



# Provincial Government Update

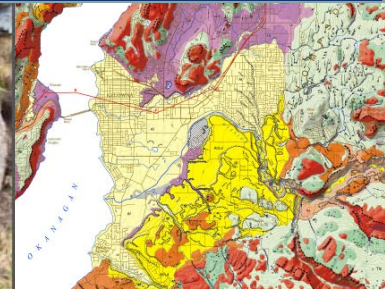
Michele Lepitre, P.Geo.

Emma Webster, P.Geo.

BCGWA Regional Meeting, Langley, BC  
November 2, 2019



Ministry of  
Forests, Lands, Natural  
Resource Operations  
and Rural Development





## Ministry of Forests, Lands, Natural Resource Operations and Rural Development

# Outline

- Groundwater Science Update
- Groundwater Data and Information Update
- Groundwater Compliance Update
- Groundwater Licensing Update
- Region Specific Information



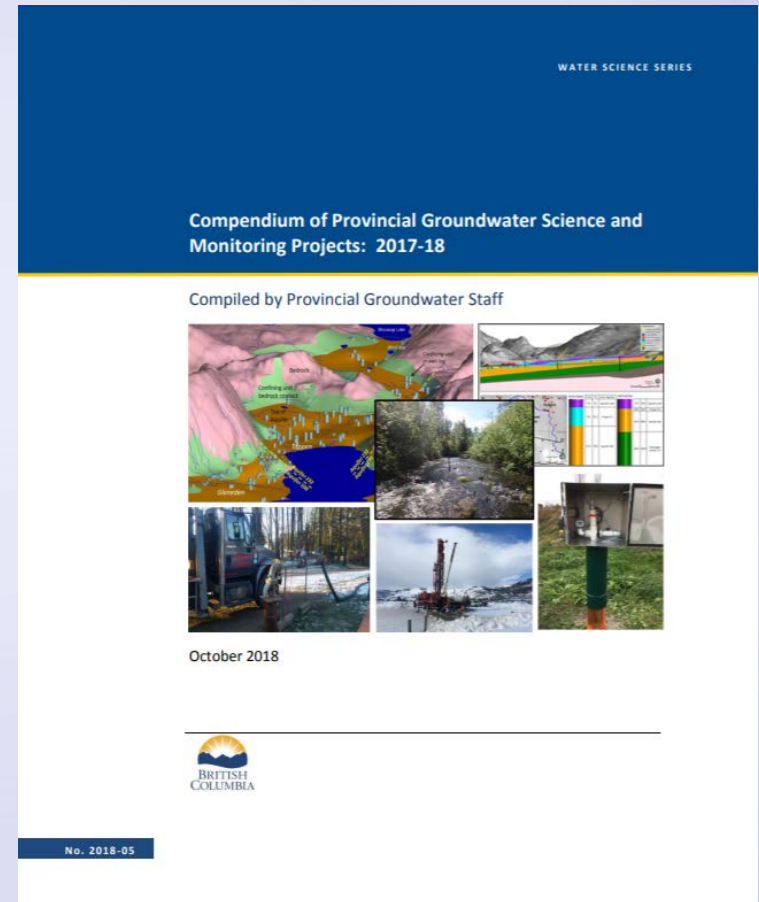
Photo by M. Lepitre



# Completed Groundwater Science Projects

- Water Budgets
- Aquifer Characterization and Mapping
- Groundwater-Surface Water Interaction Studies
- Compendium 2017-2018
- Water Science Series, available online:

<https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-science-data/water-science-series>





# Ongoing & Future Groundwater Science Projects



- Further Water Budgets, Aquifer Characterization & Mapping
- Further Groundwater-Surface Water Interaction Studies
- Drought Susceptibility and Resilience (with SFU)
- Analytical models and lag times for groundwater pumping impacts on EFN (with UVic)
- Artesian risk mapping and mitigation project (with SFU)
- Aquifer Storage and Recovery Assessment



