding about water treatment with a state-of-the-art facility
- Creation of a "Centre of Excellence" for water treatment and membrane filtration technology
- Development of local technical expertise in water treatment design, research and training
- Civic expression through quality in architecture, site design, educational displays and public art
- Integration of public amenity facilities and community infrastructure
- Redevelopment of disturbed inner city industrial land to complement adjacent public and private land uses
- Consideration of community attitudes, needs and future growth



□ **LIFE–CYCLE ECONOMIC EFFICIENCY**

- Operational and maintenance cost savings through integrated design, “green building” technologies, energy recovery and conservation landscapes on a life-cycle cost recovery basis
- Consideration of future demand and plant design to facilitate capacity increases
- Conservation design and environmental cost accounting
- Incorporation of a research and training centre for treatment plant operator training and membrane technology research on a fee-for-service basis
- Demonstration and public education of water and energy conservation techniques

□ **CONSERVATION AND ENVIRONMENTAL DESIGN**

- Expressing the connection between responsibility for the river (resource) and responsible water use (consumption)
- Treatment process designed to achieve 99% recovery of raw water from river and to finish effluent to standards required for river discharge
- Utilization of surplus and waste process water for irrigation and riparian restoration
- Green roof, heat recovery, low-water use fixtures, reduced building finish layers, control systems, glazing, environmentally preferable materials and related green building techniques
- Providing for user comfort with improved air quality, ventilation and light quality
- Provision of on-site storm water utilization and restoration of 45% of site area to naturalized, water conserving and low maintenance planting
- LEED registration and gold level certification target

□ **INNOVATIONS**

- **Constructed Wetland and Stream:** Approximate volume of 800 m³ planned to avoid piped discharge of DAF supernatant to storm or sanitary sewer and as a drainage basin for on-site storm water. Wetland also serves for supply of untreated water for park irrigation and discharge of emergency overflow from the treatment plant.
- **Park Irrigation:** Potential to supply untreated water for about 19 hectares of park to reduce peak demand for treated water by approximately 1600 cubic metres per day using a combination of reject process water and diversion from the intake.
- **Green Roof:** 180 m² demonstration project to explore environmental and aesthetic benefit in conjunction with the higher use areas of the building.
- **Training Centre:** Pilot plant, laboratory and classrooms, to accommodate a treatment plant operator program to be developed by the University College of the Cariboo in partnership with Zenon Environmental.
- **Storm Water Management:** Building roof and most of the site are designed to drain to the wetland. Infiltration is promoted through use of permeable pavement, reinforced grass pavement, grass swales and perforated culverts.

5. PROJECT TEAM

- Client: City of Kamloops
- Consultants: Stantec Consulting Ltd., Urban Systems Ltd.
- Sub-Consultants: Stantec Architecture Ltd., LR Pearson & Associates Ltd., Golder Associates Ltd., Watson Engineering Ltd., Carollo Engineers
- Partners: University College of the Cariboo, Zenon Environmental Inc.
- Contractor: Graham Construction and Engineering Inc.