

## IMPACT ON PEAK DEMANDS FOLLOWING BYLAW AMENDMENT

February 2026

This appendix outlines the changes in peak water demand resulting from the 2024 amendment to the Capital Regional District's (CRD) Water Conservation Bylaw No. 4099.

### Issue

In order to meet various objectives for sustainable water use, CRD Water Conservation Bylaw No. 4099 directs summertime irrigation of lawns during specific times and on specific days. Summer water use is increasing over time as a result of population growth in the region, and in some years due to exceptionally hot weather periods. The result of increasing demand and a strong civic adherence to the bylaw by residents, is that significantly high peak demands occurring primarily at 4 am (Figure 1). However, this is now leading to risks for operations, treatment and distribution components of the regional system.

The instantaneous rate of change in water flow can present challenges to the water treatment and distribution system. A high rate of change makes it difficult for the water treatment plant to achieve adequate disinfection. It can cause turbidity (high flows produce suspended solids in the water that can interfere with disinfection efficiency); reduce contact time for disinfection chemicals below operational requirements; or cause pressure disparities in the transmission system when demand from one geographic area impacts another area. Further, rapid changes in pressure leads to water hammer which can impact equipment and produce maintenance and operational issues. Finally, a reduction in available pressure across the system may impact domestic or public safety (e.g., firefighting) needs.

The data also indicate that, during the summer months, the change in demand is greatest at the top of the hour. This is likely correlated with the default settings of residential irrigation systems. The most significant peak demands have been shown to occur on Wednesdays the majority of the time, which is the first allowable irrigation day each week.

**Figure 1: Peak Demands at 4 am and On the Hour**



### **Bylaw Amendment**

In 2024, The Regional Water Supply Commission amended the Water Conservation Bylaw to expand the allowable watering period to reduce peak demands that occur at 4 am on Wednesdays. The amendments to the bylaw included:

- Expanding the overnight hours of allowable lawn irrigation time to begin anytime after midnight on watering days (formerly allowed to start irrigating lawns at 4 am) until 7 am
- Changing the allowable irrigation day for Public, Institution or Community Playing Fields to Tuesday only (formerly allowable on Wednesday only)

The intent was to open up more allowable times for lawn irrigation and to move the high water demands from public works irrigation in order to reduce the demand at 4 am on Wednesdays.

Intensive outreach was undertaken in late winter/early spring of 2024 and 2025 to the irrigation professionals and landscaping communities to provide education on the issue of peak demands, the new extended irrigation period and to strongly encourage these professionals to program irrigation systems to start at times that don't fall on the top of the hour. Mailouts directed to single family homes were also sent out.

### **Results – Impact on Peak Demands**

Figure 2 presents the monthly average flow by hour from 2021 to 2025. In 2025 the daily flow volume was greater than in previous years, but changes in flow patterns can be seen at the key hours of 2 am and 4 am.

The data indicate that at 2 am in 2025 flow was greater than in previous years, indicating that more irrigation is happening at this hour than in the past when irrigation was not previously allowed. Furthermore, the slope of the line between 3 am and 4 am is decreased in 2025 relative to in 2021-2023, indicating that the rate of change in water demand over this period is less in 2025. These patterns are more apparent in 2025 than in 2024.

