



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

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SUBJECT WATER QUALITY TRENDS IN SOOKE RESERVOIR IN OCTOBER 2008

SUMMARY

The water quality tests conducted for Sooke Reservoir in October 2008 continued to show good quality source water.

PURPOSE

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

**Physical Parameters**

*Water Levels.* During the month of October 2008, the water level in Sooke Reservoir continued to gradually decline following a similar pattern to 2007. By the end of October, the water level was 5 m below full pool level of 186.75 m (181.75 metres) (**Figure 1**). This level is about half a meter less water volume than at the same time last year.

*Water Temperature.* During October, the weekly average temperature of the water entering the Japan Gulch Treatment Plant declined to the average values observed in past years (**Figure 2**). As in past years, the water temperature remained under the 15°C limit for the entire month with an average water temperature of 13.2°C.

**Water Clarity**

*Turbidity.* During the month of October, the turbidity of the water in Sooke Reservoir averaged 0.43 and 0.41 NTU in the south and north basins, respectively. These values were slightly lower (better) than the post-inundation average during that same time period and slightly above (worse) the pre-inundation average (**Figure 3**). This trend in slightly higher turbidity in October was consistent throughout the Reservoir.

*Water Transparency.* In October, similar to the previous month, the transparency of the water throughout the reservoir was better than both the post-inundation average and the long-term, pre-inundation average (**Figure 4**).

**Bacteria**

*Total Coliform Bacteria.* As expected, the raw source water entering the Japan Gulch Treatment Plant from Sooke Reservoir had declining total coliform concentrations over the month of October. By the end of October, the total coliform level declined to about 75 colony forming units per 100 mL. This pattern of declining total coliform numbers in October was similar to past years and it is also a relatively low number which indicates relatively good bacterial quality in Sooke Reservoir.

**Nutrients**

*Phosphorus.* During October, the total phosphorus concentrations generally continued to remain lower than the post-inundation average in both basins (**Figure 5 and 6**). In both basins, the total phosphorus level averaged slightly above the long term pre-inundation. (**Note:** In the charts, the bars on each data point indicate the range of data observed from triplicate samples).

*Nitrogen.* In both south and north basins, the total nitrogen levels remained at the post-inundation average levels for the entire month of October with the exception of the last week in October when the levels in both basins rose well above the post-inundation averages (**Figures 7 and 8**). This sudden increase in total nitrogen may be artifact. Subsequent samples will provide this information.

### **Chlorophyll-a**

Throughout Sooke Reservoir in September, chlorophyll-a concentrations were generally above the low pre-inundation average and hovered around the higher post-inundation average (**Figures 9 and 10**). However, the chlorophyll levels were relatively low throughout the reservoir in October. This indicates that there is no particular problem with algal concentrations.

### **Algae**

There were no algal blooms during the month of October.

### **Inundation Scientific Advisory Working Group**

The Sooke Reservoir Inundation Scientific Advisory Working Group did not meet in September or October due to the lack of significant biological activity in Sooke Reservoir. The next meeting is scheduled for December.

