



## B a c k g r o u n d e r

For Immediate Release

Thursday October 2<sup>nd</sup>, 2008

### Eagle Lake Membrane Filtration Facility

#### Introduction

The District of West Vancouver is a waterfront community spanning 89 square kilometers. It is bordered by Howe Sound to the west, the Capilano River to the east, the Coast Mountains to the north. The municipality's population is almost 45,000.

The District operates a system that distributes potable water supplied from two local sources, namely Eagle Lake and Montizambert Creek and from purchased, bulk, treated water from Metro Vancouver (Capilano or Seymour sources). Detailed information regarding the Metro Vancouver supply can be found through direct contact with the regional district. By optimizing the Eagle Lake water supply, the District:

- has more control over its water supply operations
- reduces its reliance on Metro Vancouver water supply
- enhances system operation, and improves water quality
- saves on water costs in the long term

#### District Water Usage

In 2007, 4.3 million cubic metres of water were provided to District residents from Eagle Lake. The total water consumption in the District was 9.4 million cubic metres in 2007.

#### Eagle Lake Water Availability

Before the new facility, approximately 50% of West Vancouver's water supply came from Eagle Lake. This percentage is expected to increase with a more efficient, reliable treatment system in place. Water use at Eagle Lake will continue to be managed under the fisheries agreement, which ensures adequate flow in the Nelson Creek and Eagle Creek for sensitive fish populations.

The completion of the Eagle Lake Membrane Filtration Facility is a critical part of the District's long-term water stewardship plan, which recognizes that water is a valuable commodity and provides a framework for managing this precious resource. Part of the 2006-2008 Sustainable Future Corporate Business, the Water Conservation Strategy is two-fold:

1. Increase supply and control the rising cost of water via Eagle Lake development
2. Reduce water consumption through water metering and public education

The sustainable management of water resources largely depends on residents sharing the challenge and responsibility for water stewardship – and West Vancouver residents are making significant strides towards sustainable water use. With the onset of universal metering, water use reduced from a high of 758 litres per capita per day to 592 (22% decrease). Provincial water laws are heading towards placing a premium on conservation and efficiency – West Vancouver is ahead of the curve in this effort. See [www.westvancouver.ca/water](http://www.westvancouver.ca/water) for District of West Vancouver water wise incentives.

## History

West Vancouver has used local creeks as water supply sources since the 1920s. After 1947, many of the local sources were decommissioned and water was brought in from Metro Vancouver. By 1973, Metro Vancouver supplied 85% of the West Vancouver water demand. The low pressure of the Metro Vancouver water supply is adequate to serve only the District's two lowest water service pressure zones by gravity. The other eight zones require pumping, which is expensive.

In order to reduce its water supply cost, the District has worked to maximize the use of its own water from the Eagle Lake Reservoir. In addition to Dick Creek, the water supply capacity of the reservoir has been further increased by the construction of diversions on Upper Nelson Creek (1996) and Black Creek (2003). As a result, the dependence on water from Metro Vancouver decreased to 78% in 1998, to 69% in 2000, and to 54% in 2003. With a more efficient, reliable treatment system in place, the percentage of Metro Vancouver water needed for the District is expected to further decrease.

## Leading-Edge Water Treatment

Drinking water from Eagle Lake will soon be treated with state-of-the-art membrane filtration technology which will provide protection against waterborne diseases and the possible impacts of turbidity, while reducing the amount of chlorine used. The treatment process will also include pH adjustment to the naturally acidic source waters.

In late 2002, the District completed a pilot study of low head membrane filtration technology with financial support from Federation of Canadian Municipalities' Green Municipal Enabling Fund and the Province's Local Government Infrastructure Planning Study program. The study showed that this treatment process consistently produced drinking water better than the standards recommended in the Guidelines for Canadian Drinking Water Quality.

