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Agenda Item #8
REPORT #RWSC 2008 - 14

**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, JUNE 19, 2008**

SUBJECT WATER QUALITY TRENDS IN SOOKE RESERVOIR IN MAY 2008

SUMMARY

The water quality tests conducted for Sooke Reservoir during May 2008 continued to show good quality source water.

PURPOSE

This report provides information on the water quality conditions observed in Sooke Reservoir during the month of May 2008 and compares these data with those from previous years and long-term averages.

Physical Parameters

Water Levels. During May the water level in Sooke Reservoir declined gradually, following a similar pattern to that in 2007. By the end of May the water level was about 0.6 m below full pool level of 186.75 metres (186.15 m) (**Figure 1**).

Water Temperature. During May, the weekly average temperature of the water entering the Japan Gulch Treatment Plant was cooler than the pre-inundation average by more than 1°C, averaging only 9.4°C versus 10.5°C (**Figure 2**). This drop in water temperature was due to colder than average temperatures in May and not due to the raising of the water level in the reservoir.

Water Clarity

Turbidity. During May, the turbidity of the water in Sooke Reservoir averaged 0.44 NTU. This value is consistent with the post-inundation average during that same time period and about 0.18 NTU above the pre-inundation average (**Figure 3**).

Water Transparency. In May 2008, the transparency of the water throughout Sooke Reservoir was better than the post-inundation average but slightly worse than the pre-inundation average (**Figure 4**).

Bacteria

Total Coliform Bacteria. The total coliform bacteria concentration in the water entering the Japan Gulch Treatment Plant from Sooke Reservoir was similar, albeit slightly lower than levels observed in past years and similar to winter conditions of low coliform counts. By the end of May, the total coliform level was about 14 colony forming units per 100 mL. This is a very low number and indicates good bacterial quality.

Nutrients

Phosphorus. During May, the total phosphorus concentrations continued to decline in both basins, approaching the pre-inundation average (**Figures 5 and 6**). (**Note:** In the charts, the bars on each data point indicate the range of data observed from triplicate samples.)

Nitrogen In May, the total nitrogen levels fluctuated in the south basin (**Figure 7**) and remained fairly steady in the north basin (**Figure 8**) of Sooke Reservoir. Generally, the total nitrogen concentrations drew closer to the pre-inundation averages in both basins.

Chlorophyll-a

In May, chlorophyll-a concentrations continued to rise throughout the reservoir, peaking in mid- to late May and then returning to below post-inundation levels at the intake tower (**Figure 9**) and to pre-inundation averages in the north basin (**Figure 10**).

Algae

In May, several species of diatoms continued to increase in concentration. A short mini-bloom of the diatom *Tabellaria fenestrata* occurred in mid-May as well as a short mini-bloom of another diatom, *Asterionella formaosa*. Both of these diatom species can clog home filtration devices and can impart a fishy or oily odour on the water. However, due to the short duration and relatively low concentrations in these mini-blooms, there were no significant increases in customer complaints in either fishy odours or filter-clogging over this period of time.

Zooplankton concentrations remained low to average and did not present a filter clogging problem.

Inundation Scientific Advisory Working Group

The Sooke Reservoir Inundation Scientific Advisory Working Group met on June 6, 2008. No concerns or new monitoring recommendations were voiced.