### RECOMMENDATION

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

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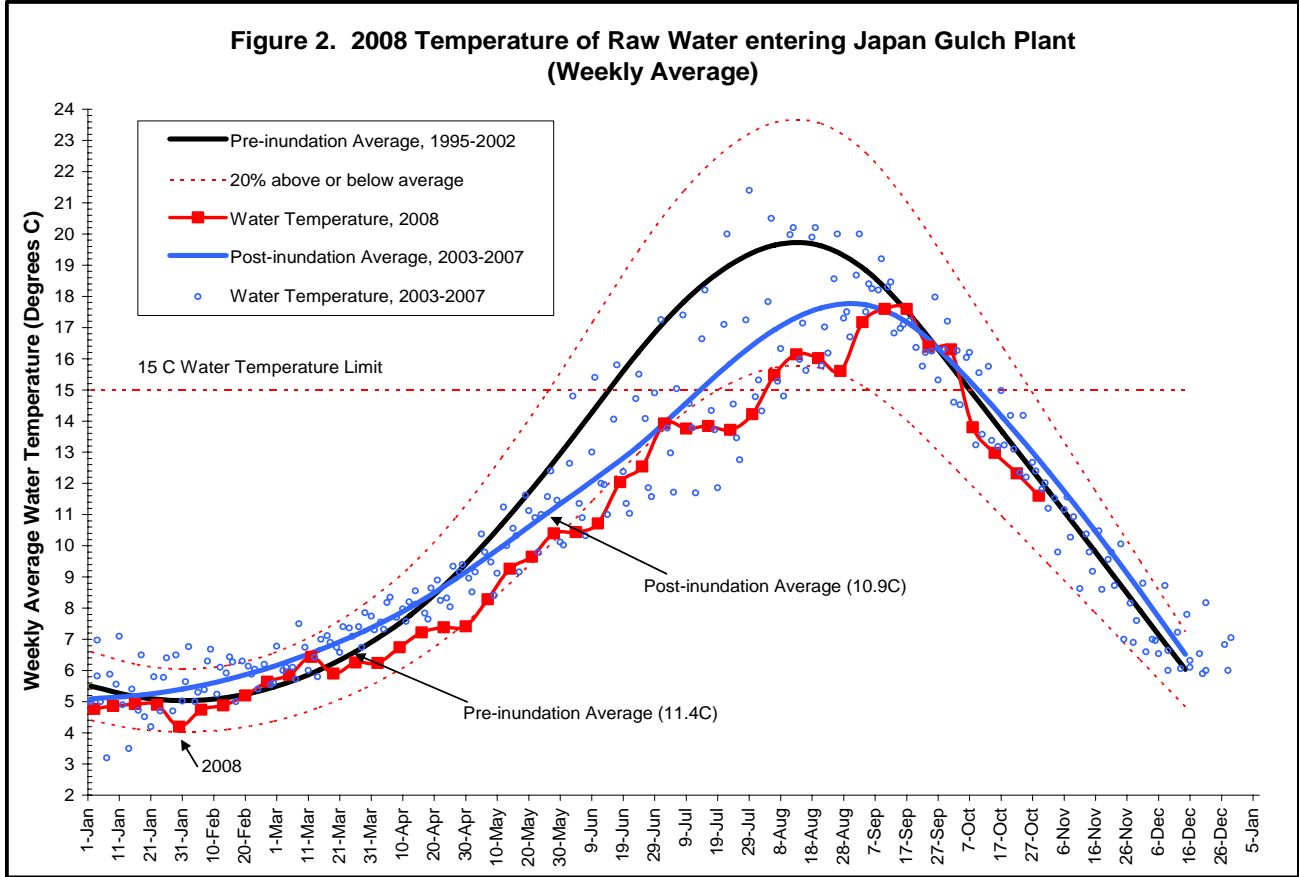
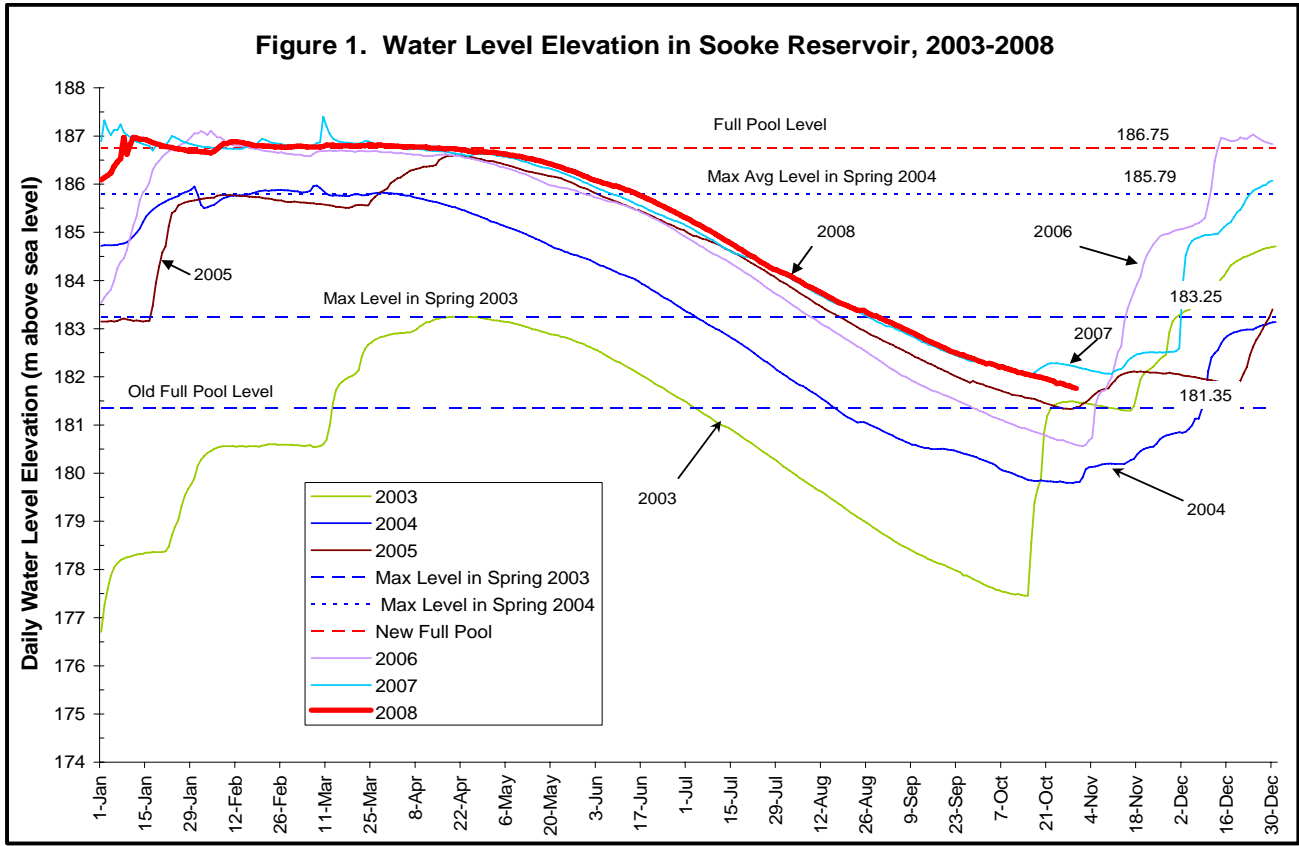
Maria Roxborough  
Laboratory Manager, Water Quality

