



**REPORT TO REGIONAL WATER SUPPLY COMMISSION  
MEETING OF WEDNESDAY, APRIL 17, 2024**

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**SUBJECT**     **Greater Victoria Water Supply Area Wildfire Management and Thinning Update**

**ISSUE SUMMARY**

To report on the 2023 wildfire program, wildfire season conditions and the forest restoration thinning project in the Greater Victoria Water Supply Area (GVWSA).

**BACKGROUND**

Several risk assessments of the GVWSA have been completed over the years. In all cases the risk of large-scale wildfire is classified as the greatest land-based risk to drinking water quality. Landscape level wildfire has been assessed as a low likelihood but high consequence risk. The water quality risks associated with large fires stem from the aftereffects of burned over forested lands from which sediment, soils, woody debris, nutrients and potential contaminants may enter source water reservoirs. Given this risk, the Watershed Protection division has developed comprehensive wildfire management programs including: planning, prevention, preparedness, detection, response, forest fuel reduction, and burned area rehabilitation preparedness.

Wildfire Planning, Prevention and Preparedness

A comprehensive *GVWSA Wildfire Management Plan* details GVWSA climate, weather, forest fuels, potential fire behaviour, fire history, and current strategies for wildfire prevention, detection, suppression and fuel management.

Each spring the *GVWSA Wildfire Preparedness Plan* is updated and distributed to staff and external agencies providing operational procedures for wildfire reporting, patrols, standby and suppression, contact lists, work restrictions, suppression equipment inventory and staging.

Wildfire prevention activities begin with restricting public access and enforcement of the Greater Victoria Water Supply Area Protection bylaw to reduce the probability of fire starts as a result of unauthorized access.

A network of eight fire weather stations determines the daily Fire Danger Rating (FDR) in each of the Water Supply Areas (WSA) which restricts operational work and requires fire (spark) watch to reduce the probability of operational fire starts.

Wildfire Detection

It is important for the GVWSA wildfire management program to detect any fires early, to increase the probability of controlling the fire. Fire starts are detected by ground patrols, air patrols, tracking lightning strikes, and more recently drones and infrared cameras. In 2023 the infrared camera on Mt. Healy, that views the Sooke and Goldstream WSAs, was used extensively for detection and in 2024 an infrared camera is planned to be mounted on Survey Mountain to “see” the Leech WSA.

### Wildfire Response

The wildfire response program includes the following elements:

- Preparedness – seasonal staff hiring, equipment staging, reporting daily wildfire preparedness status and fire weather conditions.
- Training – In 2023, 32 staff were trained and fit for wildfire response in the GVWSA, 8 to 10 additional staff within the CRD have training and can also be called upon.
- Standby - staff on standby for fireline roles at prescribed fire danger levels.
- Equipment - well maintained equipment that is the same or compatible with provincial and industry equipment for seamless fire support.
- Pumping Stations - maintenance of access to approximately 30 water source locations spread throughout the GVWSA.
- Service and Partnership Agreements
  - Wildfire Response Agreement with the BC Wildfire Service (BCWS) to provide unlimited support on wildfire suppression in the GVWSA for an annual fee. In 2023, the CRD paid \$8,100 for protection of 20,605 hectares (ha) GVWSA lands.
  - Memorandum of Understanding - South Vancouver Island Fire Management Organization – participating landholders in the South Island including private forest landholders and government agencies have agreed to terms of co-operation in reporting, initial attack, sustained wildfire suppression and payment for action on each other's lands.
  - Working relationships with neighbouring municipal and volunteer fire halls including Langford, Sooke, Shawnigan, Malahat, Colwood, and Metchosin.

### 2023 BC and GVWSA Wildfire Response

The British Columbia Wildfire Service (BCWS) states that the 2023 fire season was the most destructive in British Columbia's (BC) recorded history. BC was under a provincial state of emergency for 28 days where wildfires resulted in an estimated 208 evacuation orders which affected approximately 24,000 properties and roughly 48,000 people.

<https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/wildfire-season-summary>).

In the BC Coastal Fire Centre area, 365 wildfires burned 89,750 ha of land. There were significant impacts on Vancouver Island including months of access restriction to Port Alberni, Tofino, and Ucluelet due to active fire risk (Cameron Bluffs wildfire V70600) and subsequent land stability damages above Highway 4.