The Eagle Lake Development Plan recognizes that water is a valuable commodity. Developing the Eagle Lake water source will help the municipality manage increasing costs of treated water, reduce reliance on Metro Vancouver water, and increase the amount of water supplied by Eagle Lake. Funding of this \$16.8 million water treatment plant was approved by Council in 2006, and the capital cost is being offset by a \$3 million contribution from senior governments (\$1.5 million each from provincial and federal sources). The facility is scheduled for completion in the fall of 2008.

Owned and operated by the District of West Vancouver, the Eagle Lake Membrane Filtration Facility can process up to 21 Mega Litres per day of water – which is the equivalent of filling 15.4 Aquatic Centre pools. **In an effort to provide high quality drinking water with improved taste, this leading-edge water filtration and treatment...**

- **Removes More Waterborne Diseases and Fine Particles** than chlorine alone. (*99.99% viruses, 99.9% giardia cysts, and 99% of cryptosporidium oocysts*)
- **Virtually Eliminates Turbidity** which is a measure of water clarity.
- **Adjusts the pH** of our naturally acidic mountain streams to make water less corrosive on household plumbing.
- **Reduces Chlorine Needed** while maintaining the same amount of disinfectant protection. Less chlorine also reduces the creation of disinfection by-products.
- **Minimizes Energy Consumption** in the water treatment process, compared to other filtration technologies, since low head membrane filtration takes advantage of gravity feed through the plant.
- **Has more than 99% Efficient Water Filtration** with a two-step membrane filtration system that reduces waste water.

The Membrane Filtration Facility also uses a smaller footprint in comparison to other technologies, making it appropriate for the mountainside site. This state-of-the-art technology is well proven for this size facility. A recent study of membrane filtration technology demonstrates that this treatment process consistently produced drinking water better than the standards recommended in the Guidelines for Canadian Drinking Water Quality.

## **Water Quality Background**

### Chlorine Treatment

Our drinking water is currently treated with chlorine. This system disinfects the water of bacteria but cannot remove giardia, cryptosporidium, viruses, or turbidity.

Turbidity is a measure of water clarity and is influenced by the suspension in water of fine particles such as sediment and organic matter. Turbidity in the water supply can result in tap water that appears cloudy or discoloured. Sediment is most often transported into drinking water reservoirs by run-off caused by rainfall, and is most common during the fall and winter months.

Microorganisms can "hide" amongst the particles found in turbid water, and during turbidity events, additional chlorine must be added to ensure adequate disinfection.

### Membrane Filtration

Membrane filtration technology removes fine particles and micro organisms by filtering the water. It removes 99.99% of viruses, 99.9% of giardia cysts, and 99% of cryptosporidium oocysts. The turbidity of treated water is less than 0.1 NTU, compared to the current "optimum" level of 1.0 NTU.

Filtered water will also have a significantly reduced amount of disinfection byproducts – caused by the breakdown of chlorine reacting with organics in the water – such as trihalomethanes and haloacetic acids, because far less chlorine will be used. The water will be clear and the taste will improve.

## **Green Building Features**

Several sustainable green building features were included in the building of the Eagle Lake Membrane Treatment Facility:

- An integrated design process reduced the overall building footprint to minimize disturbance to area
- Ecosmart concrete with high fly ash content reduces the greenhouse gas emissions associated with the production of the concrete
- Ultra-low flow plumbing fixtures reduce water use significantly
- Minimal lighting reduces habitat disturbance
- Permeable parking areas reduces stormwater runoff
- Native plant landscaping provides wildlife habitat and eliminates the need for irrigation
- Blasted rock was crushed into gravel and utilized as trench backfill and in the foundation
- Excess gravel was used on Community Centre project
- Plywood sheets from the construction and membranes packages were donated to Habitat for Humanity for reuse
- Dedicated hybrid vehicle to be used by plant operator

**For more information** on the District's water supply, treatment, and water wise initiatives, please visit [www.westvancouver.ca/water](http://www.westvancouver.ca/water).

- 30 -

### **Media Contacts:**

Patricia Leslie  
Communications Manager  
604-925-4736

Raymond Fung  
Acting Director of Engineering & Transportation  
604-925-7159