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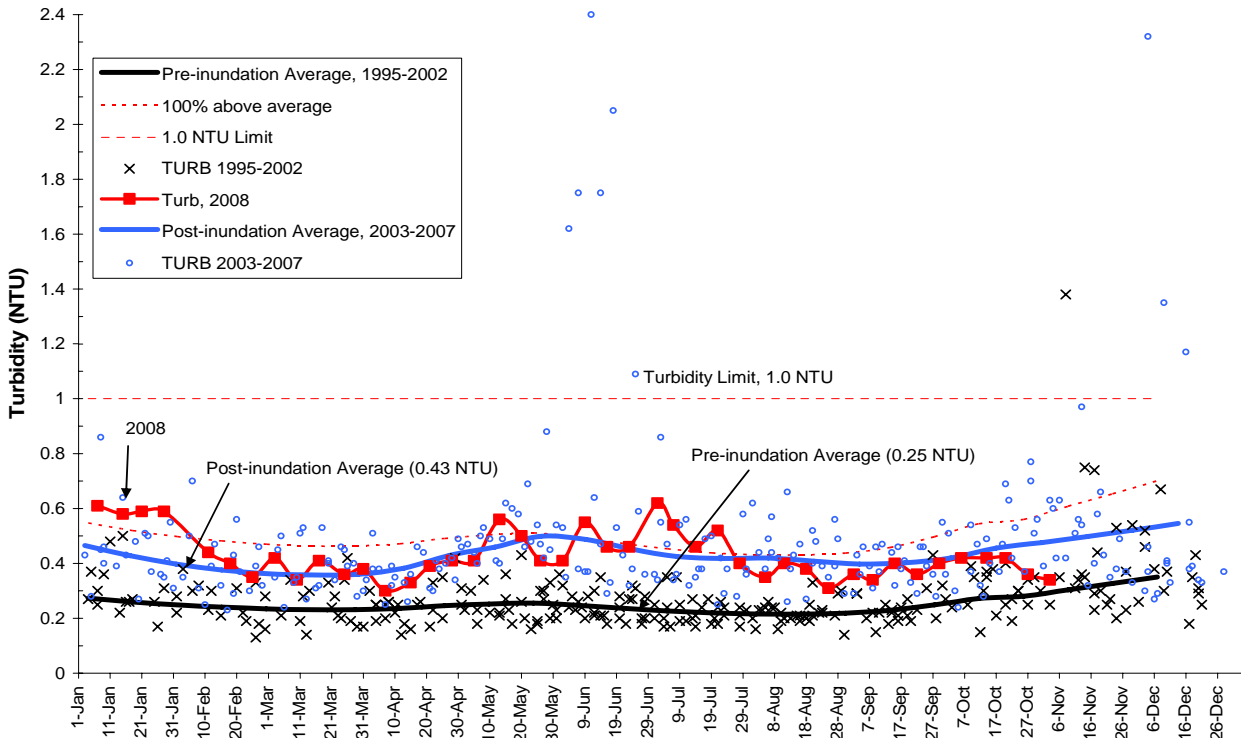
J. A. (Jack) Hull, MBA, P. Eng.  
General Manager, Water Services