# GWELLS



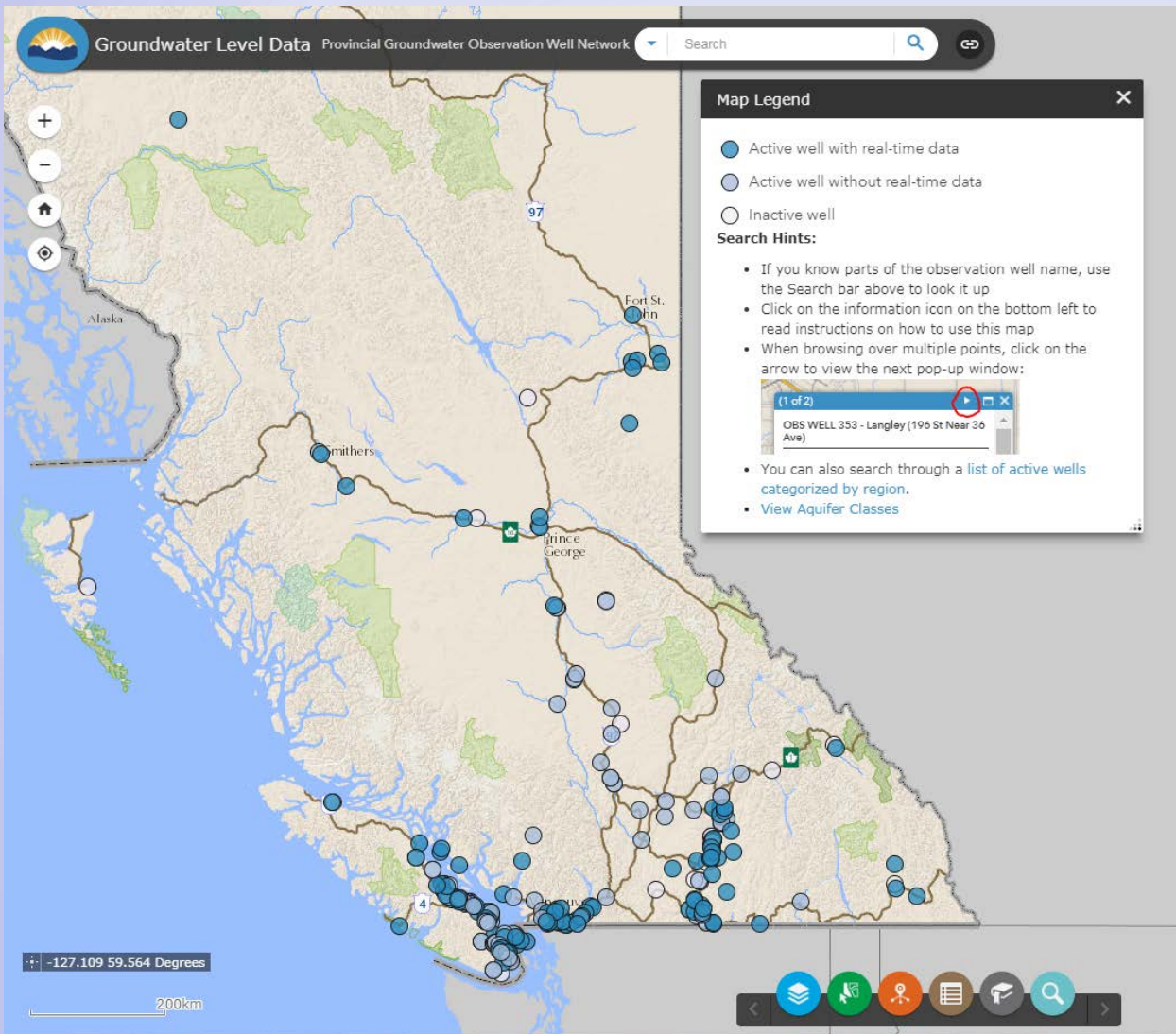
[Link](#)

- Search by WTN or WID, address
- Link to original records
- Submission of Well Records
- Edit-ability of Well Records
- Aquifer Summary Page
- Register of Well Drillers and Well Pump Installers
- Integration with other groundwater related applications e.g. Aquifer Factsheets, Artesian advisories, and Water Licensing Information



