



**REPORT TO REGIONAL WATER SUPPLY COMMISSION  
MEETING OF WEDNESDAY, 18 MAY 2011**

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**SUBJECT**      **WATER QUALITY TRENDS IN SOOKE RESERVOIR IN MARCH AND APRIL 2011**

**ISSUE**

To provide information on the water quality conditions observed in Sooke Reservoir during March and April 2011 and compare these data with those from previous years and long-term averages.

**BACKGROUND**

**Physical Parameters**

*Water Levels.* Throughout March and April 2011, the water level in Sooke Reservoir remained at full pool for the entire month (**Figure 1**).

*Water Temperature.* In March and April 2011, the weekly average temperature of the water entering the Japan Gulch Disinfection Plant was similar to the 10-year average (**Figure 2**). **Note:** The small circles on the chart show the extent of water temperature variation in previous years.

**Water Clarity**

*Turbidity.* In March and April 2011, the turbidity of the water in Sooke Reservoir was generally lower than the 10-year average throughout the reservoir and well below the 1.0 NTU turbidity limit (**Figure 3**).

*Water Transparency.* In March and April 2011, the transparency of the water throughout Sooke Reservoir continued to be better (clearer) than the 10-year average (**Figure 4**) and appears to be returning to the very clear water observed prior to raising the reservoir.

**Bacteria**

*Total Coliform Bacteria.* In March and April 2011, the total coliform concentrations in the raw source water entering the Japan Gulch Disinfection Plant from Sooke Reservoir continued to be well below the 10-year average and similar to levels observed in 2010 (**Figure 5**). *E. coli* concentrations remained low throughout March and April, well below the USEPA limit to remain an unfiltered supply (see **insert in Figure 5**).

**Nutrients**

*Phosphorus.* In March and April 2011, the total phosphorus concentrations in both the south and north basins were lower than the 10-year average (**Figures 6 and 7**). This lower level coincides with the prediction of Dr. A. Mazumder, University of Victoria, that the quality of water in Sooke Reservoir would gradually improve over the decade following the expansion of the reservoir.

*Nitrogen.* Broadly, the total nitrogen levels in both the south and north basins continued to be similar to the 10-year average (**Figures 8 and 9**) in March and April 2011.

### **Chlorophyll-a**

In March and April 2011, chlorophyll-a concentrations were similar to the 10-year average throughout Sooke Reservoir (**Figures 10-12**). These concentrations are relatively low for a surface water reservoir and reflect the low levels of nutrients (especially phosphorus) in this water body.

### **Algae**

Similar to previous years, *Asterionella formosa* and *Tabellaria fenestrata* (colonial diatoms) were dominant in Sooke Reservoir in both March and April. No water quality problems were attributed to the concentration of algae in Sooke Reservoir during March and April 2011.

### **CONCLUSION**

The water quality tests conducted for Sooke Reservoir in both March and April continue to show good quality source water with no water quality issues.

### **RECOMMENDATION**

That the Regional Water Supply Commission receive this report for information.

