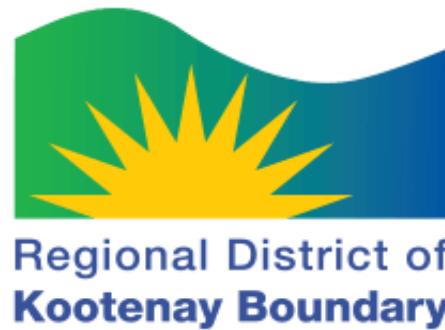




Boundary Region

Drought Response Plan

*Regional District of
Kootenay Boundary*



July 31, 2020

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Cover Photos:

Boundary Creek, September 2017 (upper left) and Trapper Creek, August 2019 (bottom left)

Table of Contents

1.0	Drought Response in the Boundary Watersheds	1
2.0	Provincial Drought Classification	2
3.0	RDKB Drought Response.....	4
	Level 1 – Provincial Target: Reduction in water use and conservation of water	5
	Level 2 – Provincial Target: Voluntary 10% reduction in total water withdrawals	5
	Level 3 – Provincial Target: Voluntary 30% reduction in total water withdrawals	6
	Level 4 – Provincial Target: Voluntary maximum reduction in water withdrawals	7
	Loss of Supply.....	8
4.0	Who Should I Call?	9
5.0	References	10

List of Figures

Figure 1.	Boundary region of the RDKB.	1
Figure 2.	Kettle watershed from the BC Drought Portal.	2
Figure 3.	Electoral Area E/West Boundary that is located outside of the Kettle Watershed	2
Figure 4.	Okanagan Basin region located in Electoral Area E/West Boundary..	3

List of Tables

Table 1.	Provincial drought level classification and targets	3
Table 2.	Provincial drought indicators	4

Acronyms

CEFT	Critical Environmental Flow Threshold
DEP	Drought Management Public Engagement Plan
DMP	Drought Management Plan
DRIP	Drought Response Implementation Plan (Provincial: Thompson Okanagan District)
DRP	Drought Response Plan
EMBC	Emergency Management British Columbia
FLNRORD	Ministry of Forests, Lands, Natural Resource Operations and Rural Development
GCPE	BC Government Communications and Public Engagement
KBR	Kootenay Boundary Region (Province)
KRWAC	Kettle River Watershed Advisory Council (formerly the Authority Committee)
LG	Local Government
RDKB	Regional District of Kootenay Boundary

1.0 Drought Response in the Boundary Watersheds

The Boundary Region Drought Response Plan (DRP) provides the Regional District of Kootenay Boundary (RDKB), water purveyors, industry, and all water users recommended actions to take during varying levels of drought, as described in the Kettle River Drought Management Plan (DMP). These actions are designed in accordance with the Provincial direction to water users, outlined in the BC Drought Response Plan (Province of BC, 2018). The intention is to lessen local impacts from drought conditions and to reduce the need for Provincial regulatory action.

This plan covers the Boundary region, defined as the western portion of the RDKB area, encompassing Electoral Areas: C/Christina Lake, D/Rural Grand Forks and Area E/West Boundary and the municipalities of Grand Forks, Greenwood, and Midway (Figure 1). As of May 2020, the provincial coordination of drought management for the Boundary region is held by the Kootenay Boundary Region (KBR) of the Ministry of Forest, Lands, Natural Resource Operations and Rural Development (FLNRORD). Prior to this, the Boundary region was managed provincially by the Thompson Okanagan region of FLNRORD and addressed in the Thompson Okanagan's Drought Response Implementation Plan (DRIP) (Ministry of Forests, Lands, Natural Resource Operations and Rural Development, 2016). The DRP complements the objectives and structure of the BC Drought Response Plan and DRIP, and is to be used in conjunction with the DMP and the Boundary Region Drought Management Public Engagement Plan (DEP). The DRP follows recommendations outlined in the report *Dealing with Drought; A Handbook for Water Suppliers in British Columbia* (Province of BC, 2016).

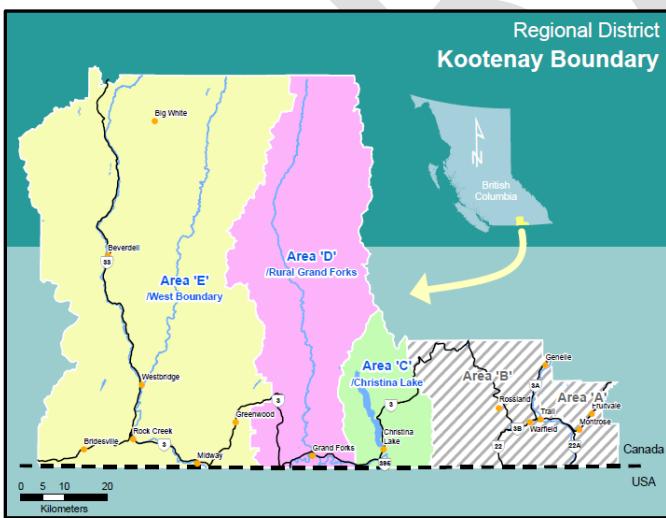


Figure 1. Boundary region of the RDKB.