# Ministry of Forests, Lands, Natural Resource Operations and Rural Development

## Groundwater Level Data Interactive Map

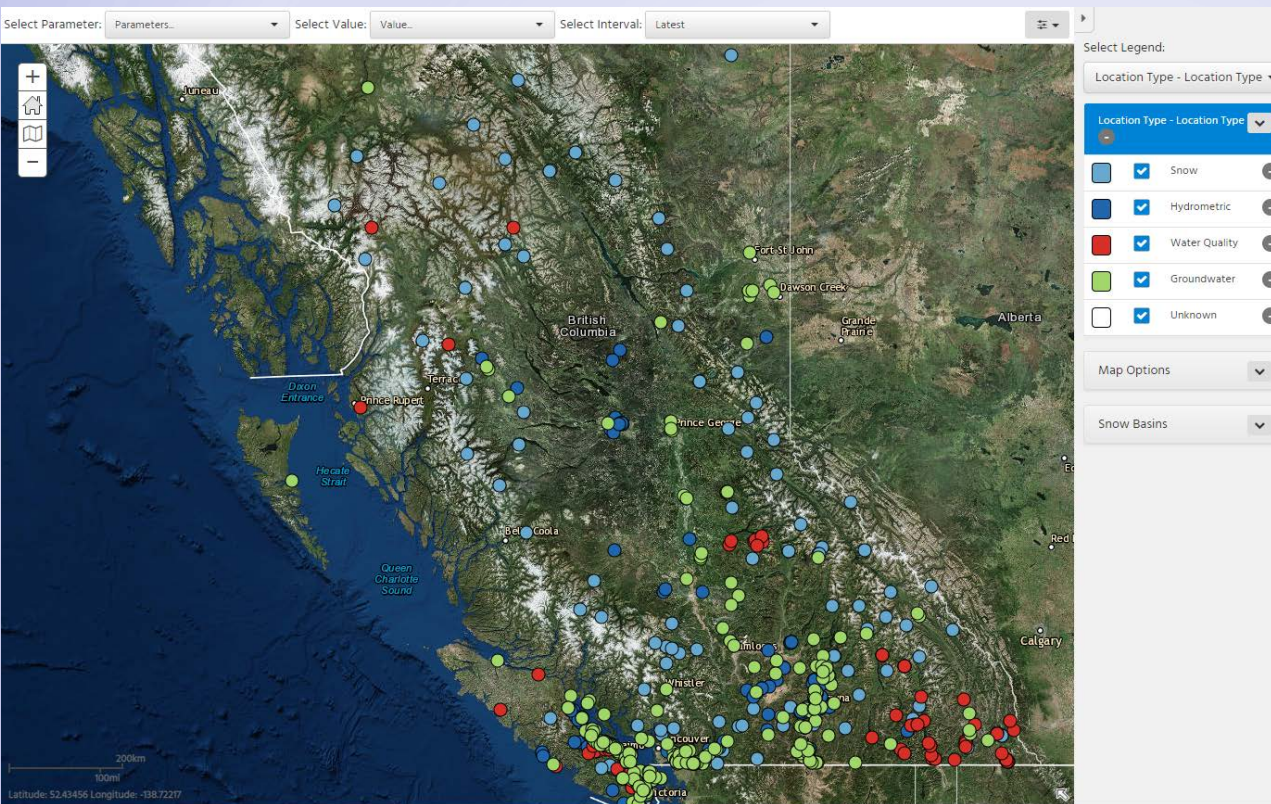


- View hydrographs
- Compare to long-term record (min, max, average)
- Download data

[Link](#)



# Real Time Water Data (Aquarius)



- View and download data from groundwater and surface monitoring sites
- Statistical analysis and display options

[Link](#)



# Ministry of Forests, Lands, Natural Resource Operations and Rural Development

British Columbia Drought Information Portal

Last Drought Level Update - September 20, 2018



BRITISH COLUMBIA

- Drought in BC
- BC Drought Map
- West Coast Stream Watch
- BC Angling Closure Map
- Historical BC Drought Information
- 7-Day Average Streamflow Map

**British Columbia Drought Information Portal**

A geographic drought level information system for the Province of British Columbia

Drought is a recurrent feature of climate involving a deficiency of precipitation over an extended period of time, resulting in a water shortage. The British Columbia Drought Information Portal (DIP) was created as a single source geographic drought level information system for British Columbians. The application uses multiple embedded maps to provide information on provincial drought levels, angling closures, historical drought time-lapse information and other drought information. Drought levels and other data are updated regularly as it becomes available.