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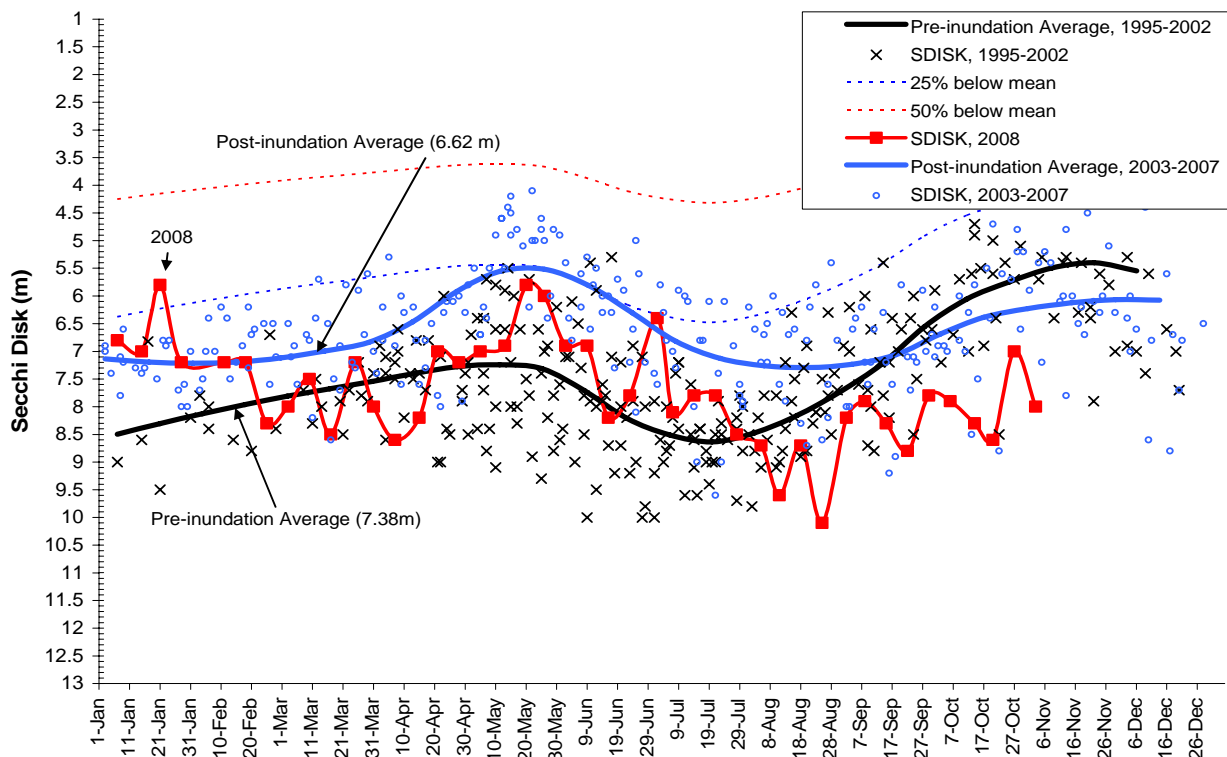
Stewart Irwin  
Senior Manager, Water Quality