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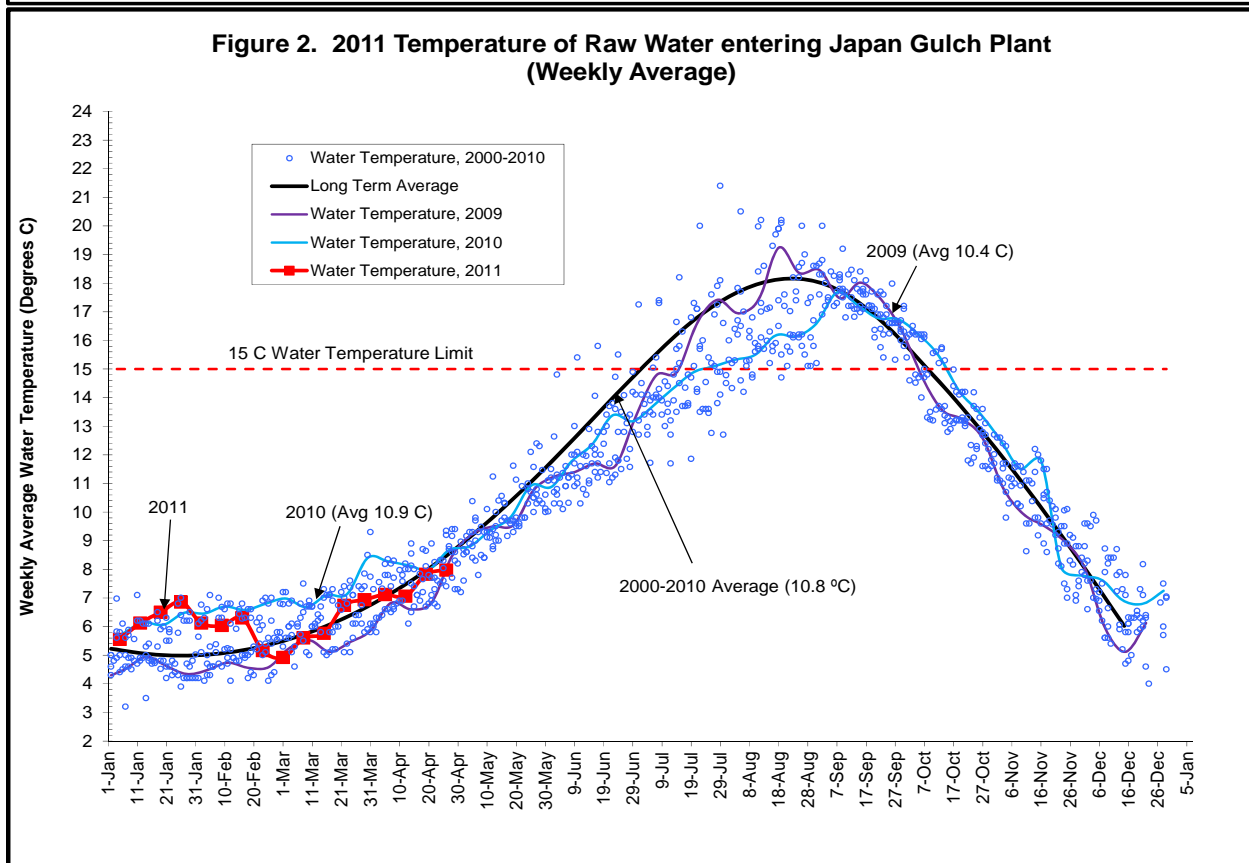
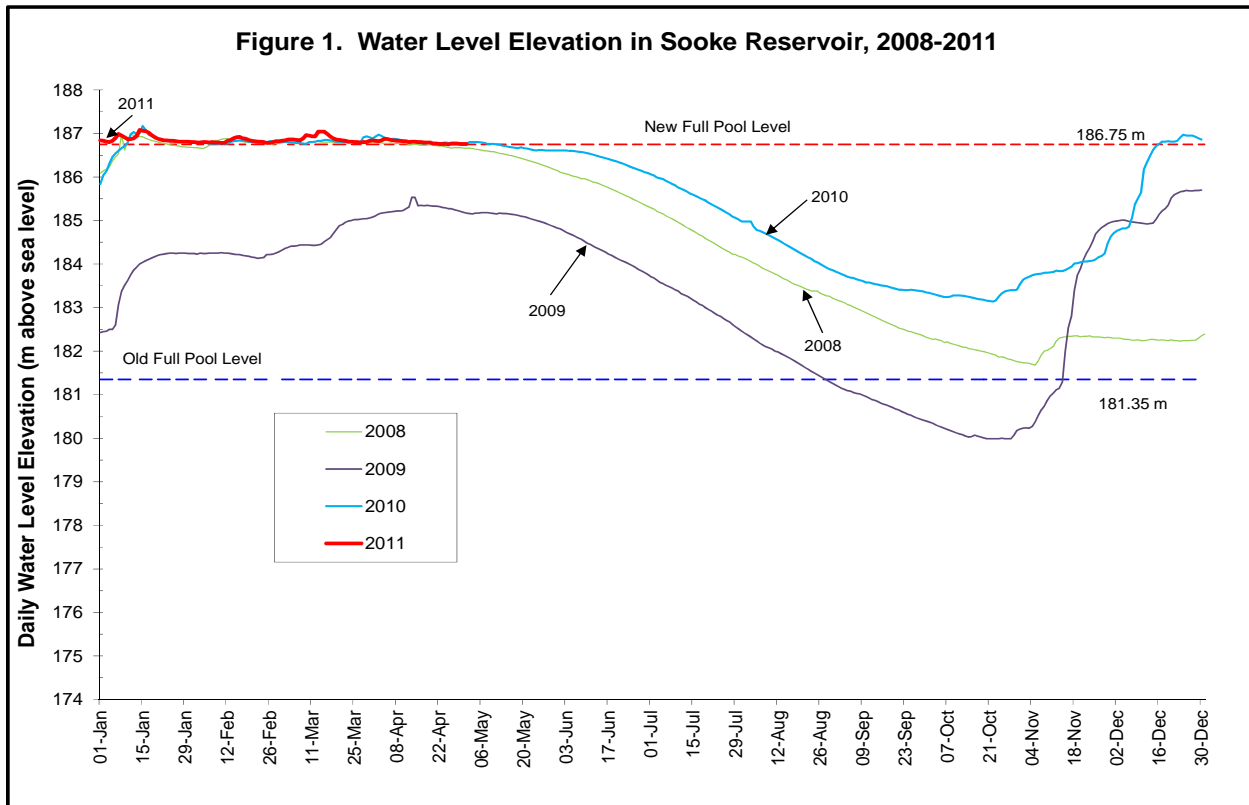
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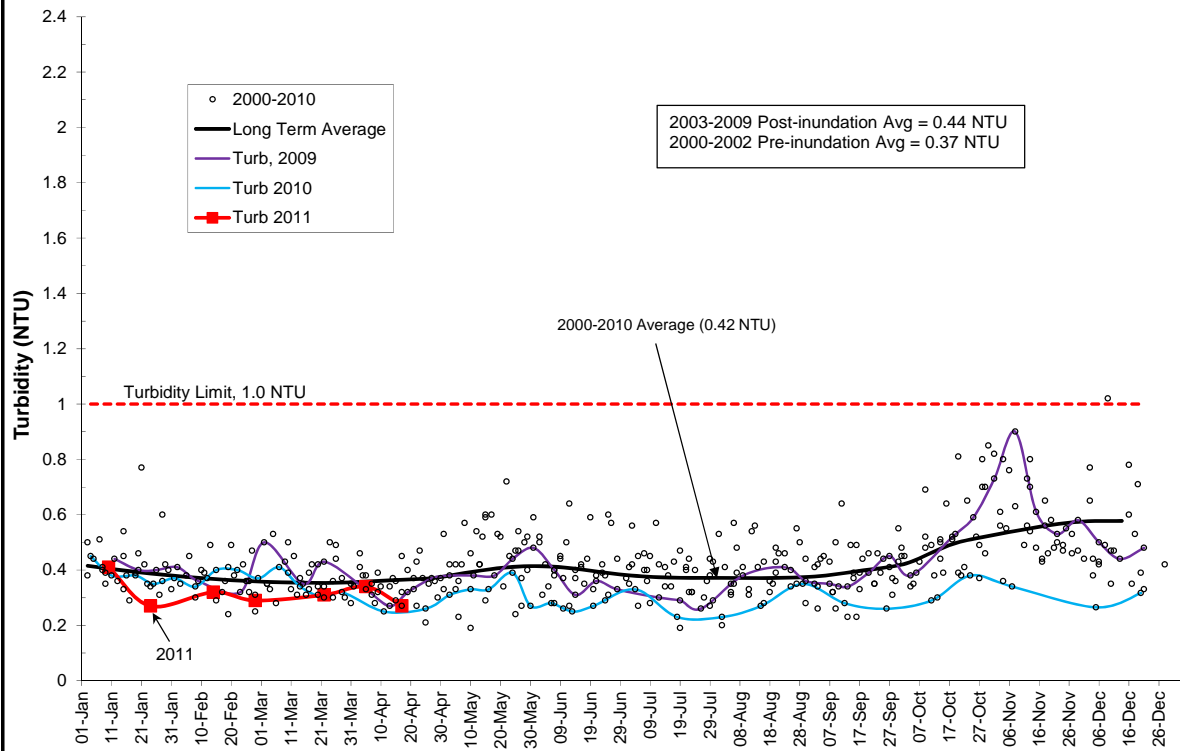
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**Figure 3. 2011 Turbidity in Sooke Reservoir Intake Tower, 1m depth (SOL-00-01)**



**Figure 4. 2011 Water Transparency in Sooke Reservoir Intake tower, (SOL-00-01)**