[Drought Information Bulletins](#)

[Angling Closure Information Bulletins](#)

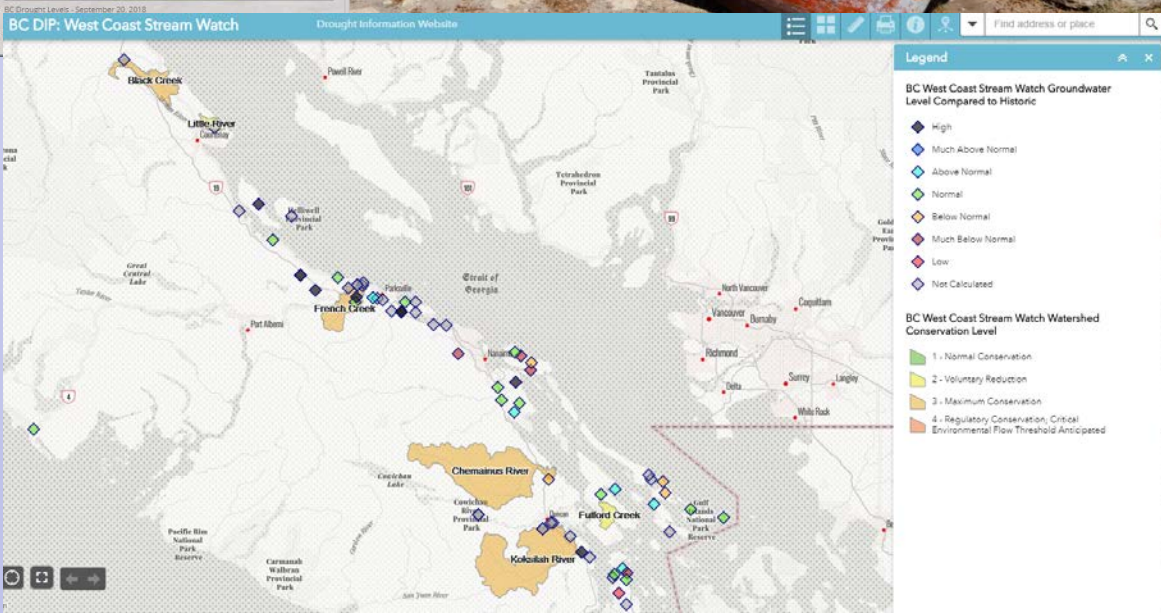
2018 DROUGHT LEVELS AT A GLANCE

Watershed	High	Much Above Normal	Above Normal	Normal	Below Normal	Much Below Normal	Low	Not Calculated
Black Creek								
Little River								
French Creek								
Chemainus River								
Koksilah River								



# Drought Portal

- Provincial Drought Map and updates during dry season
- West Coast Stream Watch:
  - Current state of drought in priority watersheds (Koksilah R., Chemainus R., French Ck, Black Ck, Little R.)

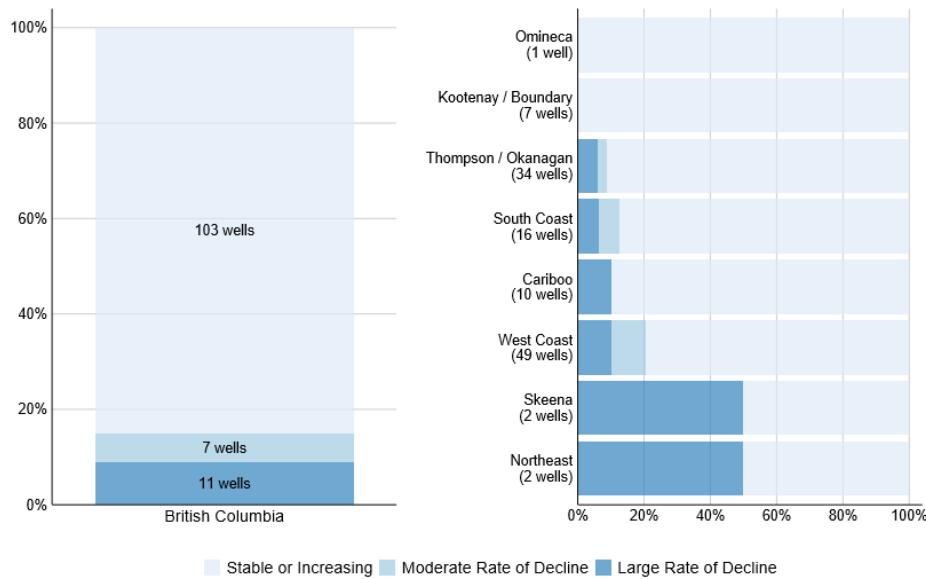


[Link](#)