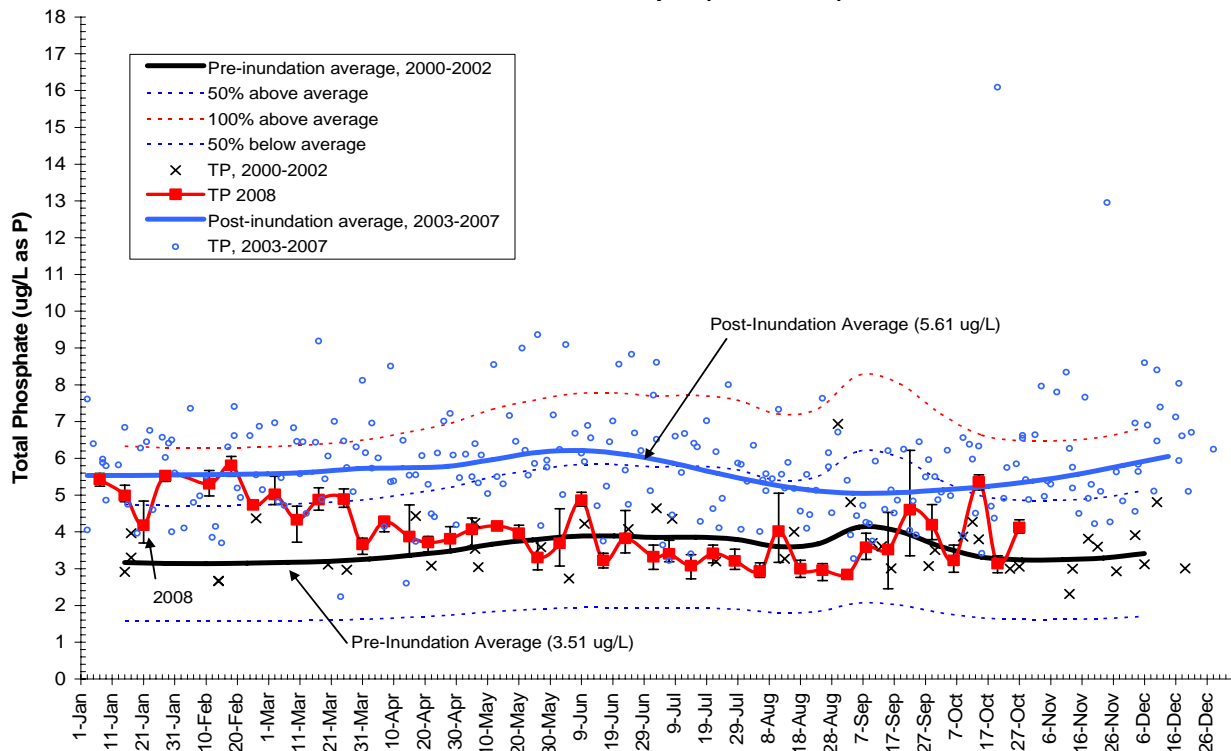
**Figure 3. 2008 Turbidity in Sooke Reservoir  
 North Basin, 1m depth (SOL-04-01)**