A need for local coordinated drought response was identified for the Boundary region; as a result, the RDKB has taken on the roll to work with stakeholders and water users to respond to drought in accordance with provincial recommendations and best practices. Preparing for and responding

collaboratively to drought conditions can help reduce pressures on our local water systems, in turn, support the health, economic, environmental and social components of our communities.

2.0 Provincial Drought Classification

The Province of BC is responsible for setting the Provincial drought levels, licensing water withdrawals under the *Water Sustainability Act*, and regulating water use during times of water scarcity. The RDKB is committed to supporting Boundary residents, stakeholders and industry in all stages of drought from planning, and preparedness to response.

Drought level for the Kettle River Watershed (Figure 2) is located online at the British Columbia Drought Information Portal ([Drought Portal](#)) and on the RDKB website ([RDKB Drought](#)). The Kettle River Watershed covers the majority of the Boundary region, although not all of it.

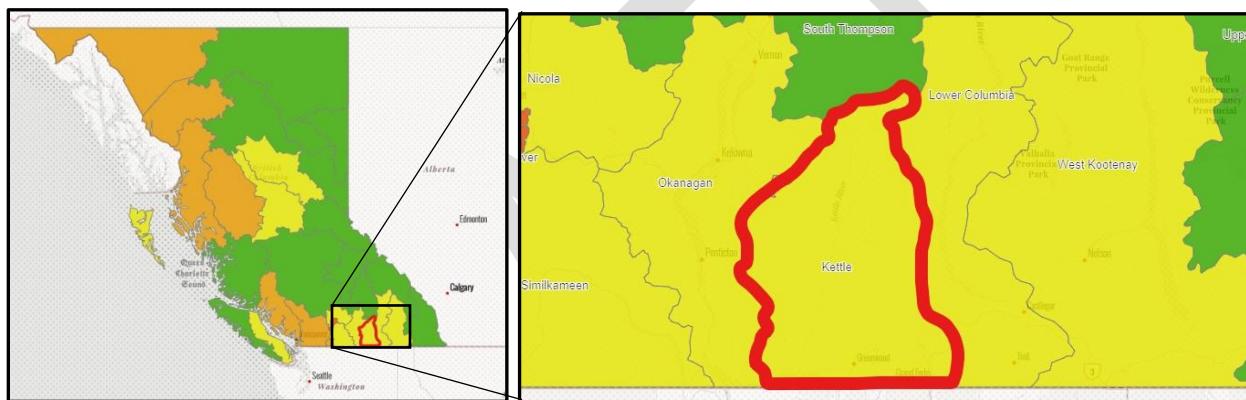


Figure 2. Kettle River watershed from the BC Drought Portal. Left image: Map of British Columbia showing the provincially delineated drought watersheds; the Kettle River watershed is outlined in red (Province of BC, 2019). Right image: Close up of the Canadian portion of the Kettle River watershed.

There is approximately 53 km² in the RDKB Electoral Area E/West Boundary that is located in the Okanagan River Watershed (Figure 3). This region's main surface water system includes Nine Mile creek.

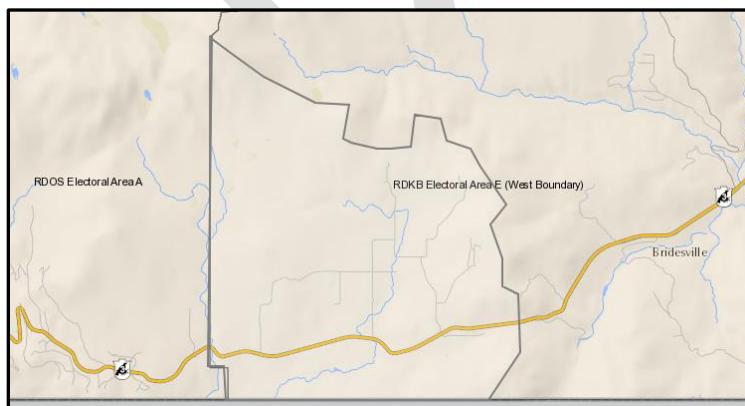


Figure 3. The approximately 53 km² region, identified in grey, within Electoral Area E/West Boundary that is located outside of the Kettle River Watershed.