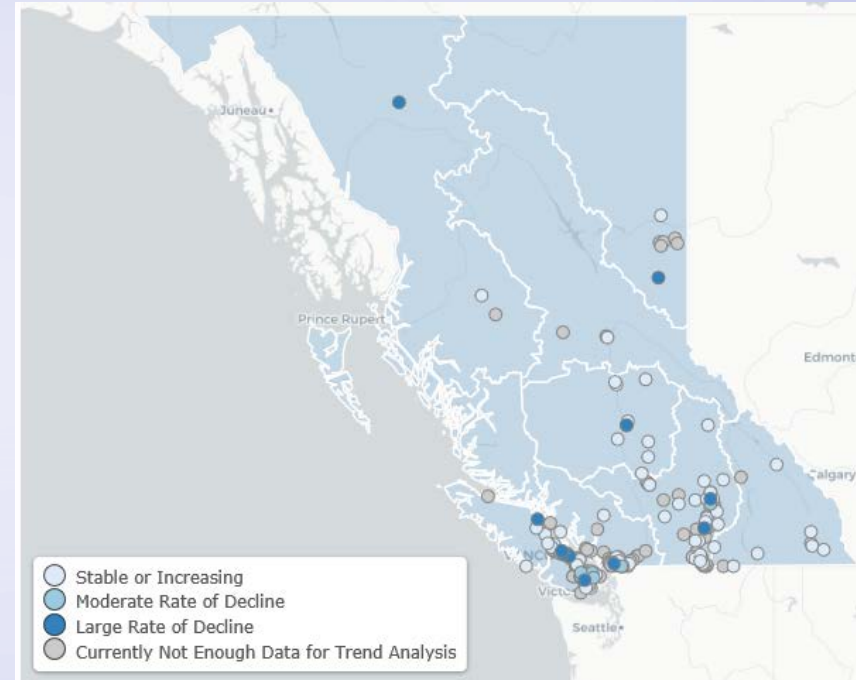




# Long-term Trends in Groundwater Levels



\*Note that only wells with enough data for trend analysis are included in these figures.



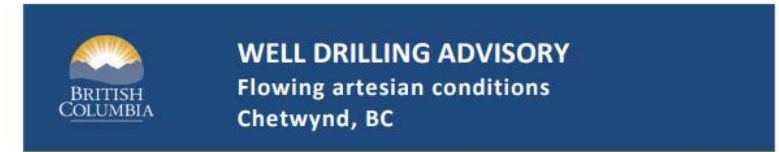
- Evaluation of long-term trends - updated analysis was completed in fiscal 2018-2019

[Link](#)



# Well drilling advisories

- See [GWELLS aquifer summary page](#) or [Information for Well Drillers & Well Pump Installers > Well Drilling Advisories](#)
- Check advisories for artesian conditions in BC, currently completed for:
  - [Coldstream](#)
  - [Westwold](#)
  - [Surrey and Langley](#)
  - [Lower Mission Creek, Kelowna](#)
  - [Vancouver, Burnaby and New Westminister](#)
  - [Chetwynd](#)



Flowing artesian conditions exist in low elevation valleys in Chetwynd, BC. Well drillers and home owners should be aware of potential complications and costs of flowing artesian wells.



#### Where do flowing artesian conditions occur?

The District of Chetwynd is an area of known flowing artesian conditions. The potential areas under artesian pressure are located in Centurion Creek valley stretching from northeast to southwest across Highway 97 and the Pine River valley from Chetwynd towards the southeast (Figure 1).

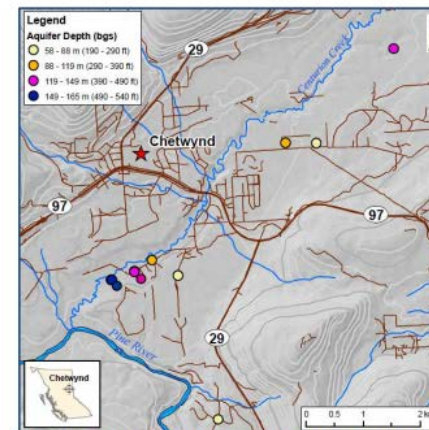


Figure 1: Chetwynd flowing artesian wells (bgs: below ground surface). Aquifer depth is inferred from well depth.