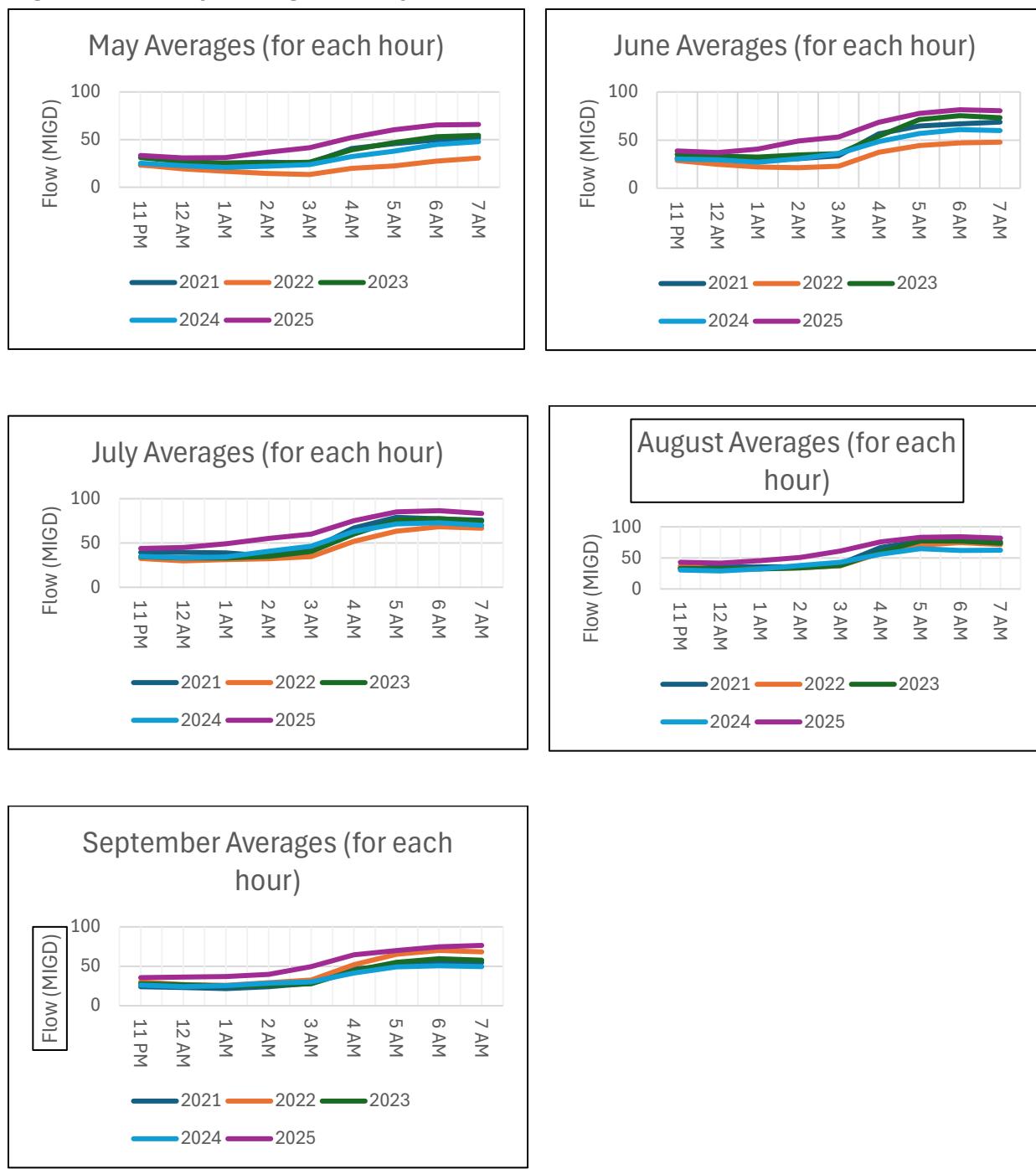
The raw data from 2024 and 2025 (not included) indicates that the peak demands continue to occur close to the top of the hour, while some slight spread around the top of the hour is apparent in 2025. Another year or two of data is required to understand the impact of the outreach program and the subsequent trend in daily demand.

These patterns show that a modest change has occurred following the implementation of the new bylaw amendments. However, these changes to demand are small and unlikely to significantly reduce the impact to infrastructure and water quality from peak demands. In addition, peak demands continue to occur on Wednesdays despite the change of irrigation day for public works.

Instantaneous demand is the maximum amount of water required at a point in a single day, representing the maximum instantaneous flow that the treatment plant must treat. Table 1 shows the average of the weekly instantaneous demands in 2025 compared to historical values and Table 2 shows the maximum instantaneous demand by month in 2025 compared to historical values.

Both the average and maximum instantaneous demands in 2025 were lower than in previous years in the majority of months (only the May 2025 average was greater than the historical average). This indicates that there has been an overall reduction in instantaneous demand following the amendments to the bylaw.

**Figure 2: Monthly Average Flow by Hour**



**Table 1: Average Instantaneous Demand 2025 vs. Historical**

	Average Instantaneous Peak Demand (MLD)				
	May	June	July	August	September
Avg 2021-2024	236	300	344	331	277
2025	265	293	226	210	192

**Table 2: Maximum Monthly Instantaneous Demand 2025 vs. Historical**

<b>Maximum Instantaneous Peak Demand (MLD)</b>					
	May	June	July	August	September
2021-2024	327	361	376	388	338
2025	314	340	303	295	212

### **Conclusion**

The amendments to the Water Conservation Bylaw that were implemented starting in 2024 and intended to reduce peak and instantaneous demands have a modest impact to date.

An increase in demands at 2 am coupled with a decrease in demand at 4 am indicate that residents have altered their irrigation timers to utilize the newly expanded allowable time for lawn irrigation after 2023. This change is also apparent in a slightly reduced rate of change of flow volume at 4 am.

Instantaneous peak demands in 2025 were lower than historical values in most months, which supports the conclusion that residents are using the expanded allowable time for lawn irrigation. Demand is highly weather dependant and more data is required to identify any trends. However, peak demands continue to cluster around the top of the hour and the magnitude of demand at the peak hour of 4 am still present challenges to the water treatment and distribution systems.

Continued outreach and education are set to be rolled out in 2026 to further encourage irrigation changes to reduce the impacts from peak demands. Staff have identified ways in which to further promote the bylaw and the peak demand issue in the summer of 2026 through active community engagement focused on the residential level. Summer patrols will be established to support homeowners to adjust automatic sprinkler settings in areas where data indicate highest morning demand. The CRD will continue its outreach and education approach in 2026 and evaluate results in the coming year.