RECOMMENDATION

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

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Concurrence

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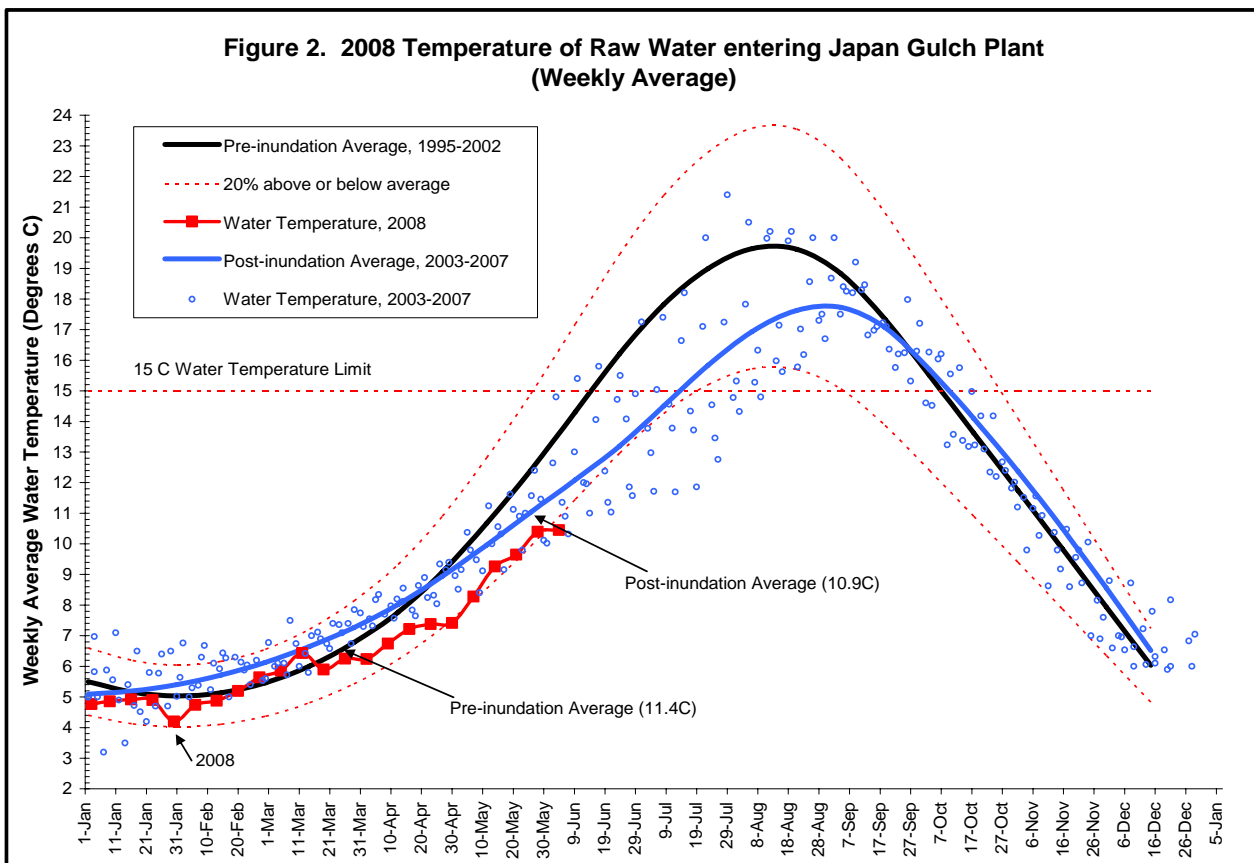
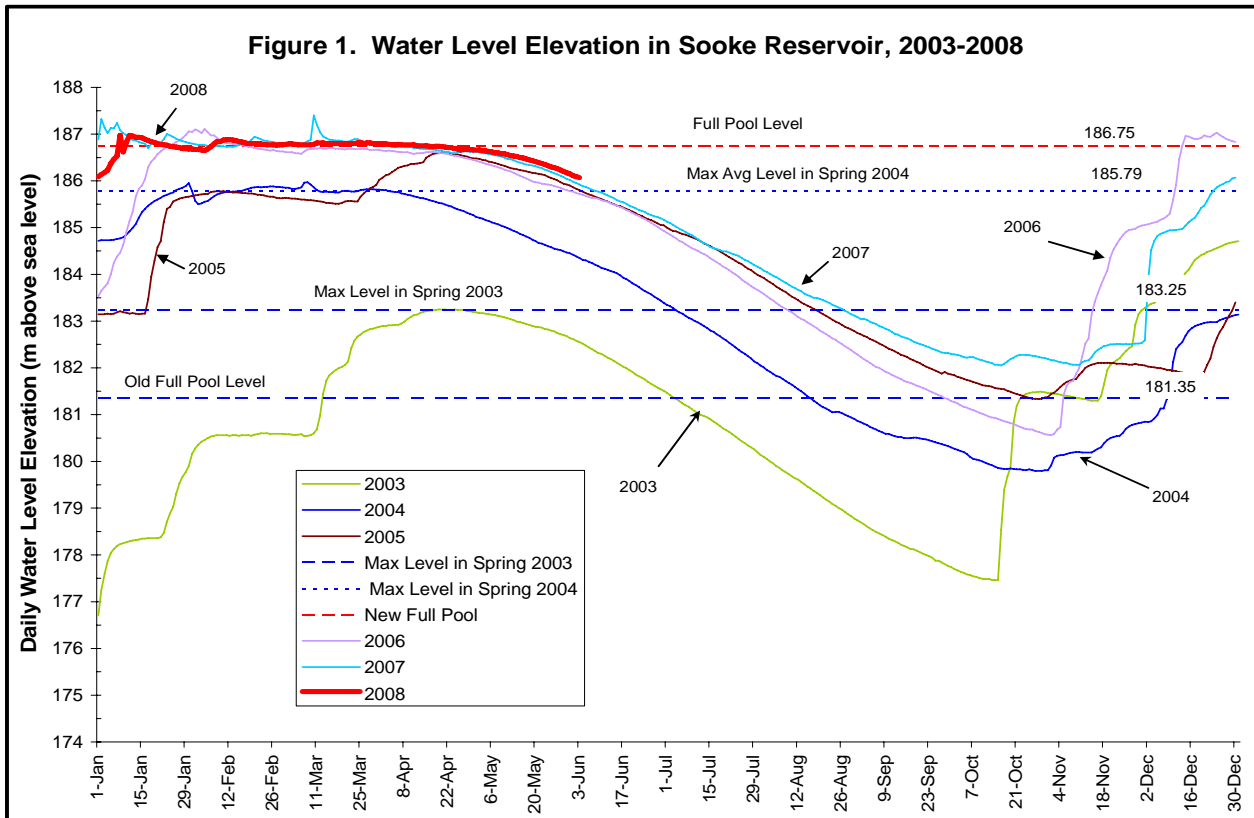