#### What is a flowing artesian well?

Flowing artesian wells occur when a well is drilled into an aquifer under pressure that is high enough to force the water level in the well to rise above the ground surface and flow over the top of the well casing.

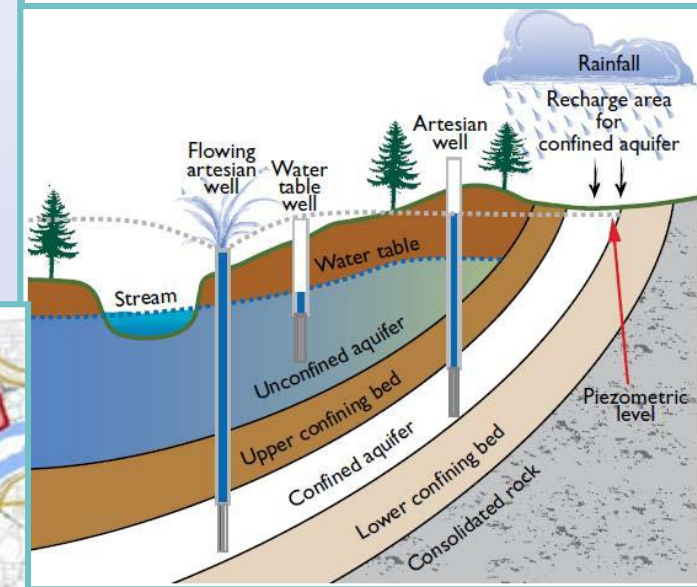
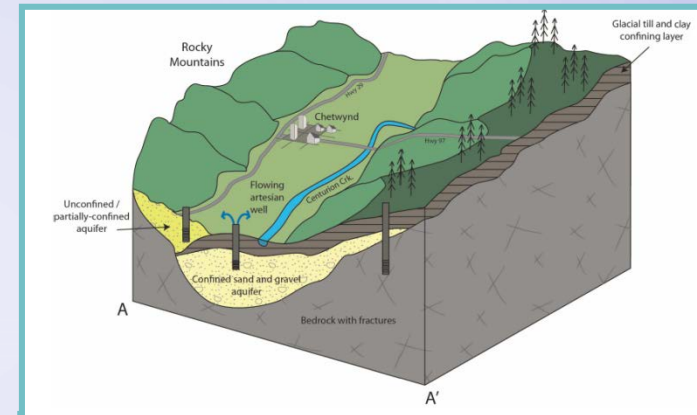
It is important to properly construct the well to control this flow. Controlling artesian flow conserves groundwater resources, preserves the pressure within the aquifer, and prevents damage to the natural environment (i.e., property damage, flooding, erosion and impacts to surface water). A flowing artesian well can cause substantial damage and incur significant and unexpected costs if not carefully planned and constructed. Well drillers and well owners should be prepared in advance in case flowing artesian conditions are encountered.



# Artesian Flowing Wells

## Prevention

- Well Drilling Advisories
- Mapping
  - iMapBC
  - BC Water Resources Atlas
- Other resources (e.g. Qualified Professionals)
- [Link](#)





# Legislated Requirements

## “Under Control”

- Clear of sediment
- Entirely conveyed through casing (if applicable)
- Can be turned off indefinitely
- Does not pose a threat to property, public safety or the environment







# Well Record Submissions

- It's an important reminder that since the WSA came into force, most Well Completion Reports need to be submitted.

Well Completion/Alteration/Decommissioning Report submission is mandatory for most wells under the *Water Sustainability Act*

- It's important to clarify that it's the responsibility of the driller (not the well drilling company) to submit the well record.
- Failure to submit a well record is a ticketable offense (**\$230 per instance**).
- The province will be reviewing the QWD registry and well submissions to verify compliance.



