



INFORMATION ONLY COUNCIL REPORT  
Engineering and Public Works  
For the July 9, 2019 Council Meeting

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DATE: July 4, 2019  
TO: Tracey Batten, Deputy CAO  
FROM: Allen Fillion, GM of Engineering & PW  
RE: Water Supply Update

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**BACKGROUND:**

Adequate snowpack is a key contributor to ensuring our water storage reservoirs are able to fill in the spring. Full reservoirs in the spring ensures adequate water supply throughout the typically warm and dry summer months and into the fall without drawing our reservoirs down too low and compromising the ability to refill them for the following year. The main risk with our reservoir levels is subsequent drought years and hence the importance of always being able to refill our reservoirs over the winter and spring.

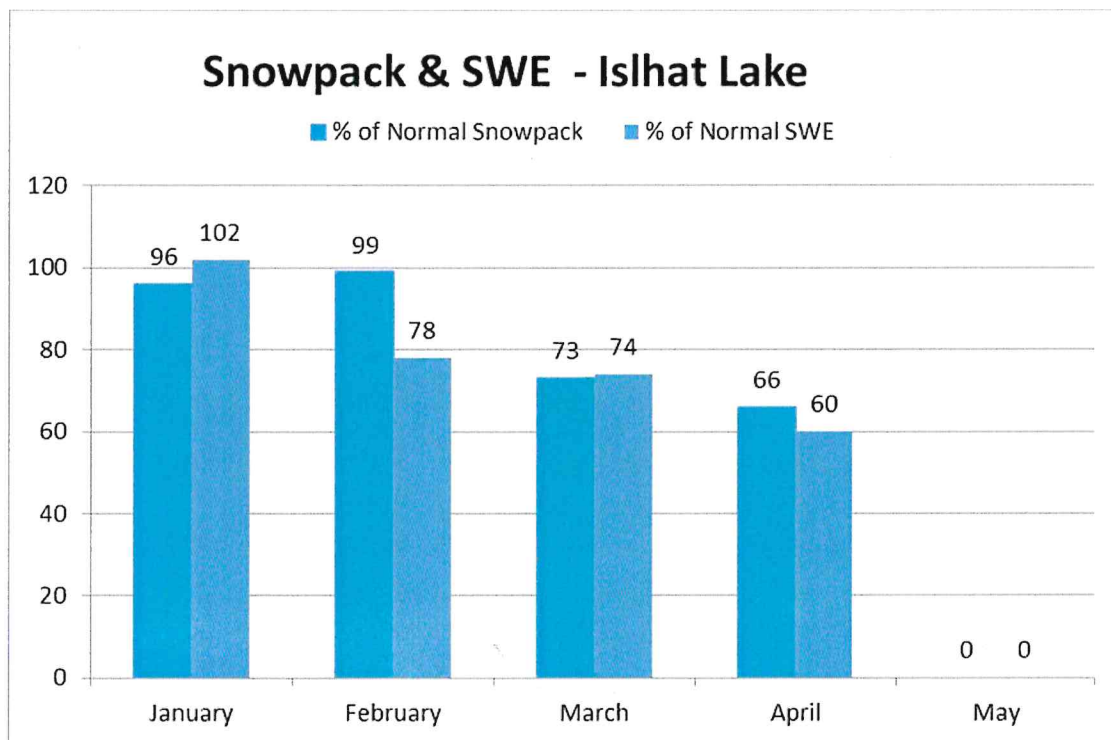
City of West Kelowna staff have been measuring snowpack levels at Islaht (Horseshoe) Lake dating back to 1982. Islaht Lake (elevation 1480 meters) is in the upper portion of the Powers Creek watershed. Staff measure both snowpack and snow water equivalent (SWE) levels on a monthly basis through the winter months. Snow water equivalent is the amount of water contained within the snowpack. It can be thought of as the depth of water that would theoretically result if you melted the entire snowpack instantaneously.

**FIGURE 1 – SNOWPACK AT ISLAHT (HORSESHOE) LAKE**



This past winter saw the majority of snowpack built up in a six-week period in December and January. As such, our snowpack in January was near normal levels. February was a very cold month with some precipitation that kept snowpack levels near normal. March brought mixed weather, generally cooler than normal in the first half and warmer than normal in the second half. March was however a very dry month and as such our snowpack levels dropped to 72% of normal. A significant difference in low to mid elevation and upper elevation snow resulted from the warmer weather in late March. Low to mid elevation snow began to melt early and much of the snow was gone by early May. This trend was two to three weeks ahead of normal timing. Even with weather returning to normal conditions in April, our snowpack had dropped to 65% of normal by months end due to the early melt. May weather started warm and dry and resulted in our snowpack essentially disappearing well ahead of normal. Figure 2 summarizes the data (note that readings are taken towards the end of the month).

