

Happy Holidays and Best Wishes for the New Year

Welcome to the inaugural Provincial Government update to GeoExchangeBC. The intent of these updates is to provide GeoExchangeBC members with information related to the *Water Sustainability Act* (WSA) and regulations that are relevant to the geothermal industry. This may include updates related to legislation and policy development, compliance and enforcement activities, and progress reports related to specific projects and data management from the Ministry of Environment (ENV) and Ministry of Forests, Lands and Natural Resource Operations (FLNRO).

In this issue, we will provide information regarding:

- The difference between geothermal and geothermal wells,
- Registration requirements for geothermal well drillers,
- Flowing artesian conditions,
- Regional groundwater program activities,
- Submission of borehole records to government,
- Clarification on roles and responsibilities of ENV and FLNRO staff, and an
- Updated contact list of groundwater staff with a regulatory role.

Geothermal Wells versus Geothermal Wells

Geothermal wells are drilled to exploit high temperature geothermal resources deep in the earth. Geothermal wells are regulated under the *Geothermal Resources Act* and are defined as holes or shafts which extend greater than 600 metres and have a diameter greater than 100 mm through which information can be obtained about a geothermal resource or for which a geothermal resource can be produced. Geothermal wells are not regulated under the WSA.

Geothermal wells are wells constructed for the purpose of heat exchange. Geothermal wells are either part of an open loop system or a closed loop system. Open-loop geothermal wells are a type of water supply well used for the purpose of heat exchange in which there is a transfer of water between an aquifer and the well. Closed-loop geothermal wells are also used for the purpose of heat exchange, but there is no transfer of water between the aquifer and the well. The WSA and Groundwater Protection Regulation (GWPR) regulate the construction and development of both open-loop geothermal and closed-loop geothermal wells; both types of wells must follow the construction requirements set out in the Act and Regulation.

Please note, the diversion of groundwater from open loop geothermal wells for heat exchange now requires an authorization (e.g., licence). For further information about obtaining an authorization for existing or new use of groundwater for geothermal, please visit www.frontcounterbc.gov.bc.ca.

Registration of Well Drillers

The new WSA and GWPR came into force on February 29, 2016, introducing new requirements for registration as a well driller. Construction of closed loop geothermal wells is now a restricted activity in BC.

A new classification of well driller was created called geothermal driller, which qualifies an individual with that classification to construct closed-loop geothermal wells in the Province of BC. A new certificate program is being offered through the Industry Training Authority (ITA) that allows individuals

to obtain their certificate of qualification as a Geoexchange Driller. For more information, please visit www.itabc.ca/program/geoexchange-driller.

Construction of open loop wells remains a restricted activity and requires a well driller who holds a certificate as a water well driller and is registered to construct these wells.

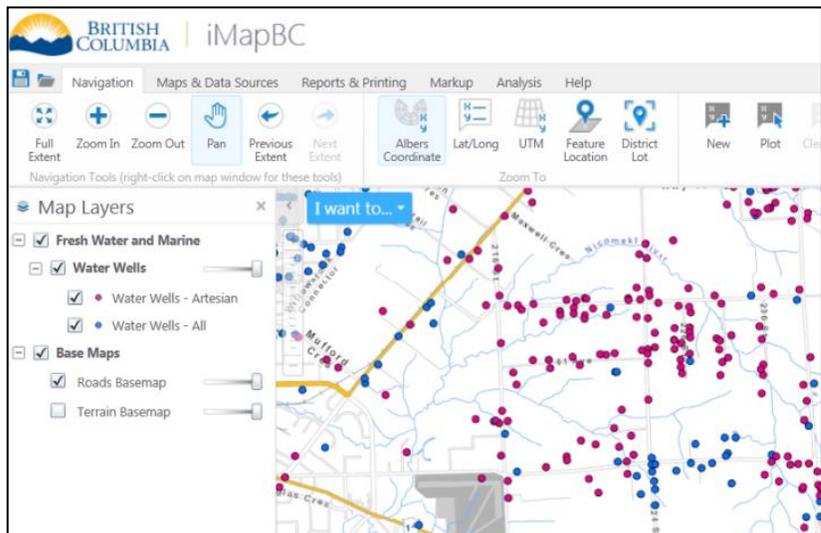
The register of well drillers can be found on line at <http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/groundwater-wells/information-for-well-drillers-well-pump-installers>.

If you would like to become registered or if you would like to update your contact information, please contact Lindsay Macfarlane at 250-953-3408 or Lindsay.Macfarlane@gov.bc.ca.

Flowing Artesian Wells

Sections 52 and 53 of the WSA and Part 8 of the GWPR describe the requirements that must be taken or must be met when encountering flowing artesian conditions. All wells, including any closed-loop geoexchange well that encounters flowing conditions, must report the well to the Comptroller of Water Rights by completing and submitting a well construction report.

Before drilling a well, it is strongly recommended that the engineer or drilling contractor conduct a pre-drilling assessment of the area to help determine if flowing conditions will be encountered. Current advisories for flowing conditions in BC and a Flowing Artesian Wells brochure are available from our website at <http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/groundwater-wells/information-for-well-drillers-well-pump-installers/well-drilling-advisories>.



Map from iMapBC displaying wells reported to have flowing artesian conditions at time of drilling

iMapBC and the BC Water Resources Atlas are interactive maps that can be used to help discover where flowing conditions may be met. The 'artesian wells' layer displays wells where drillers have reported encountering flowing conditions.