The Provincially recognized drought level for this area is defined by the Okanagan River Watershed drought level (Figure 4), with the classification to be found at the [Drought Portal](#).

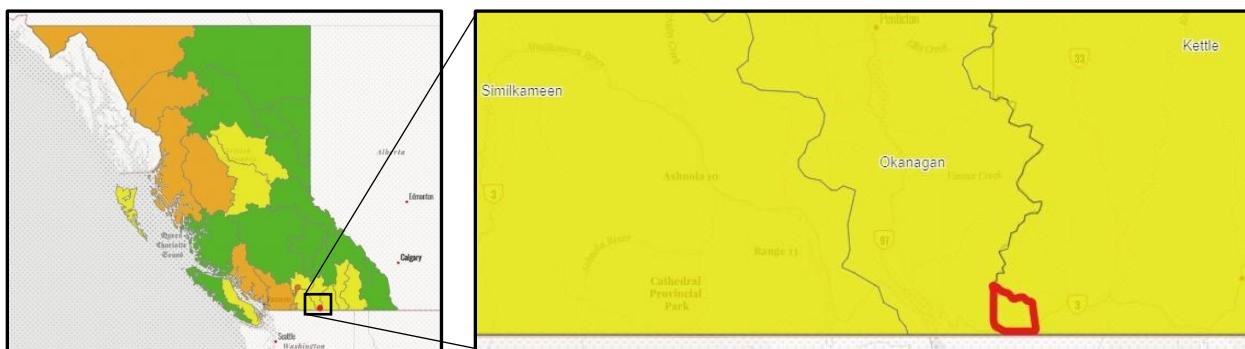


Figure 4. Section from the Okanagan River Watershed that is located in Electoral Area E/West Boundary. Images from the BC Drought Portal (Province of BC, 2019).

There are four (4) stages in the Provincial Drought Classification system, from Level 1 normal to Level 4 extremely dry conditions. Table 1 provides a summary of the Provincial objectives and targets for each drought level (Province of BC, 2018).

Table 1. Provincial drought level classification and targets

Level	Conditions	Significance	Objective/Emphasis	Target
1 (Green)	Normal Conditions	There is sufficient water to meet human and ecosystem needs	Preparedness	Ongoing reductions in community water use
2 (Yellow)	Dry Conditions	First indicator of a potential water supply problem	Voluntary Conservation	Minimum 10% reduction
3 (Orange)	Very Dry Conditions	Potentially serious ecosystem and socioeconomic impacts are possible	Voluntary conservation and restrictions	Minimum additional 20% reduction to a minimum total of 30%
4 (Red)	Extremely Dry Conditions	Water supply insufficient to meet socio-economic and ecosystem needs	Voluntary conservation, restrictions and regulatory action as needed	Maximum reduction
Loss of Supply		Potential loss of community's potable or firefighting supply	Emergency response	Ensure health and safety

(Province of BC, 2016)

The Province determines the regional drought level primarily from the information supplied by water flow (discharge) and climate monitoring stations (Table 2). These determinates are derived from early drought season forecast indicators (amount of snow available and seasonal runoff forecasts) and the core drought indicators (average precipitation and seven-day average stream flow).

Table 2. Provincial drought indicators

	Level 1 (Green)	Level 2 (Yellow)	Level 3 (Orange)	Level 4 (Red)
Basin Snow Measures	>80%	80-65% of normal	<65% of normal	
Seasonal Volume Runoff Forecasts	>80%	80-61% of normal	60-45% of normal	<45% of normal
30 Day % of Average Precipitation	>80%	80-51% of average	50-25% of average	<25% of average
7-Day Average Streamflow	>25 percentile	11-25 percentiles	6-10 percentiles	<6 percentile

(Province of BC, 2018)

3.0 RDKB Drought Response

The RDKB responds according to the provincially defined drought classification level for the Boundary region labeled “Kettle” (Figure 2) and the “Okanagan” (Figure 4). As the Boundary region is a large and geographically diverse landscape, some areas and/or water sources may be more vulnerable or experience higher impacts to drought. Those with a high vulnerability to drought may need to prepare earlier and respond faster to the progressing drought conditions. Note that the DRP does not address the necessary planning and preparation components of drought management, which can be found in the DMP, but rather focuses on immediate response during the summer months and periods of low water.