**FIGURE 2 – Snowpack & SWE at Islhat Lake**

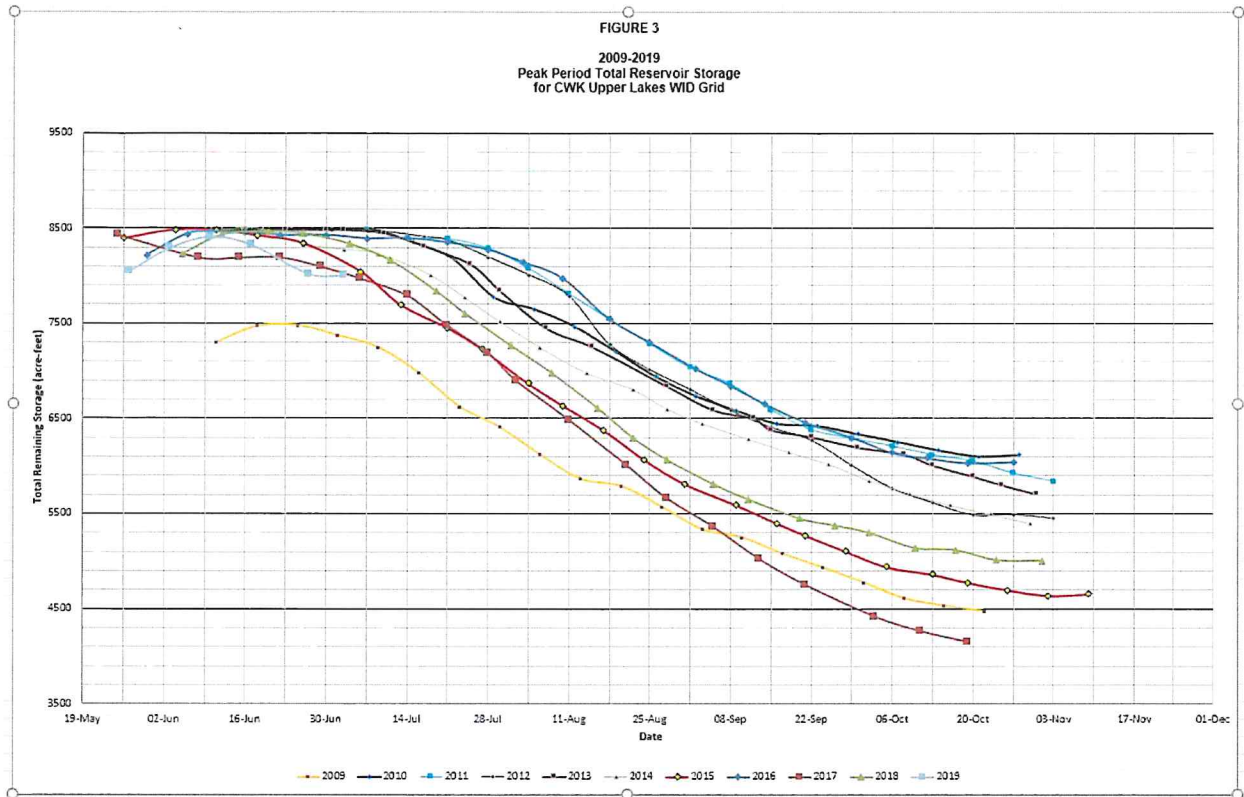


**WATER SUPPLY UPDATE**

Although the spring weather was favourable in preventing any concerns related to flooding, it did create challenges from a water supply perspective. With spring melt occurring earlier than normal it was operationally challenging to capture all the runoff and completely refill our reservoirs, as many of the sites were still inaccessible as the melt began.

Figure 3 below shows Total Reservoir Storage for the Powers Creek system for the last 11 years. The data shows that the current year remaining storage is relatively low.

**FIGURE 3 – Total Reservoir Storage**



Although we came close to refilling all the reservoirs completely you will note that they also began to draw down earlier than usual. This is again a reflection of the earlier than normal melt. The graph also shows a levelling off in the storage levels over the last week. This is directly attributable to the rainfall over the last week of June. At the time of writing this report further rainfall events have happened since the last reservoir readings and further rainfall is in the forecast over the next five days. This will have a further positive impact on storage levels; however, to what extent will be determined next week (week of July 7<sup>th</sup>) when reservoir levels are again measured.

