



# Drought

IN THE

# Nicola Watershed

What You Need  
and Might  
Want To Know



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Prepared by the Nicola Watershed Community Round Table.

[www.nwcrt.org](http://www.nwcrt.org)



## Acknowledgements

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PACIFIC SALMON FOUNDATION  
FRASER SALMON AND WATERSHEDS PROGRAM  
[www.psf.ca/index.php?option=com\\_content&view=article&id=90&Itemid=16](http://www.psf.ca/index.php?option=com_content&view=article&id=90&Itemid=16)



HABITAT CONSERVATION TRUST FOUNDATION  
[www.hctf.ca/Reporting/Communications.html](http://www.hctf.ca/Reporting/Communications.html)



MINISTRY OF NATURAL RESOURCE OPERATIONS  
[www.gov.bc.ca/nro/index.html](http://www.gov.bc.ca/nro/index.html)



NICOLA WATERSHED COMMUNITY ROUND TABLE  
[www.nwcr.org](http://www.nwcr.org)

# Drought

## IN THE Nicola Watershed

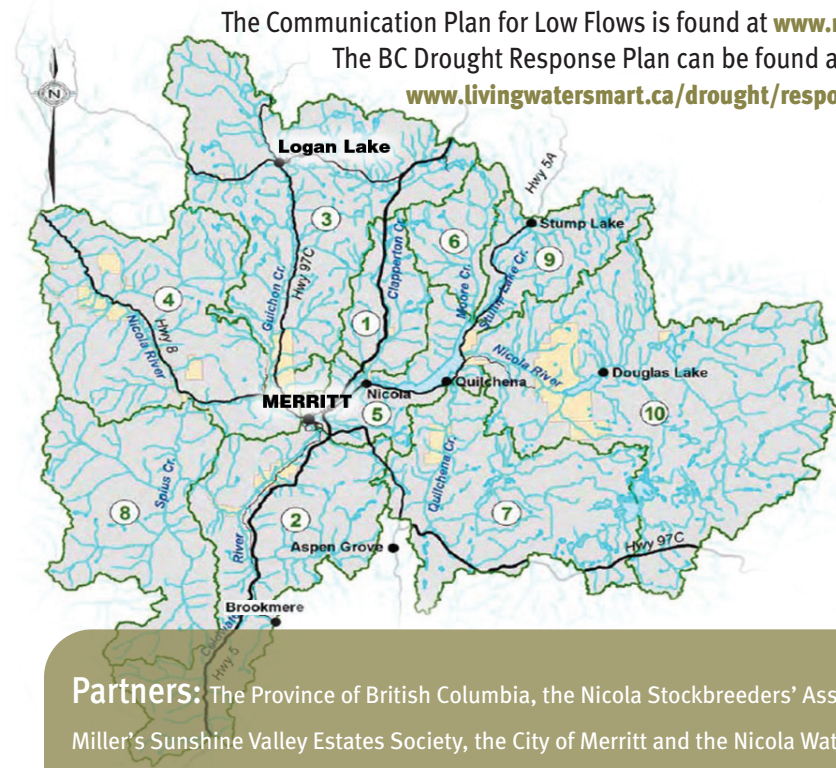
**IN 2010** the Nicola Watershed Community Round Table (NWCR) received funding to develop a communication plan for drought. The plan was developed in consultation with local government, the provincial government, water purveyors, the Nicola Stockbreeder's Association, and residents.

The information contained within these pages is taken from the Communication Plan for Low Flows in the Nicola Watershed, the British Columbia Drought Response Plan and from a number of the Province of British Columbia's web sites.

The Communication Plan for Low Flows is found at [www.nwcr.org](http://www.nwcr.org).

The BC Drought Response Plan can be found at

[www.livingwatersmart.ca/drought/response.html](http://www.livingwatersmart.ca/drought/response.html).



**Partners:** The Province of British Columbia, the Nicola Stockbreeders' Association, Miller's Sunshine Valley Estates Society, the City of Merritt and the Nicola Watershed Community Round Table will play a role in communicating about drought.



Drought is a recurrent feature of climate involving a deficiency of precipitation over an extended period of time, resulting in a water shortage for activities, communities or aquatic ecosystems. Droughts can be defined as meteorological, hydrological, agricultural or socioeconomic, each of which implies different impacts.

#### METEOROLOGICAL DROUGHT

is generally defined by comparing the rainfall in a particular place and at a particular time with the average rainfall for that place. Meteorological drought leads to a depletion of soil moisture and this almost always has an impact on crop production. When drought is defined in this way, only reductions in rainfall are considered. The impacts of the lack of water on water reservoirs, human needs or on agriculture are not taken into account.

#### HYDROLOGICAL DROUGHT

is associated with the effect of low precipitation on water levels in rivers, reservoirs, lakes and aquifers. Hydrological droughts usually are noticed some time after meteorological drought.

#### AGRICULTURAL DROUGHT

occurs when there is not enough water available for a particular crop to grow or livestock to thrive at a particular time. This drought does not depend only on the amount of precipitation, but also on the correct use of water. Agricultural drought is typically seen after meteorological drought and before hydrological drought.