In the GVWSA, fire weather indices became favorable for wildfires beginning May 15 with conditions of concern remaining until September 22, a total of 130 days. Of the 130 fire days, 114 were in High or Extreme Fire Danger Rating (FDR), with a rapid spring drying and extended drought through the summer. Fortunately no wildfires started, and no suppression activities were required in the GVWSA in 2023. On August 29, crews detected and responded to a fire on adjacent private forest lands just outside the GVWSA. The fire was spot sized, burning with low intensity, and crews contained the fire over the course of the afternoon before turning activities over to the landowner and BCWS (see Appendix A).

The following figure shows the number of days per year of High and Extreme FDR for the Sooke WSA for the last 21 years. A new record was set in 2023 for most combined high and extreme days (114). The calculated trend line shows an ongoing increase in the number of days in High and Extreme FDR, which is expected to continue with climate change.

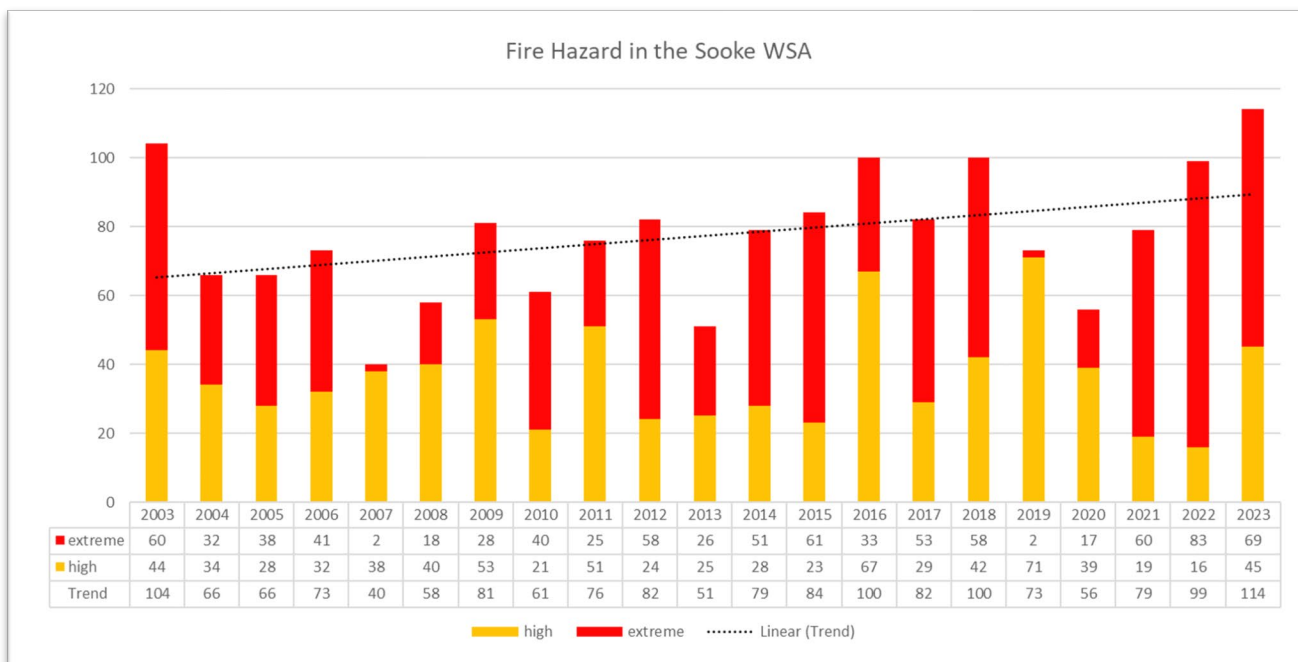


Figure 1. The number of days in High and Extreme Fire Danger Rating in the Sooke WSA over time

Forest Fuel Management

Forest fuel management refers to the reduction of the amount and type of forest fuels (small trees, branches, downed woody material, combustible shrubs) available to a wildfire. If located strategically, forest fuel management can reduce the intensity and rate of spread of wildfire, improve probability of suppression success, and reduce the threat to water quality and water supply facilities. Forest fuel management has been ongoing for the last 15 years with a variety of FireSmart and fuel reduction areas and corridors implemented and maintained (see Appendix B map). New in 2023 was the implementation of a thinning trial to reduce fuel loads and improve wildfire resilience and forest health.