Additionally hydrogeological and geotechnical consultants may also have information on whether flowing artesian conditions exist in the area that you are planning to drill.

Regional Groundwater Program Update – West Coast Region

The West Coast Region (the region) of the Ministry of Forests, Lands and Natural Resource Operations (FLNRO) has been responding to enquiries, concerns and complaints related to regulatory requirements, wells and local groundwater issues. Topics include clarification on qualifications to do certain work, well siting (including salt water intrusion), construction and decommissioning standards, and well record submission.

West Coast Region staff are working with FLNRO Compliance and Enforcement Division’s Natural Resource Officers (NROs) on enforcement of the GWPR. Eighteen NROs have been trained to conduct well inspections in the region and this will provide a significant increase in resources to respond to complaints. These officers will work in tandem with the Groundwater Protection Officer who is the main point of contact for general questions regarding the WSA and the GWPR. Please note that reporting of violations has changed. Please call the Report All Poachers and Polluters (RAPP) Line: 1-877-952-7277 or use the online form at www.env.gov.bc.ca/cos/rapp/rapp.html to report a concern.



Map showing Natural Resource Regional Boundaries

The region is also developing a plan to begin proactive well inspections with the aim of identifying non-compliance that would otherwise go unreported. We have also been active in providing outreach and education through presentations to various groups, such as the BCGWA, private well owners, water allocations staff, and Island Health. More outreach is planned in early 2017 through presentations to the First Nations Health Authority and at the Islands Agriculture Show in Port Alberni.

Borehole Record Submission

Records can be submitted electronically (EWELLS) or by mail to the Ministry of Environment. Please note, paper records will only be accepted on a Ministry form.

- EWELLS:
http://www.env.gov.bc.ca/wsd/data_searches/wells/index.html
- Mail: **Ministry of Environment, Attention: Lindsay Macfarlane, PO Box 9362 STN PROV GOVT, Victoria BC V8W 9M2.**

If you or your company would like to learn more about EWELLS or have questions related to well record submission, please contact Groundwater@gov.bc.ca.

Did You Know?

Drillers constructing closed-loop goexchange wells are required to submit one well construction report per geoexchange system to the comptroller.

A report for every well in a geoexchange system must be submitted to the well owner.

Roles and Responsibilities of ENV and FLNRO

Staff in the Ministry of Forests, Lands and Natural Resource Operations (FLNRO) and the Ministry of Environment (ENV) work together to administer the WSA and its associated regulations (including the GWPR).

Industry typically contacts FLNRO staff in their region on topics such as interpretation of legislation, construction practices and standards, and compliance and enforcement. ENV is contacted on legislation, regulation and policy development and interpretation, and data management related to well records.

Contact Information for Groundwater Staff with Statutory Designation under the WSA

Office	Name	Statutory Designation	Phone	E-mail	Ministry
West Coast (Nanaimo)	Pat Lapcevic, P. Geo.	Assistant Water Manager	250-751-3149	Pat.Lapcevic@gov.bc.ca	FLNRO
	Graeme Henderson	Officer	250-751-7119	Graeme.Henderson@gov.bc.ca	
	Sylvia Barroso, P. Geo.	Assistant Water Manager	250-751-3265	Sylvia.Barroso@gov.bc.ca	
	Ben Robinson	Officer	250-751-3266	Ben.Robinson@gov.bc.ca	
South Coast (Surrey)	Mike Simpson, P. Geo.	Assistant Water Manager	604-586-2809	Mike.Simpson@gov.bc.ca	
	Bryan Jackson	Officer	604-586-2801	Bryan.Jackson@gov.bc.ca	
South Area (Penticton)	Skye Thomson, P. Geo.	Assistant Water Manager	250-490-8276	Skye.Thomson@gov.bc.ca	
	Nicole Pyett, P. Geo.	Assistant Water Manager	250-490-2285	Nicole.Pyett@gov.bc.ca	
	Twyla Legault, P. Eng.	Officer	250-490-8287	Twyla.Legault@gov.bc.ca	
	John Pogson	Officer	250-490-8220	John.Pogson@gov.bc.ca	
South Area (Vernon)	David Thomson, P. Geo	Assistant Water Manager	250-260-4641	David.Thomson@gov.bc.ca	
South Area (Kamloops)	Melissa Wade	Assistant Water Manager	250-371-6206	Melissa.Wade@gov.bc.ca	
	Laurie Lyons	Officer	250-371-6280	Laurie.Lyons@gov.bc.ca	
North Area (Prince George)	Jun Yin, P. Geo.	Assistant Water Manager	778-693-3015	Jun.Yin@gov.bc.ca	
North Area (Smithers)	Cody Cameron, P. Geo.	Assistant Water Manager	250-847-7326	Cody.Cameron@gov.bc.ca	
	Barry Watson	Officer	250-847-7329	Barry.Watson@gov.bc.ca	
Victoria	Mike Wei, P. Eng.	Deputy Comptroller	250-356-5062	Mike.Wei@gov.bc.ca	ENV
	Lindsay Macfarlane	Officer (Sr. GW Data Specialist)	250-953-3408	Lindsay.Macfarlane@gov.bc.ca	
	Michele Lepitre, P. Geo.	Assistant Water Manager	604-586-4413	Michele.Lepitre@gov.bc.ca	
	Erin McGinnis	Officer (GW Data Specialist)	250-387-9465	Erin.McGinnis@gov.bc.ca	