RBC Blue Water Project™

Groundwater Connections

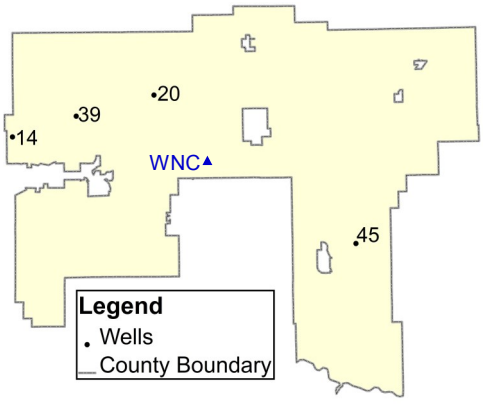
UNIVERSITY OF CALGARY

DECEMBER 2014

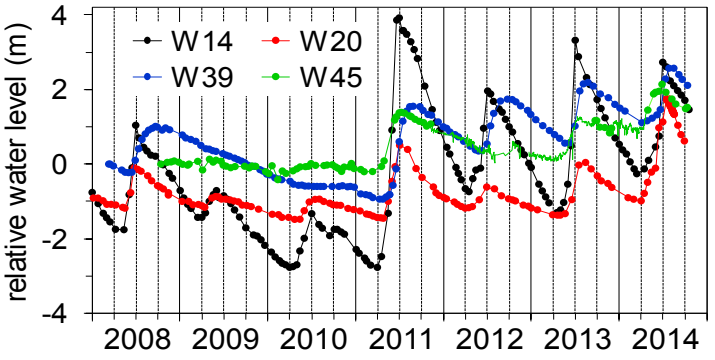
Newsletter for Rocky View County Community-Based Groundwater Monitoring Program
Reporting progresses and updates of the program to community volunteers.

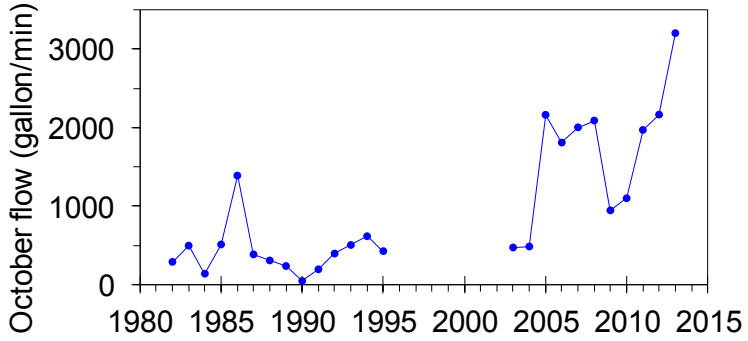
Things are wet in Rocky View County

Things have been getting wetter in this region since we had the last drought in 2000-2002, and many people have noted wet conditions in sloughs around houses and farms, and high water tables. These "anecdotal" evidences are useful, but a long-term monitoring program of groundwater level provides even more useful information. In Rocky View County, we are fortunate to have the long-term data set collected and reported by the volunteers. Thank you for all your time and efforts! Many of the wells have shown a gradual increase in water levels accompanied by seasonal rises and falls. The top diagram shows a few examples from the wells where the data have been frequently collected. With the recent increase in groundwater levels, the local creeks fed by groundwater are also showing an increase in flow. The bottom diagram shows the average flow of West Nose Creek in October of each year when the creek is almost entirely fed by groundwater. The increase in groundwater is related to the increase in precipitation (rain and snow) in recent years. For example, average precipitation in Calgary was 466 mm during 1982-2002 and 525 mm during 2003-2013, or 13 % increase in the recent decade. This important finding on the relation between groundwater and precipitation in Rocky View County was published as a research paper in the international leading scientific publication on groundwater called Hydrogeology Journal in November 2014. You can see the water level in other wells by visiting the Rocky View Well Watch website (http://rockyview.geocens.ca/), and learn more about the connection between groundwater and creeks in the Groundwater Connections website (http://groundwaterconnections.weebly.com/).



Map shows the location of wells and the West Nose Creek (WNC) flow monitoring station. Top graph shows relative changes in water level in the four wells, where vertical lines are placed every three months. Bottom graph shows October average flow in WNC.





School activities at Glenbow Ranch

Glenbow Ranch, located east of Cochrane, is a beautiful provincial park overlooking the Bow River with some unique aquatic ecosystems sustained by numerous springs. Many of these springs discharge from the same Paskapoo aquifer system that provides groundwater to Rocky View County residents. We started a study of springs in Glenbow Ranch last year and continued to work with the park staff on outreach and education programs. We had a pair of Grade 9 students, Leah Zaitlin and Magda Storkova studying some of the springs in 2013-2014. They presented their work at Calgary Youth Science Fair in April 2014. They were awarded several medals and selected to go to National Youth Science Fair in London, Ontario. That was exciting news for all of us involved in the Glenbow Ranch groundwater study. We hosted a Science Day for a group of students from Cochrane School in May 2014 and helped them find the source spring of a major creek in the park. The data collected by Rocky View Well Watch are helping teachers and students learn about groundwater and its connection with the ecosystem.

Students at Glenbow Ranch (Left: Leah and Magda at a spring. Right: Cochrane School students on a field excursion).

New study on groundwater recharge

Anticipating the future increase in groundwater use, it is important to use it in a sustainable manner. A program like Rocky View Well Watch provides the essential information on the amount of groundwater stored in aquifers. In addition to storage, we need to know how much rain and snowmelt water actually makes it to the aquifer - a process called groundwater recharge. Building on the experience of the Rocky View project, we succeeded in securing a grant from the Alberta Government to launch a new study called Groundwater Recharge in the Prairies (GRIP). The goal of this study is to get a realistic estimate (a grip!) on the amount of recharge across the agricultural regions of southern Alberta. The Rocky View Well Watch data will provide the critical information for the GRIP project, along with new instruments set up at our key study sites.

Research instruments for measuring precipitation and plant water use at Spyhill site near Calgary.

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