#### SOCIO-ECONOMIC DROUGHT

occurs when the demand for economic goods exceeds their supply as a result of a weather-related shortfall in water supply.

## Drought Indicators

The Province of British Columbia uses four core plus supplemental indicators where data is available to establish:

- » If there is a drought or a possibility of drought
- » What the drought level is at a given point in time

### Core Indicators

The province measures the following four indicators to establish whether there is a drought:

Basin  
Snow  
Indices

Seasonal  
Volume  
Runoff

30 percent of  
Average  
Precipitation

7-day  
Average  
Streamflow

In addition, the following supplemental indicators also help assess the situation:

- » Aquifer levels
- » Individual hydrometric station results
- » Multi-year trends
- » Reservoir inflows
- » Wildfire danger class ratings

The drought level is linked to a threshold established for each of the core indicators. For a more complete description, please refer to the British Columbia Drought Response Plan, June 2010 at [www.livingwatersmart.ca/drought/response.html](http://www.livingwatersmart.ca/drought/response.html).

# Drought Levels

In order to manage drought conditions of varying severity, the BC government has adopted a rating system of four successive levels of drought.

LEVEL	CONDITIONS	DESCRIPTION
<b>1</b> [Green]	Normal Conditions	There is sufficient water to meet human and ecosystem needs
<b>2</b> [Yellow]	Dry Conditions	First indications of a potential water supply problem
<b>3</b> [Orange]	Very Dry Conditions	Potentially serious ecosystem or socio-economic impacts are possible
<b>4</b> [Red]	Extreme Dry Conditions	Water supply insufficient to meet socio-economic and ecosystem needs
<b>LOSS OF SUPPLY</b>		Potential loss of community's potable or fire fighting water supply

Although Level 1 is not by definition, drought, the level is included because it plays a role in managing drought effectively and in keeping drought management costs low.

# Expected Actions

The British Columbia Drought Response Plan has established the following guidelines for water reduction based on the severity of the drought.

LEVEL	CONDITIONS	DESCRIPTION
<b>1</b> [Green]	Normal Conditions	Drought preparedness
<b>2</b> [Yellow]	Dry Conditions	Minimum 10% reduction in water use through voluntary conservation
<b>3</b> [Orange]	Very Dry Conditions	Minimum additional 20% reduction in water use through voluntary conservation
<b>4</b> [Red]	Extreme Dry Conditions	Maximum reduction
<b>LOSS OF SUPPLY</b>		Ensure health and safety

Source: British Columbia Drought Response Plan, June 2010

# Planning For Drought

The BC Ministry of Agriculture's web site [www.agf.gov.bc.ca/emergency/Drought/](http://www.agf.gov.bc.ca/emergency/Drought/) provides information, fact sheets and links to other web sites on best practices around water use in agriculture. When drought is projected, timely planning will minimize crop losses and other adverse effects of a drought.

Below are topics about which information is provided through the Ministry of Agriculture web site

## IRRIGATION MANAGEMENT

### Irrigation Operation

- BC Agriculture** - Alternate forage crops when irrigation water is limited
- Forage crops and irrigation management in drought conditions
  - Irrigation decisions with limited water
  - Irrigation tips to conserve water on the farm
  - Irrigation water-saving tips
  - Key drought management tips
  - Managing irrigated forage crops during drought - an introduction
  - Soil water, storage capacity and available soil moisture

### Irrigation Scheduling

- BC Agriculture** - Irrigation scheduling techniques
- Irrigation scheduling with tensiometers
  - Sprinkler irrigation scheduling using a water budget method
  - Trickle irrigation scheduling using evapotranspiration data
  - Crop coefficients for use in irrigation scheduling

### Collecting Evapotranspiration Data

- BC Agriculture** - Determining evapotranspiration with evaporation pans
- BC Pacific Field Corn Assoc.**
- Farmwest.com (web site has information used to calculate evapotranspiration)

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# Planning For Drought

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## Water Purveyors

**BC Agriculture** - WURLD- Water use reporting and land use database

## Crop Management

**University of Idaho** - Practices to conserve water

## Forage

**BC Agriculture** - Irrigated alfalfa management under drought conditions  
- Alternate forage crops when irrigation water is limited  
- Forage crops and irrigation management in drought conditions

**University of Idaho** - Alfalfa irrigation

**Washington State University** - Alfalfa irrigation management

## Soil Management

**BC Agriculture** - Drought impacts on soil fertility  
- Tillage, residue management and their effect on soil moisture

## Livestock Management

**BC Agriculture** - Managing through drought

**Montana State University** - Cattle management during drought

## University

**Montana & North Dakota State Universities** - Drought management strategies for beef cattle

## Dakota State Universities

## Universities

## Livestock Watering

**BC Agriculture** - Livestock water-saving tips  
- Livestock watering requirements - quantity and quality  
- Watering livestock directly from watercourses