Forest Ecosystem Restoration Thinning Trial

A new initiative to trial thinning to reduce forest fuels and mitigate vulnerability to wildfire and climate change was begun in 2023. The trial is being conducted on five Douglas-fir planted sites at the north end of the Sooke WSA totaling 42 ha. Existing tree densities ranged from 836 to 2,848 trees/ha in forests 43- to 64-years of age. Thirty to fifty percent of the dominant Douglas-fir trees were thinned out, while retaining deciduous and other coniferous trees. The thinning was implemented “from below”, which means the largest trees are retained and the smallest most suppressed live and dead trees are the ones selected for removal. In comparison, old forests in the GVWSA have 150 to 250 large trees/ha in the overstory.

The work was advertised on BC Bid and a Vancouver Island contractor with specialized thinning equipment submitted a successful proposal and was awarded the contract. As well as submitting prices for the thinning treatment, the contractor also submitted a proposal for the purchase of the resulting merchantable logs. Sold logs are being delivered to a veneer and roundwood facility and a pulp mill; both located in Nanaimo. The remaining woody debris from the treatment (cut

non-merchantable stems, branches and tops) is assessed by staff for mitigation by piling, chipping or burning as required.

Post treatment, the stands are being re-measured for remaining tree density, size, canopy base height (a measure of ladder fuels) fuel loading, air temperature, relative humidity and soil moisture in the thinned areas compared with control untreated areas. Tree rings will be assessed over time to monitor tree growth and bark thickness response.

Dr. Chris Bone at the University of Victoria is incorporating the thinning trial areas into the modelling work he is doing to examine how forest management can reduce threats associated with the effects of climate change on forests and wildfire in the GVWSA. Along with learnings from modelling, trials and adaptive management, the longer-term goal is to develop a forest management plan for the GVWSA to mitigate climate change effects.

One of the trial thinning sites is located along the public tour route and a stop is planned to show and discuss the project. The public's questions and feedback about thinning for wildfire and forest restoration and resilience will be used to inform any further outreach efforts.

The thinning initiative is funded by the "Forest Resilience" and "Forest Fuel Management" capital line items in the Regional Water Supply Capital Plan. The project is not yet complete (logs are still being delivered to the Nanaimo facilities), so log revenues can only be estimated. At this time the 42 ha of treatment is estimated to result in a net cost of \$200,000 or \$4,700/ha. In comparison, the last fuel management contract for six ha awarded in 2022 cost \$68,952 or \$11,492/ha.

#### Burned Area Rehabilitation Planning and Preparedness

While much effort is directed into preventing wildfire, the rehabilitation response after wildfire can play a large role in the resulting water quality impacts should a significant fire burn in the GVWSA. In 2023, a project to assess the water quality impact (in terms of debris flow and sediment delivery) of different intensities of wildfire adjacent to the Sooke Lake Reservoir was completed. Based on this assessment, site specific post wildfire rehabilitation prescriptions will be prepared in high priority areas in 2024/2025 for rehabilitation preparedness in case of wildfire. Unique materials and designs required to perform the prescriptions have or will be procured.

#### CONCLUSION

Wildfire management remains the highest priority program in managing the Greater Victoria Water Supply Area (GVWSA). The GVWSA again experienced a long period of Extreme Fire Danger and wildfire risk in 2023. Fortunately, there were no lightning strikes or wildfire starts in the GVWSA. Annual wildfire prevention and preparedness activities were conducted as well as a thinning initiative to make greater progress on managing forest fuels in overdense planted stands and improving tree and forest stand health and resilience. In preparation for the 2024 wildfire season, Watershed Protection continues with operational wildfire preparation activities with an outlook of a wildfire season similar to 2023. The BC Wildfire Service – Capital Regional District *Wildfire Response Agreement* that provides provincial firefighting capacity to GVWSA fires will be renewed and the Capital Regional District will continue to work with academia, other agencies and utilities to minimize and mitigate wildfire risk in the GVWSA.

**RECOMMENDATION**

There is no recommendation. The report is for information only.

Submitted by:	Annette Constabel, M.Sc., RPF., Senior Manager, Watershed Protection
Concurrence:	Alicia Fraser, P. Eng., General Manager, Integrated Water Services
Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

**ATTACHMENTS**

Appendix A: 2023 Wildfire Management Activity Photos

Appendix B: Wildfire Management Map