



# Corporate *NO: R141*

# Report *COUNCIL DATE: June 25, 2001*

<b>REGULAR COUNCIL</b>			
<b>TO:</b>	<b>Mayor &amp; Council</b>	<b>DATE:</b>	<b>June 19, 2001</b>
<b>FROM:</b>	<b>General Manager, Engineering</b>	<b>FILE:</b>	<b>1230-001</b>
<b>SUBJECT:</b>	<b>Phasing of Filtration of Capilano Water</b>		

## RECOMMENDATIONS

That Council request the Greater Vancouver Water District to:

1. Request the new Provincial Government to reconsider the appropriateness of the recently introduced Safe Drinking Water Regulations relating to turbidity.
2. Not proceed with construction of ozone treatment at Capilano pending reconsideration of filtration options.
3. Not make further decisions on filtration until there has been a response from the Province on Recommendation 1 above.

## INTENT

To provide Council with background information relating to the filtration of drinking water from Capilano Lake.

## BACKGROUND

The attached report to the Water Committee of the GVWD provides background to the issue of filtration of drinking water supplied from Capilano Lake. This issue has been raised due to the previous Provincial Government introducing changes to the drinking water regulations just before the election.

Before these changes, the Region had been using the Canadian Drinking Water Quality Guidelines as the basis

under which capital works were being planned and the system operated. The change to standards, in essence, relates to the allowable turbidity (i.e., siltiness/cloudiness) of the water. This turbidity is measured in Nephelometric Turbidity Units or NTU.

The Canadian Drinking Water Quality Guidelines allow, in certain circumstances, drinking water to be up to 5 NTU. However, the new Provincial regulation states that if drinking water exceeds 1 NTU, that the Medical Health Officers have the discretion to decide if further action to improve water quality is required. As stated in the GVWD report, this places a great deal of responsibility on the shoulders of the Medical Health Officers. Our expectation is that, if the Provincial regulations remain unchanged, the Medical Health Officers would err on the side of safety and require the water supply to be brought towards 1 NTU.

### **Impact of Turbidity on Health**

Turbidity impacts the safety of drinking water in that higher turbidity can reduce the effectiveness of primary disinfection. This was highlighted by the publication of a Health Canada study in late 2000 that found a statistical connection between turbidity in Greater Vancouver's water and the incidence of gastro-intestinal disease in the population between 1992 and 1998. Since this timeframe, primary and secondary disinfection has been steadily improving as has the amount of water main flushing leading to an overall improvement in water quality. While the interpretation of this study is open to question, it reinforces the view in the medical health and water research community that by reducing the effectiveness of the disinfection process, turbidity increases the risk of illness from waterborne organisms. The issue of what level of turbidity impacts disinfection is open to question.

Turbidity also has an aesthetic impact in that water with between 5 and 10 NTU appears slightly cloudy; however, water lower than 5 NTU is virtually indistinguishable from water with 1 NTU.

### **Works Necessary to Reduce Turbidity**

The Region is supplied by three mountain lakes: Coquitlam, Seymour and Capilano. Of these lakes, Coquitlam has the lowest average turbidity and Capilano the highest average. However, all lakes have occasional spikes of turbidity due to rain storm events, small washouts or small land slides. The current Regional plan has constructed a transfer trunk water main to cross supply areas so that if one lake has a turbidity event, it can be closed down and water be supplied from the other two. The next stage of the plan was for filtration to be constructed at Seymour to provide additional assurance of supply of low turbidity water.

With this system in place, the 5 NTU Canadian Water Quality Guidelines Standard could be met except in very extreme circumstances. This system cannot, however, meet the new 1 NTU Provincial Drinking Water regulation.

Due to the frequency of turbidity in Capilano, the only way to achieving 1 NTU, at this source, is filtration (over the last 11 years, Capilano has exceeded 1 NTU just over 50% of the time, compared to Coquitlam which exceeded 1 NTU about 10% of the time). The current proposal is to construct a tunnel to take water from Capilano to an expanded Seymour filtration plant and a second tunnel to return filtered water back to Capilano. The estimated cost for this is \$280 million. These filtration works do, however, avoid the need for the \$80 million ozone disinfection system at Capilano; consequently, the net cost for filtration is in the order of \$200 million.

The decision on whether to proceed with the \$80 million ozone disinfection works is currently on hold pending a decision on Capilano filtration. If filtration is provided, a significantly lower cost primary disinfection system can be used.

## Impact on Surrey

Surrey is, under normal operations, supplied by water from Seymour and Coquitlam lakes. Should there be high turbidity events at all three lakes, as happened in 1991, then the filtered Seymour source alone would not have sufficient capacity to provide water for the whole region. A minimum of two out of the three lakes is required to meet off-peak (i.e., spring, winter, fall) supply needs. Adding filtration at Capilano will enable the system to provide sufficient water at 1 NTU for the whole region.

## Impact on Water Rates

Construction of filtration for Capilano water will increase regional water costs over current projections by about 5 to 6 cents a cubic metre. Projections are as follows:

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**¢ a cubic metre**

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Projected Rate without Capilano Filtration	18.8	26.6
Projected Rate with Capilano Filtration	18.8	32.6

This increase represents about an additional \$25 a household.

## DISCUSSION & CONCLUSIONS

The decision on filtration at Capilano is a question of balance between public expenditures and potential, or perceived, public health impacts. Such decisions are never easy. As outlined in the attached report to the Water Committee, there have never been any waterborne disease outbreaks associated with the regional water supply, and the quality of this supply has increased over the last few years and, under the current plan, will increase into the future. The question is whether this increase is at a pace fast enough to satisfy the Medical Health Officers, public opinion, and Federal/Provincial regulations and guidelines, especially in light of recent events in Walkerton and North Battleford.

The need for a decision on further acceleration of filtration is now being prompted by the recent new Provincial Safe Drinking Water Regulations and the need to decide on whether to proceed with the ozone disinfection system at Capilano. We believe that before any action is taken by the region, the Province needs to reconsider the appropriateness of the new regulations regarding turbidity and the specific conditions of the water supply in this region.

Should the Province not reconsider the current drinking water regulations and should the Medical Health Officers not use their discretionary powers to allow water supply at between 1 and 5 NTU, then there is little alternative to bringing forward the filtration of Capilano water.

We do not believe that the expenditure of \$200 million on filtration of Capilano water is the best expenditure of community resources in terms of overall health benefits. However, it has not been possible to engage Provincial health agencies in this type of debate. Each branch of Government deals with its own issues without necessarily looking at the wider implications.

Based on the above, we believe the best course of action is to:

1. request the Province to reconsider its regulations on turbidity,
2. hold off on ozonation at Capilano,
3. seek a commitment from the Medical Health Officers to use their discretionary powers to allow water supply of up to 5 NTU.

Should 1 and 3 not yield results, then the most cost-effective way of providing water at 1 NTU for the region needs to be re-evaluated including a review of the current proposal to convey water by tunnel from Capilano to an expanded filtration plant at Seymour.

We understand that the majority of the GVWD member municipalities support the proposal that the safe drinking water regulations be reconsidered by the Provincial government and that filtration / ozonation decisions be deferred pending this reconsideration.

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PH/brb

**Attachment**

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