**PFRA** (Agriculture and Agri-Food Canada)

- Water quality and cattle
- Securing livestock water during drought
- Dugouts showing effect of drought

THE NICOLA WATERSHED IS ONE OF THE DRIEST REGIONS IN BC

ALL RESIDENTS AND ALL SECTORS SHOULD BE PRACTICING WATER CONSERVATION AND USING WATER WISELY

PLEASE DO YOUR PART TO CONSERVE THIS VITAL RESOURCE

PLEASE VISIT THE WATER TIPS AND BEST PRACTICES PAGE IN THE DROUGHT SECTION OF THE NWCRT WEB SITE FOR MORE INFORMATION

## We Want to Hear From You!

The NWCRT has a blog accessible through its web site or by typing in 'NWCRT' into a search engine

[www.nwcrt.org](http://www.nwcrt.org)

*The NWCRT Blog is convenient, easy to use, available 24/7, and welcomes all comments and questions*

### WE INVITE RESIDENTS OF THE NICOLA WATERSHED

- » to post information about current conditions they're seeing
- » to respond to postings and comments on the blog
- » to ask questions related to:

- » the Nicola Water Use Management Plan (Nicola WUMP)
- » drought
- » water conservation
- » current conditions (water levels, water quality, aquatic and fish habitat issues, etc.)

**PLUS:** You will be able to post pictures as well as files to the blog. To use the blog, you will be asked to provide your name and e-mail address and you will have the option not to have this information showing on the blog.

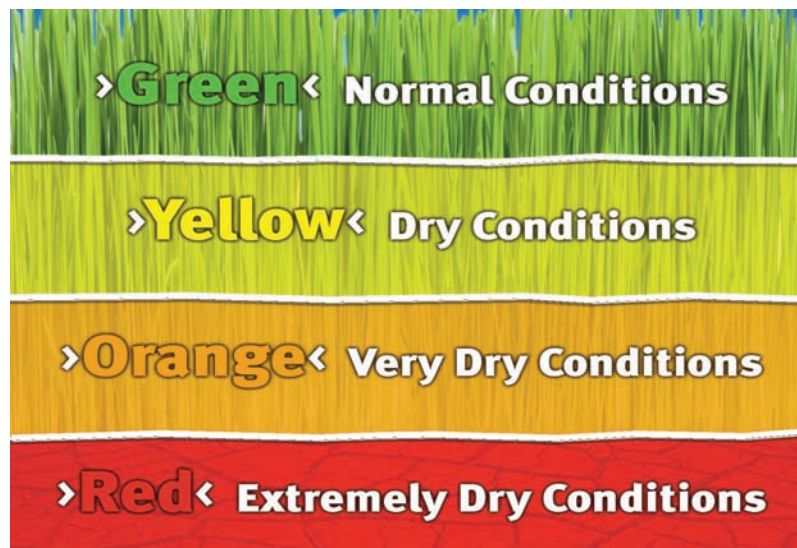
# What You Will See & Hear

The provincial government will play a lead role in advising and talking about drought. Through news releases, media interviews, advisories, newspaper articles, the government's website and in some instances, telephone calls, information will be provided on changing conditions in the event of a drought.

The British Columbia Drought Response Plan outlines the steps that will be undertaken by Ministry staff under each of the levels of drought: normal (green), dry (yellow), very dry (orange), extremely dry (red).

Please visit the province's web site for more information

[www.livingwatersmart.ca/drought/response.html](http://www.livingwatersmart.ca/drought/response.html)



In addition, the Nicola Watershed Community Round Table's web site - [www.nwcrct.org](http://www.nwcrct.org) - will have drought information and links to related topics.

The City of Merritt, the Nicola Stockbreeders' Association and Miller's Sunshine Valley Estates Society who are partners in the Communication Plan, will be providing information to their constituencies as necessary.

# Communication Activities

The Communication Plan for Low Flows details the communication that will be taking place during a drought, as drought escalates and when a drought is anticipated. Some actions will be undertaken by the Province of BC while others will be done by the partners.

## Province of BC

### As drought becomes more severe, communication activities will intensify

- >> News releases
- >> Information bulletins to local governments, water suppliers, First Nations, major licensees
- >> Advisories to agricultural producers
- >> Direct and indirect communication to request water licensees to voluntarily work together, conserve, share water and consider instream needs
- >> Communicate regulatory controls under the Water Act, Fish Protection Act or other statutes to affected water licensees

## City of Merritt

- >> Advise all water users within its boundaries of conservation measures required

## Nicola Stockbreeders' Association

- >> Disseminate information (drought warnings/ drought information) to membership
- >> Disseminate information about strategies for irrigation to membership
- >> Meetings to discuss water conservation plans

## Miller's Sunshine Valley Estates Society

- >> Disseminate information (drought warnings/ drought information) to membership

## Nicola Watershed Community Round Table

- >> Maintain a web site with information about drought levels and related topics
- >> Install a sign in Merritt showing levels of drought and current drought condition
- >> Facilitate a meeting of water license holders during a level 2 drought