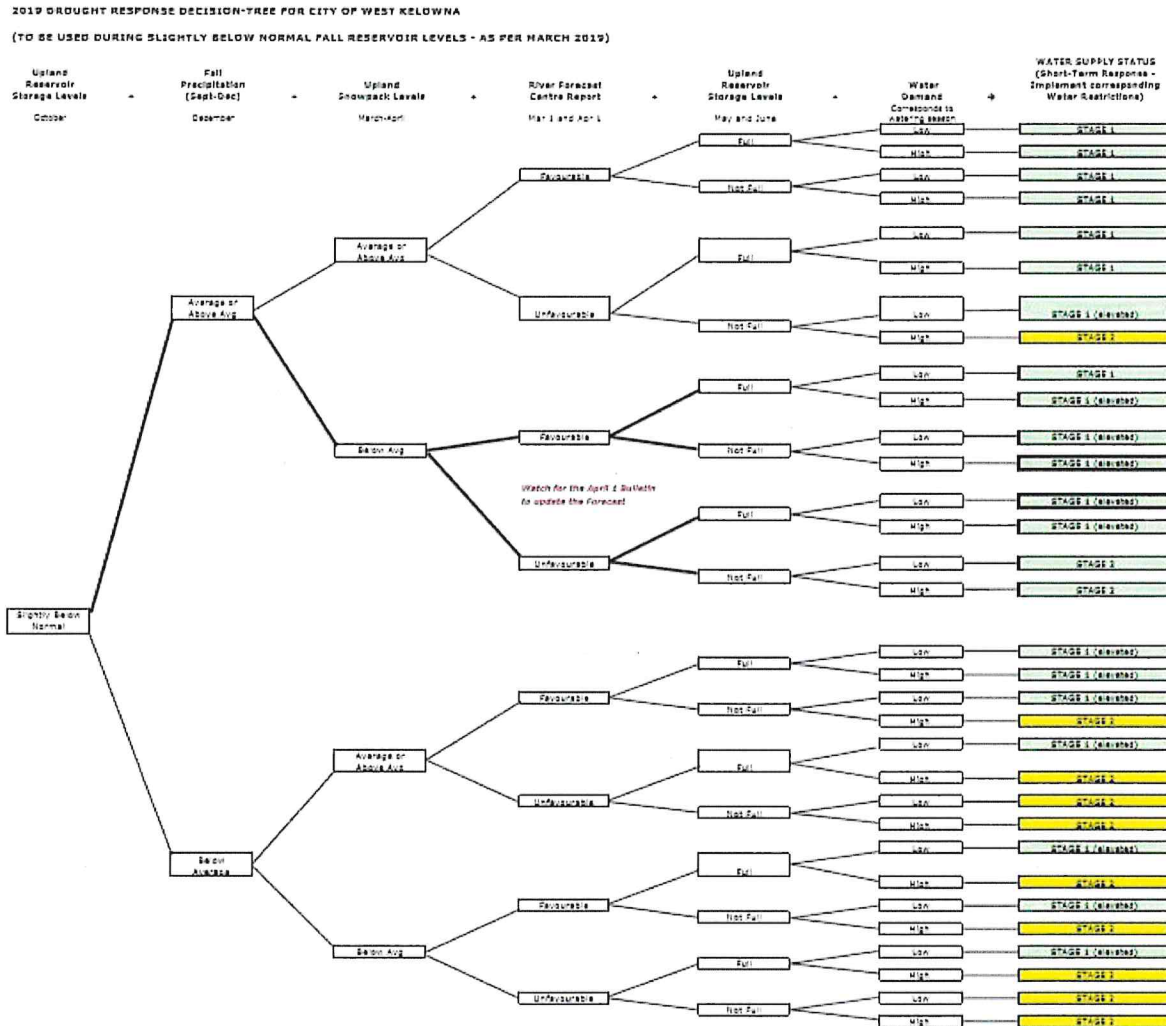
## **DROUGHT PLANNING**

Drought occurs naturally in the Okanagan and hence the Province and the Okanagan Basin Water Board (OBWB) are encouraging communities to conserve water and to have current drought plans in place.

CWK staff have been working with Don Dobson of Dobson Engineering and Jen Clarke of Clarke Geoscience to develop a Drought Plan that will encompass all of the CWK water systems. The plan is being developed in conjunction with the OBWB and Provincial initiatives on drought planning.

A key output of the plan is a drought response decision tree which informs the process for elevated sprinkling regulations. Figure 4 shows an example of the matrix considered earlier this spring.