Higher vulnerability to drought includes surface water users with little to no storage capacity and those with shallow groundwater wells situated in unconfined aquifers¹. Additional information on defining areas of high vulnerability to drought, drought risk factors, vulnerability of groundwater contamination and water use data for the Boundary region is in the DMP.

Regular maintenance and repair of water works should occur throughout the year. Leaks and faulty systems can result in a significant loss of water, negative financial implications as well as structural problems in surrounding lands.

For the purpose of this plan, a Water Supplier is defined as those who deliver, manage, monitor and in some cases treat water for water users. Water suppliers in the Boundary region include local governments (LG), irrigation districts, improvement districts, school districts, water user communities and water utilities.

¹ In basic terms, an aquifer is a underground large body of water. An unconfined aquifer occurs when the body of groundwater can be affected by water seeping from the ground surface or is directly connected to a surface water source, such as a stream.

Level 1 – Provincial Target: Reduction in water use and conservation of water

Province

- Update BC Drought Portal with current drought information.

RDKB

- Review Drought Management and Drought Response Plans; update every few years.
- Update the RDKB drought awareness webpage with current Provincial drought level.

All Water Users

- Focus on maintenance, leak detection and repair of water works.
- Focus on general awareness, preparedness and water conservation efforts.
- Where appropriate, take early action to fill water reservoirs.
- For agricultural producers, where appropriate, irrigate effectively to ensure sufficient water retention in the soil column.

Level 2 – Provincial Target: Voluntary 10% reduction in total water withdrawals

Province

- Update BC Drought Portal with current drought information.

RDKB

- Update the RDKB drought awareness webpage with current Provincial drought level.
- Review, update as required, regional streamflow watch list.
- Monitor provincially and federally reported stream flow, water temperature and aquifer water level as warranted.
- Review, update as required, the list of all large water users in the region.
- Represent the LG and water suppliers on Provincial drought calls, providing local conditions, questions and concerns.

Water Suppliers and Large Water Users

- Voluntary implementation of watering restrictions to achieve the Province's request to reduce water use by 10%.
- If available, increase stream flow and aquifer monitoring efforts.
- Monitor water supply levels and authorized water use; report concerns to the RDKB or the Province (see Section 4 for contact information).
- Display and enforce bylaws; provide clear water restriction recommendations to all water users.
- Where appropriate, continue to fill water reservoirs in preparation for drier periods.
- For agricultural producers, where appropriate, continue irrigating to increase water retention in the soil column in preparation for drier periods.
- Practice conservation and efficient water use.

All Water Users, with additional targets for high drought vulnerability

- Voluntarily reduce water use by 10%.
- Check for leaks in lines and follow Fire Smart recommendations. Water users from high drought vulnerable systems may be at risk of losing supply for fire protection at drought level 2.

Level 3 – Provincial Target: Voluntary 30% reduction in total water withdrawals

To be implemented for drought level 3 when issued between July 1 and December 31. Prior to July 1, the RDKB recommended drought response will be provided on the RDKB drought awareness website and from the Province.

Province

- Media release from BC Government Communications and Public Engagement (GCEP).
- If required, FLNRORD to send letters to affected water licence holders detailing drought level 3 Provincial recommendations and encouraging water conservation.
- Update the LG on local water supply status and forecasted conditions.
- Where possible, update LG on water volume concerns and contact prior to elevating to drought level 4.

RDKB

- Update RDKB drought awareness webpage with messaging and current drought conditions from the Province.
- Advise elected officials, relevant RDKB and municipal staff of current drought status.
- Press releases to local media as required.
- Participate in the Provincial Drought calls; report on local conditions, questions and concerns.
- As required, update Water Suppliers, larger water users and Kettle River Watershed Advisory Council on messaging from the Province.
- Support the reporting of local stream water levels, water temperatures and concerns.
- Monitor stream discharge, temperature and/or water level readings, as capacity and funding permits.
- Work with Provincial Fisheries staff, and report on water quality and habitat concerns.

Water Suppliers and Large Water Users

- Voluntary 30% reduction of total water use based on licensed water quantity; focus on reducing all non-essential outdoor water use.
 - Non-essential outdoor use could include the watering of avenues, boulevards, lawns, un-used turf, and gardens where appropriate.
 - Reduced water use could include eliminating outdoor vehicle washing and restricting the filling of swimming pools and hot tubs.

- Watering early in the morning, before 9:00 am, or later in the evening, after 7:00 pm, to minimize evaporation potential.
- Focus on watering trees and perennial crops as needed.
- Share groundwater and surface water volume concerns among users, the RDKB and the Province.
- Implement water restrictions as outlined by the water system's bylaws or directions.