Figure 3. 2008 Turbidity in Sooke Reservoir
 North Basin, 1m depth (SOL-04-01)

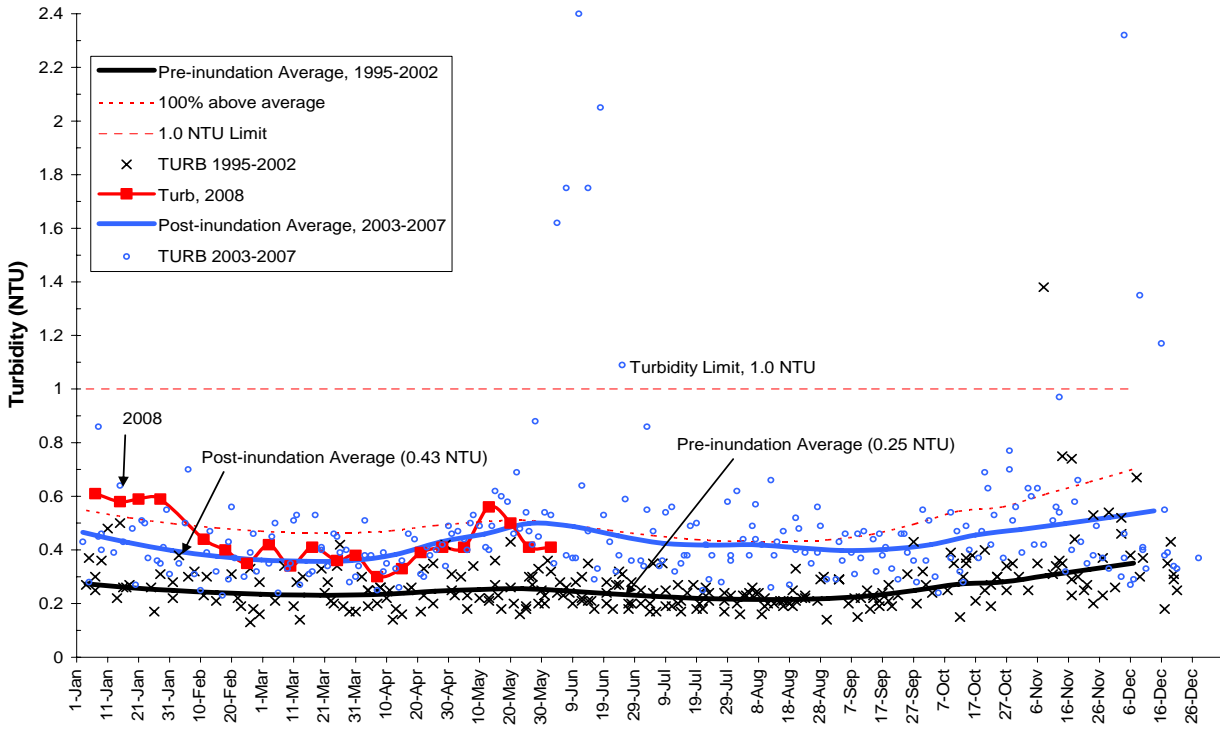
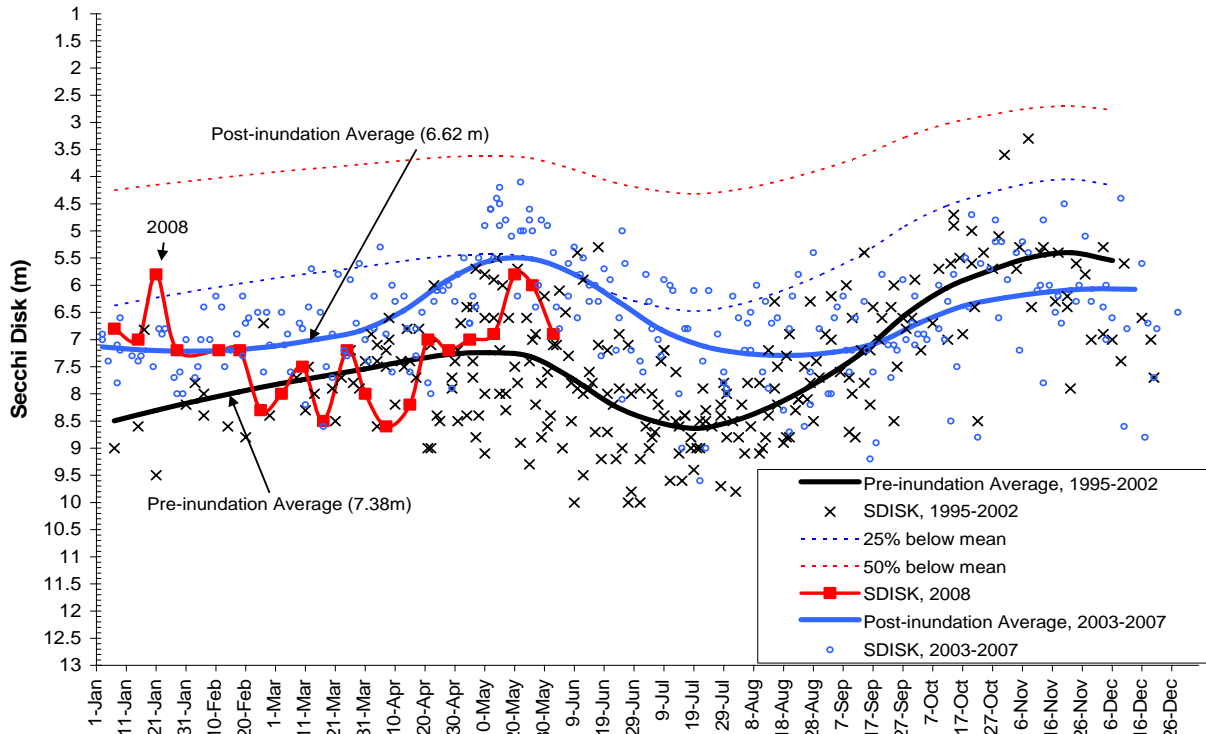
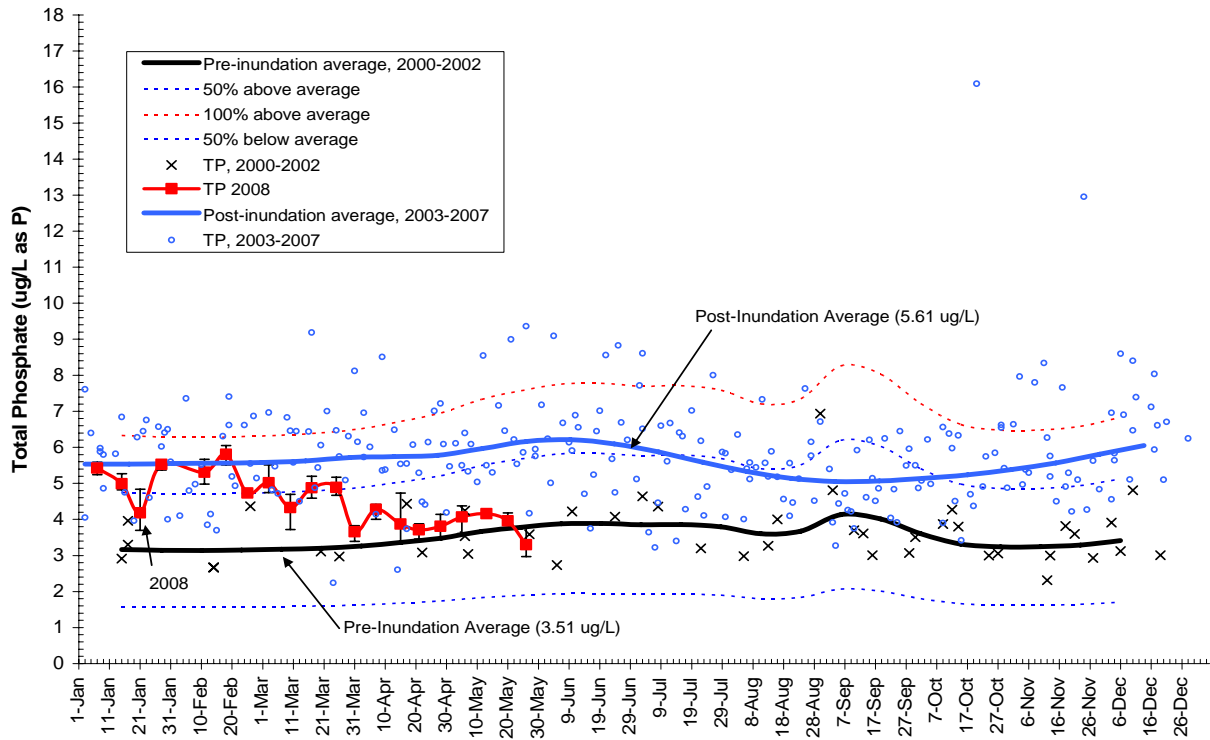


Figure 4. 2008 Water Transparency in Sooke Reservoir
 Intake tower, (SOL-00-01)



**Figure 5. 2008 Total Phosphorus for Sooke Reservoir
 South basin, 1 m depth (SOL-01-01)**



**Figure 6. 2008 Total Phosphorus for Sooke Reservoir
 North basin, 1m depth (SOL-04-01)**

