



## CH2M HILL goes for green with new Pine Creek Wastewater Treatment Facility

The City of Calgary, Alberta, has the highest level of wastewater treatment among the major Canadian cities. To maintain this level of treatment—and accommodate a projected population growth of 18 percent by 2007—the city is building the Pine Creek Wastewater Treatment Facility.

CH2M HILL is the prime consultant and has overall responsibility for the project management and process design of the facility. When complete, the facility will treat 185 million gallons per day and serve 1.7 million Calgarians. The facility will have an initial plant capacity of 26 million gallons per day and is expected to begin treating wastewater in 2007.

“The Pine Creek facility will use state-of-the-art treatment processes, including biological nutrient removal (BNR), effluent filtration employing fabric filter technology and ultraviolet light disinfection,” said CH2M HILL project manager Warren Switzer.

The BNR process removes phosphorus and nitrogen from wastewater using microorganisms instead of

chemicals. BNR increases the nutrient value of biosolids that are produced during the treatment process while also reducing the total volume of biosolids that require ultimate disposal to the environment. The enhanced biosolids produced at the facility will be applied to farmland to increase crop productivity.

Another treatment step, effluent filtration, significantly improves the quality of the treated effluent by further reducing the particulate and phosphorus content, while UV-light disinfects the treated effluent to a high quality.

The 300-acre Pine Creek Facility site is located in the idyllic Bow River Valley, a green corridor along the Bow and Fish Creek Provincial Park. This area currently offers recreational opportunities, habitat for wildlife and is home to several archaeological sites.

### Sustainable design

The facility design incorporates the sustainable planning concept of a *triple bottom line* – the balancing of environmental, societal and economic needs. The treatment process will protect

the water quality of the Bow River while the landscaping, layout, architecture, and odor and noise control designs will decrease the burden of the facility on the environment. The landscape design includes trails and bike paths that extend to the plant—and beyond.

The Leadership in Energy and Environmental Design (LEED) Green Building Rating system, which is being used to guide the design of the architectural and landscape components at the site, incorporates green building concepts such as recycled building materials and energy-saving heating and cooling systems.

“The whole site is being approached as a LEED ‘campus’ under the new LEED Canada NC 1.0 accreditation process, subject to approval,” said Mark Crisp, a member of CH2M HILL Canada’s Sustainable Enterprise

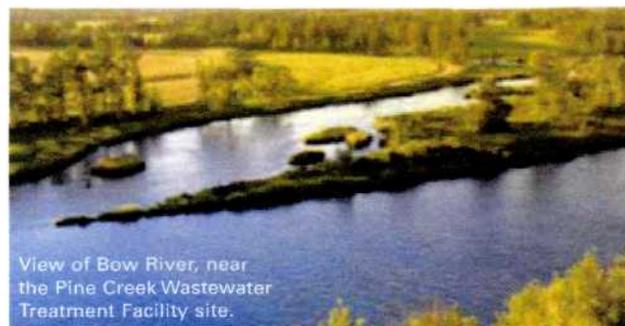
Solutions group. “The operations, maintenance and administration building will be the key LEED building on the site.”

### Cutting-edge research facility

A unique aspect of the plant is the onsite Calgary Water Center. The center is a collaborative effort between the city and the University of Calgary. It will include a university research facility, visitor interpretive center and public education areas focusing on water and water technology.

The university research component of the Center includes a small wastewater treatment plant and up to 12 identical research streams that emulate natural stream flows, riffles and pools. The research streams will model the behavior of chemicals and additives frequently found in streams near urban developments, investigating how the chemicals are transported and where they tend to accumulate in streams. UN Ltd

Facility design for the Pine Creek Wastewater Treatment Plant, located outside Calgary, Canada. The facility features Biological Nutrient Removal (BNR), effluent filtration with fabric filter technology, and UV-light disinfection treatment steps.



View of Bow River, near the Pine Creek Wastewater Treatment Facility site.

Grading at the Pine Creek site in September 2004.