**FIGURE 4 – Drought Response Decision Tree**



The conditions in April pointed towards either Stage 1 or Stage 2 restrictions dependent upon the outlook for the summer weather. Staff have been monitoring storage levels and re-evaluating our storage requirements on a weekly basis since May. The current storage levels as shown in Figure 3 dictate moving to Stage 2 watering restrictions. Although this will likely still be necessary, we will wait and re-evaluate the impact of the forecasted rain over the next five days before finalizing the decision.

## **MANAGING WATER SUPPLY**

Given the changes in weather patterns and with a focus on planning for the future it is imperative to continually focus on water conservation and education around the importance of water as a resource.

Watering Regulations are one tool available to help manage water demand. The current CWK regulations are as such:

### **General Rules for Stages 1 to 3**

- Hand watering of all landscape plant materials and vegetable plantings, excluding lawns, is permitted, except during Stage 4.
- Sprinkling is never permitted between 11 a.m. and 6 p.m.
- Only one half-inch diameter outside tap may be used at any one time for sprinkling.
- Never use an open, free flowing pipe, outlet or hose for any watering.
- Properties equipped with automated sprinkler systems may only water between midnight and 6 a.m. on the days described below.
- Properties equipped with manually controlled sprinkling systems, including those attached to outside taps, may only water from 6 to 11 a.m. or 6 p.m. to midnight on the days described below.

### **Stage 1**

- Even numbered addresses may only water on even calendar days.
- Odd numbered addresses may only water on odd calendar days.

### **Stage 2**

- Even numbered addresses may only water on Saturdays and Tuesdays.
- Odd numbered addresses may only water on Sundays and Wednesdays.

### **Stage 3**

- Even numbered addresses may only water on Saturdays.
- Odd numbered addresses may only water on Sundays.
- No filling of swimming pools, hot tubs, garden ponds or decorative fountains is permitted.
- No washing of vehicles, boats, bikes - motorized or otherwise, RVs or ATVs is allowed.
- No washing of sidewalks, driveways, patios, or eaves can occur.

### **Stage 4**

- No watering is permitted outdoors for any purpose.

CWK staff released a PSA in early June encouraging residents to use water wisely. This information is also included in the July newsletter. Engineering staff will work with Communications staff to develop a more comprehensive communications plan as necessary over the summer.

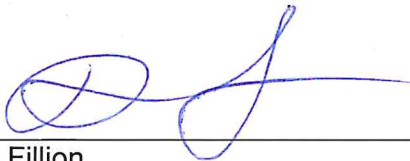
The information provided to residents will focus on delivering the message of the importance of using water wisely. Water conservation offers a number of benefits including:

- Operations and maintenance cost savings by reducing the volume of water treated (further highlighted as we move towards full treatment for all systems);
- Future cost savings through deferral of capital investment as a result of population growth and expansion;
- Environmental benefits: less water could be removed from the environment for human purposes;
- Competing beneficial uses: more water could be available for competing beneficial uses such as agriculture, or recreation;
- Stewardship: utilities that conserve water demonstrate leadership in resource management;

The CWK is a partner in the Okanagan Basin Water Board's Waterwise Initiative. This initiative aims primarily to educate residents of the Okanagan Valley about water issues in our region. This includes promoting water conservation and protecting water quality. There are also tips on how to conserve water in the home, yard and business. The Waterwise website is easily accessed through a link on the CWK website. In addition, the CWK website itself has a number of tips for conserving water inside and outside the house and this information will be highlighted as needed.

CWK staff will also be continuing with leak detection work on the water system using equipment purchased in 2014 with support from a grant from the Okanagan Basin Water Board. Staff are able to proactively audit the system for leaks and make any necessary repairs to the system as they are discovered. Often leaks can go undetected for long periods of time if they are in well drained soils and a proactive approach is critical to minimizing water losses.

Respectfully submitted,

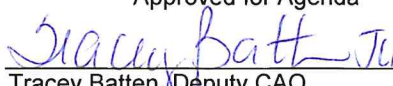


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Allen Fillion  
GM of Engineering & PW

Powerpoint: Yes  No

Attachments: Figure 3 – Total Reservoir Storage  
Figure 4 – Drought Response Decision Tree

Approved for Agenda	
	July 5/19
Tracey Batten, Deputy CAO	Date



**2019 DROUGHT RESPONSE DECISION-TREE FOR CITY OF WEST KELOWNA**  
**(TO BE USED DURING SLIGHTLY BELOW NORMAL FALL RESERVOIR LEVELS - AS PER MARCH 2019)**