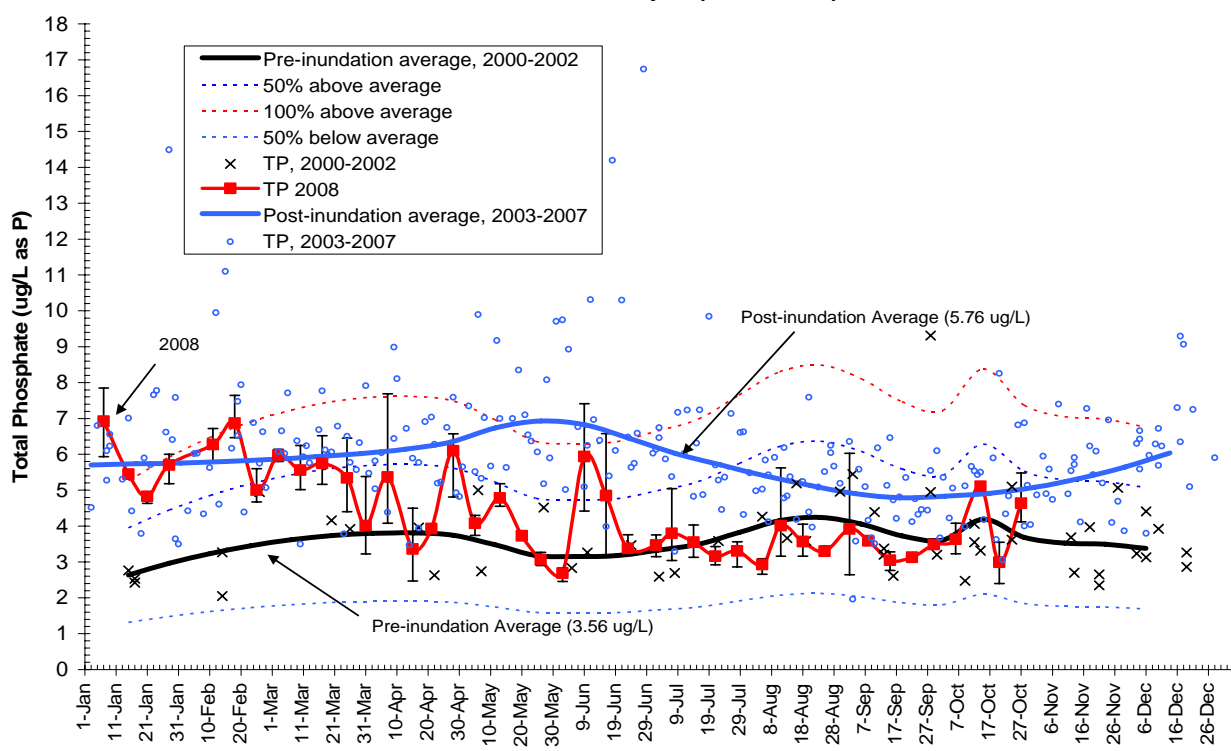
**Figure 4. 2008 Water Transparency in Sooke Reservoir  
 Intake tower, (SOL-00-01)**

