

DROUGHT CLASSIFICATION SYSTEMS USED IN B.C.

This primer was developed to address potential miscommunication and misunderstanding around drought levels in British Columbia. This is intended to explain the differences between federal, provincial, and local drought declarations in B.C.

Drought is a recurring feature of climate involving a deficiency of precipitation over an extended period, resulting in a water shortage for activities, communities, or aquatic ecosystems. In B.C., drought can be caused by a combination of several factors, including insufficient snow accumulation, hot and dry weather, or a delay in rainfall.

No universally applicable tool is available for measuring drought. Instead, various agencies have created definitions and indicators to measure and define the extent and severity of drought based on criteria significant to the agency's mandate. Three classification systems are used in B.C.:

- A. **LOCAL DROUGHT STAGES** enacted by local water suppliers,
- B. **PROVINCIAL DROUGHT LEVELS** put in place by the B.C. Government, and
- C. **FEDERAL DROUGHT RATINGS** declared by the Canadian Drought Monitor. Geographical areas can have overlapping drought classifications at the same time.

A. LOCAL DROUGHT STAGES

Local water suppliers use water regulation bylaws and drought/water shortage plans with restriction stages to manage their water supplies and water distribution conditions in times of drought or emergency water shortage. **Stages vary between purveyors and are based on local conditions, including infrastructure capacity, customer demand, weather and moisture conditions, and current water storage.** Typical stages and descriptions are shown in Table 1.

Local decisions on appropriate water restriction stages are not required to match the "Provincial Drought Levels," which are determined at a regional scale. That said, water restriction stages and provincial drought levels will tend to both increase as drought worsens.

Table 1. Typical stages and descriptions used by water suppliers

STAGE	DESCRIPTION
Normal	Defined by the ability to meet or exceed the average storage condition.
1 - Dry	Mild drought or minor limitations on supply. First indication of potential water shortage.
2 - Very dry	Major infrastructure limitations on supply or a moderate drought resulting from prolonged periods of no rain and hot, dry weather and/or below-average snowpack conditions. Water supply is becoming stressed.
3 - Extremely dry	Severe drought, when water supplies are at a critical shortage level, or upland fire, or failure of key infrastructure.
4 - Emergency	Loss of supply via loss of storage or due to contamination or loss of critical infrastructure.

Current watering restriction stages are usually posted on water supplier websites. Watering restriction stages in the Okanagan can be searched [here](#).

B. PROVINCIAL DROUGHT LEVELS

The [Government of B.C.](#) focuses on managing hydrological drought, typically defined as a reduction in lake levels, a decrease of streamflow, and/or a lowering of groundwater levels over large areas. They use four core indicators and several supplemental indicators to classify drought under a six-category system from Level 0 to 5 (see Table 2). The two core indicators for the early season forecast include basin snow measures and seasonal volume runoff forecasts, while the two core indicators used during the drought season include 30-day precipitation percentiles and 7-day average stream flow percentiles. Additional types of drought and details about drought levels can be found in the [B.C. Drought Response Plan](#).

Table 2. Levels used by the provincial government to define hydrological drought.

LEVEL	IMPACTS
0	There is sufficient water to meet socio-economic and ecosystem needs
1	Adverse impacts to socio-economic or ecosystem values are rare
2	Adverse impacts to socio-economic or ecosystem values are unlikely
3	Adverse impacts to socio-economic or ecosystem values are possible
4	Adverse impacts to socio-economic or ecosystem values are likely
5	Adverse impacts to socio-economic or ecosystem values are almost certain

The [B.C. Drought Information Portal](#) provides map-based information on provincial drought levels and is updated regularly during the drought season.

C. FEDERAL DROUGHT RATINGS

The [Canadian Drought Monitor](#) (CDM), led by Agriculture & Agri-Food Canada, combines multiple indicators and impacts (meteorological, agricultural, hydrological, and others) to assess the current drought risk across the country.

A five-category drought rating system from D0 to D4 is used by the CDM to communicate risk, with D0 indicating abnormally dry conditions, and D1 to D4 indicating moderate to exceptional drought (Table 3). The ratings are shared through monthly maps that show the extent and intensity of drought across Canada. The information is also fed into the North American Drought Monitor, a cooperative effort between drought experts in Canada, the United States, and Mexico.

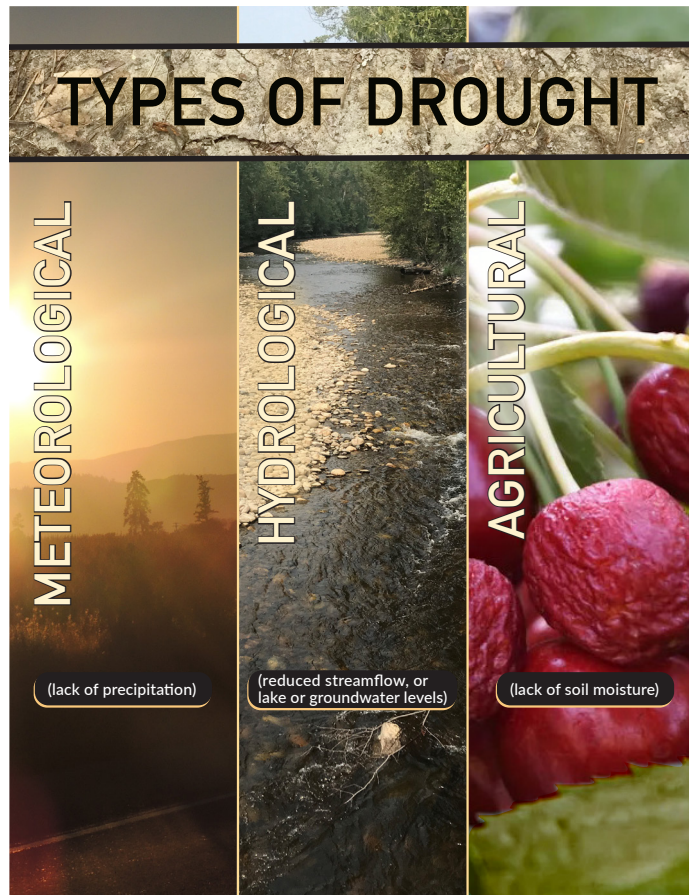
Table 3. Drought ratings used by the Canadian Drought Monitor

RATING	DESCRIPTION
D0	Abnormally dry
D1	Moderate drought
D2	Severe drought
D3	Extreme drought
D4	Exceptional drought

The [CDM website](#) includes a variety of products and information about current and historic drought conditions across the country. For additional information, please refer to the [About](#) section on the Canadian Drought Monitor page.

TYPES OF DROUGHT

Local water suppliers, and provincial and federal agencies determine drought levels, stages and ratings based on indicators that measure three types of drought: meteorological (lack of precipitation), hydrological (reduced streamflows, or lake or groundwater levels), and agricultural (lack of soil moisture). Please see graphic to the right for a visual representation of types of drought.



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