All Water Users

- Voluntary 30% reduction of water use based on licensed water quantity.
- Focus on reducing non-essential outdoor water use (see above examples of non-essential water use and recommended timing).
- Check for leaks in water works, follow Fire Smart recommendations.
- Report water volume concerns to the Province and the RDKB (see Section 4 for contact information).

Level 4 – Provincial Target: Voluntary maximum reduction in water withdrawals

To be implemented for drought level 4 when issued between July 1 and December 31. Prior to July 1, the RDKB recommended drought response will be provided on the RDKB drought awareness website and from the Province.

Province

- Media release from GCEP on drought level 4 recommendations.
- Letter sent by FLNRORD to affected water licence holders detailing drought level 4 recommendations and encouraging maximum conservation of water.
- Update LG on local water supply status and forecasted future conditions.
- Advise on areas where *Water Sustainability Act* regulatory action is being considered or may be considered in the near future.
- Address water user's questions and concerns (contact information provided in Section 4).

RDKB

- Update RDKB drought awareness webpage with Provincial messaging and current conditions (surface water and groundwater).
- Advise elected officials, relevant RDKB and municipal staff of current drought status.
- Update RDKB Manager of Emergency Operations; where possible, identify alternative water supplies and water options for areas showing significant concerns.
- Press releases to local media as required.
- Represent LG in the Provincial Drought calls, reporting on local conditions, questions and concerns.

- Update Water Suppliers, larger water users and Kettle River Watershed Advisory Council regarding messaging and forecasting from the Province.
- Support the reporting of local stream water levels and water temperatures concerns.
- Monitor for the Province stream discharge, temperature and/or water level readings, as capacity and funding permits.
- Support the Province to define the Critical Environmental Flow Threshold (CEFT) for threatened streams.
- Support Province to determine streams that are near or have reached their CEFT.
- Work with the Provincial Fisheries staff to determine water quality conditions and advise on habitat and fisheries concerns.

Water Suppliers and Large Water Users

- Voluntary maximum reduction of all water use (see above for example of non-essential outdoor water use and recommended timing).
- Advise all surface and groundwater users of water restrictions and water system's bylaws.
- Advise water users of possible consequences if the stream's discharge reaches the CEFT.
- Advise surface and groundwater users about any water volume concerns; report concerns to the RDKB and the Province.
- Monitor reservoir water levels and use water sparingly. Should regulatory action be required, this could be the water remaining available for use until conditions improve².

All Water Users

- Voluntary reduction of water use to the maximum quantity possible.
- Focus on eliminating all non-essential water use (see above for example of outdoor non-essential water use and recommended timing).
- Review and adhere to all bylaws and regulations in place to reduce water use.
- Continue to be conscious of and repair leaks in lines.
- Report water volume concerns to the Province and RDKB (see Section 4 for contact information).

Loss of Supply

All water users: Prepare for emergency response where risk of loss or failure of supply exists.

² In the event of regulatory action, domestic users are permitted to continue to divert water for essential household use to a maximum of 250 litres of water per day per household.

4.0 Who Should I Call?

The following addresses who you should call for specific questions, concerns and general drought information. There are many levels of government working together to support drought management in British Columbia. The RDKB is committed to providing support throughout the pre, during and post drought management stages. The DRP is a working document, updated as needed, incorporating lessons learned and new information as it becomes available.

Water Volume Concerns

If you are experiencing water volume concerns that are affecting your water intake system(s), or a water system in your area, please contact the FLNRORD Kootenay Boundary Water Stewardship office at 250-421-1766, FrontCounter BC at 1-877-855-3222 or email at FCBC.CBK@gov.bc.ca.

If your region is under a Local State of Emergency, your water supply is dry and you are not able to reach someone at the number above, contact Emergency Management British Columbia (EMBC) at 1-800-663-3456.

Provincial drought level questions

If you have questions related to the provincial drought level that cannot be answered through the online Provincial [Drought Portal](#), please contact FrontCounter BC at 1-877-855-3222 or by email at FrontCounterBC@gov.bc.ca.

Reporting unauthorized use of water

Unauthorized water use and all fisheries concerns should be reported to the Province through the [RAPP line](#) (Report all Poachers and Polluters) by phone at 1-877-952-RAPP (7277) or online: <https://forms.gov.bc.ca/environment/rapp>.

DRP clarification or questions

For all other questions and clarification regarding the DRP please contact the RDKB Watershed Planner at 250-442-4111 or by email at watershedplanner@rdkb.com.

5.0 References

Ministry of Forests, Lands, Natural Resource Operations and Rural Development. (2016). *Thompson Okanagan Region Drought Response Implementation Plan*. Kamloops: Province of BC.

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