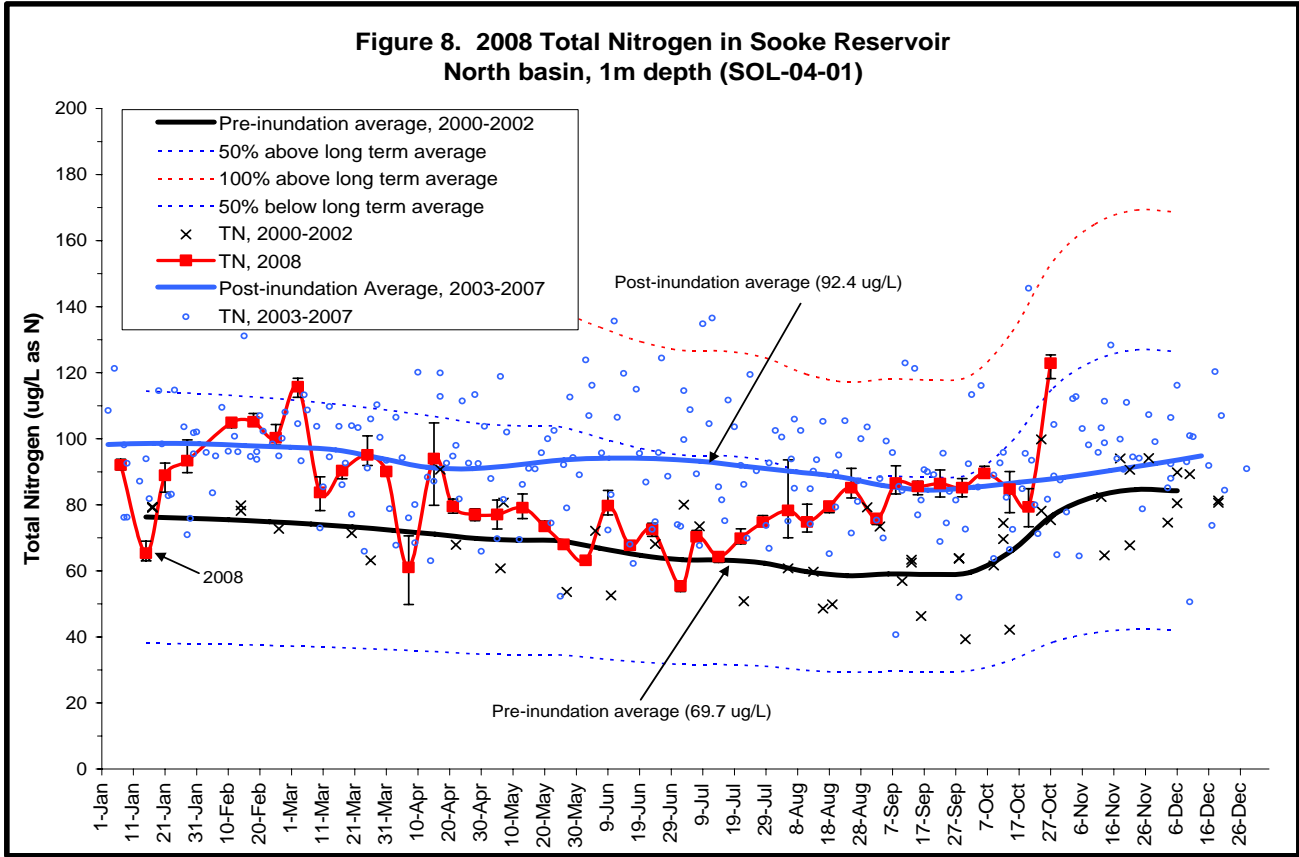
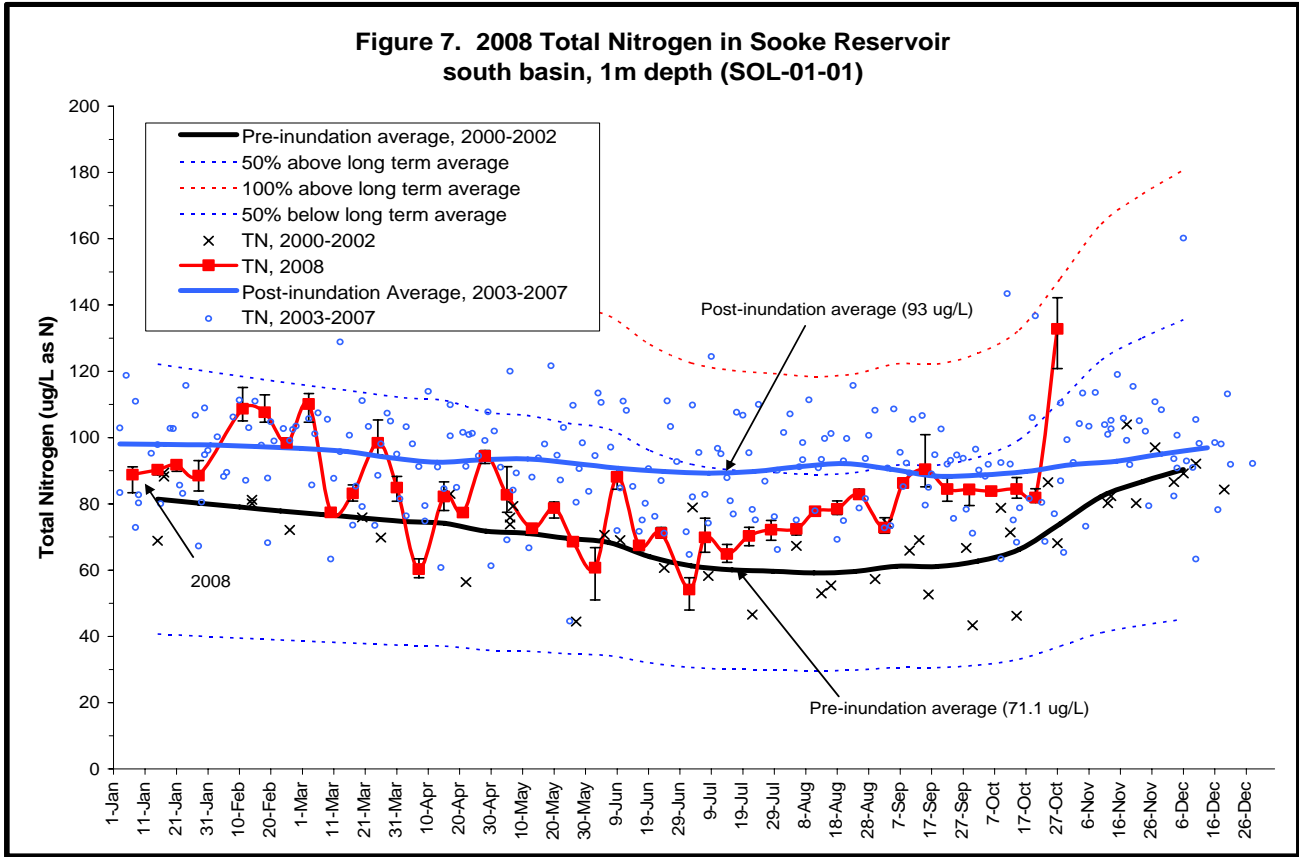


**Figure 5. 2008 Total Phosphorus for Sooke Reservoir South basin, 1 m depth (SOL-01-01)**

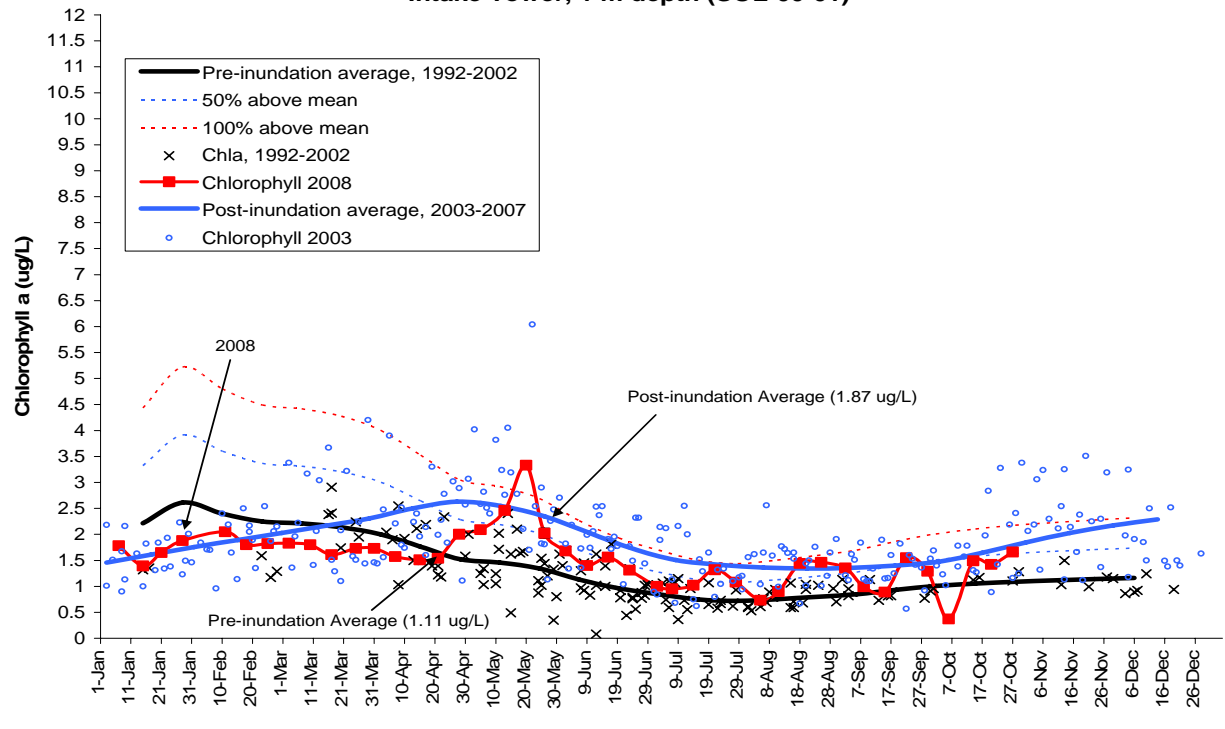


**Figure 6. 2008 Total Phosphorus for Sooke Reservoir North basin, 1m depth (SOL-04-01)**





**Figure 9. 2008 Chlorophyll-a in Sooke Reservoir Intake Tower, 1 m depth (SOL-00-01)**



**Figure 10. 2008 Chlorophyll-a in Sooke Reservoir North Basin, 1 m depth (SOL-04-01)**