# Groundwater Licensing Update

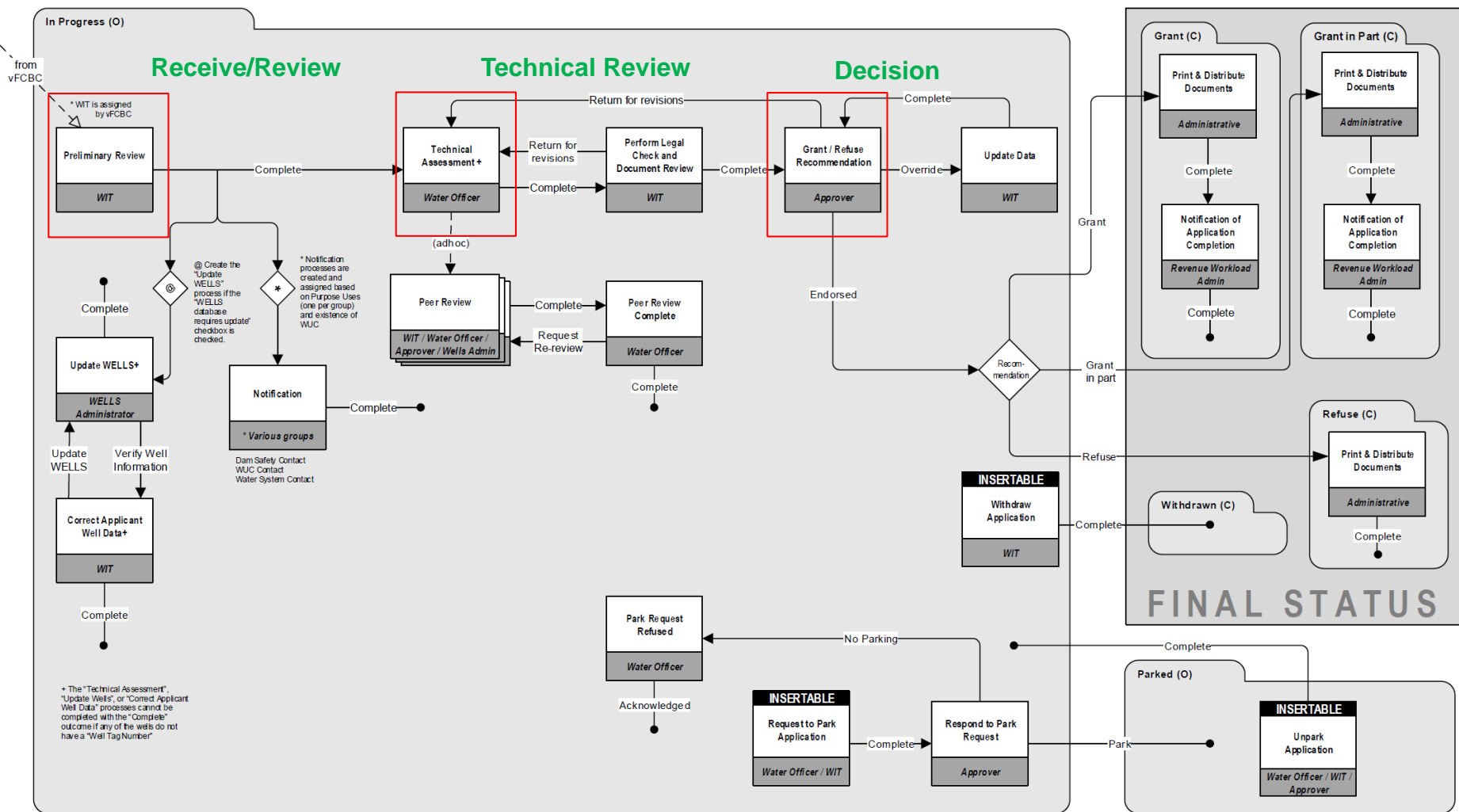
- The Water Sustainability Act requires a licence for non-domestic groundwater use – irrigation, industrial, commercial, etc.
- Existing groundwater use has a transition period. However, rentals accrue from Feb. 29, 2016 regardless when application received
- New groundwater use (after Feb. 29, 2016) must not use water until after licence is granted
- Surface water and groundwater to be managed under the same regulatory regime





# Ministry of Forests, Lands, Natural Resource Operations and Rural Development

## How do we process a licence?







# How do we assess the application?

- Adequacy of supply
- Likelihood of hydraulic connection to streams and other aquifers
- Potential impact on nearby groundwater users
- Other relevant issues

WATER SCIENCE SERIES

Guidance for Technical Assessment Requirements in Support of an Application for Groundwater Use in BC

Jenn Todd, P. Geo., Michele Lepitre, P. Geo., David Thomson, P. Geo., Julie-Ann Ishakawa, P. Geo., Melissa Wadsworth, P. Geo., and Calvin Bebee, P. Geo.



Version 2.0 – Updated 2019

BRITISH COLUMBIA

No. 2016-08





# UPDATE Groundwater Licensing Summary

Received-Existing Use				Granted-Existing Use			
South Coast	West Coast	North Area	South Area	South Coast	West Coast	North Area	South Area
715	724	853	1062	69	68	176	254



## South Coast Region Groundwater Science Update

- Aquifer Characterization and Mapping (recently updated):
  - Chilliwack – report available soon
  - Abbotsford – report available soon
  - Nicomekl-Serpentine Watershed–preliminary EFN study (report available soon) and ongoing aquifer mapping and water budget

WATER SCIENCE SERIES

### Assessment of Aquifer-Stream Connectivity Related to Groundwater Abstraction in the Lower Fraser Valley

Phase 1 Field Investigation

Glenn Hall, Diana M. Allen, Mike Simpson, Habtamu Tolera,  
Bryan Jackson, Mary Ann Middleton, and Michele Lepitre





# South Coast Region Groundwater Science Update

- Groundwater-Surface Water Interaction Studies
  - Otter Park, Langley
  - Phase 2: Pumping test and water level monitoring – fieldwork complete (reporting to be combined with phase 3)
  - Phase 3: A Hydrogeological Assessment of Hydraulic Connectivity

WATER SCIENCE SERIES

## Assessment of Aquifer-Stream Connectivity Related to Groundwater Abstraction in the Lower Fraser Valley

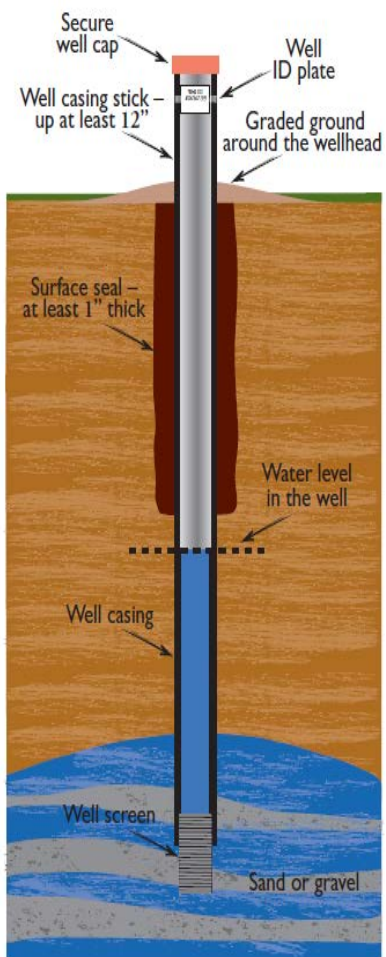
Phase 1 Field Investigation

Glenn Hall, Diana M. Allen, Mike Simpson, Habtamu Tolera,  
Bryan Jackson, Mary Ann Middleton, and Michele Lepitre





# South Coast Region Groundwater Compliance Summary



- GWPO role has been vacant for 1 year
- Artesian risk mapping and mitigation project (with SFU)
- Joint Compliance Project with NRO's




## South Coast Region PGOWN Update

- Over the past year we have added new wells to Squamish, Langley, Dewdney and Deroche.
- 54 active PGOWN wells in the South Coast Region
- Actively monitoring almost 20% of mapped aquifers in the South Coast Region
- More expansion planned over the coming months/years





# South Coast Region Groundwater Licensing Summary

 BRITISH COLUMBIA		Groundwater Application Summary				
October 31, 2019	FCBC	GW	Parked	Granted	Total	Active
Existing Use	441	205	0	70	716	646
New Use	1	27	12	24	64	40
STU	0	10	2	32	44	12
Amendments	0	2	0	11	13	2
<b>Total</b>	<b>442</b>	<b>244</b>	<b>14</b>	<b>137</b>	<b>837</b>	<b>700</b>





# Ministry of Forests, Lands, Natural Resource Operations and Rural Development

## Thank You!

### More information

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Phone: 778-572-2160



### WSA and GWPR

<http://engage.gov.bc.ca/watersustainabilityact>

[http://www.env.gov.bc.ca/wsd/plan\\_protect\\_sustain/groundwater](http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater)