STATE OF COLORADO

Carter - DNR, Jocelyn <jocelyn.carter@state.co.us>

M-2002-004 GCC Pueblo - Notification of GW Discharge Exceedance 2Q 2025

1 message

Meghan Way <meghanway@gcc.com> Tue, Jul 15, 2025 at 8:23 AM
To: Jocelyn Carter - DNR <jocelyn.carter@state.co.us>
Cc: Landon Beck <lbeck@slrconsulting.com>, Amy Rodrigues <aveek@gcc.com>

Hi Jocelyn,

Pursuant to Rule 3.1.7(9), this email provides the notification of concentrations above Colorado state ag standards in groundwater samples collected as part of the recent 2nd Quarter 2025 groundwater sampling event at GCC's Pueblo Facility. On July 3rd and July 8th GCC received the final laboratory reports from ACZ Laboratories indicating concentrations above the ag standards for the samples collected on June 10th, 11th and 17th from MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12, MW-13, MW-14, MW-18, MW-19, MW-20, MW-21, MW-23 and MW-2B (duplicate of MW-23) and MW-3B (field blank). The report provided the following results with exceedances noted in bold red text:

Parameter	State Ag Standard (µg/L)	Results MW-6 (µg/L)	Results MW-7 (µg/L)	Results MW-8 (µg/L)	Results MW-9 (µg/L)	Results MW-10 (µg/L)	Results MW-11 (µg/L)	Results MW-12 (µg/L)	Results MW-13 (µg/L)	Results MW-14 (µg/L)	Results MW-18 (µg/L)	Results MW-19 (µg/L)	Results MW-20 (µg/L)	Results MW-21 (µg/L)	Results MW-22 (µg/L)	Results MW-23 (µg/L)	Results MW-2B (Sample duplicate of MW-23) (µg/L)	Results MW-3B (Field Blank) (µg/L)
Manganese	200	**501**	119	122	**351**			40			56		45		29	29	26	
Boron	750	375	345	**880**	**1440**	**1240**	479	**912**	**1080**	**1280**	**763**	489	**835**	604	748	384	374	97
Selenium	20		13.2	3.3			**36.8**											
Fluoride	2000	500	520	960	410	1430	790	1740	**5850**	**2910**	1350	1580	**2390**	1410	1240	62	61	

1. As noted in Water Quality Control Commission, Regulation 41 - The Basic Standards for Groundwater, the manganese standard of 200 µg/L is only appropriate where irrigation water is applied to soils with pH values lower than 6.0, which is not the case for areas potentially receiving waters from this facility.

2. As noted in Water Quality Control Commission, Regulation 41 - The Basic Standards for Groundwater, the boron standard of 750 µg/L is set to protect the following plants in ascending order of sensitivity: Pecan, Black Walnut, Persian (English) Walnut, Jerusalem Artichoke, Navy Bean, American Elm, Plum, Pear, Apple, Grape (Sultanina and Malaga), Kadota Fig, Persimmon, Cherry, Peach, Apricot, Thornless Blackberry, Orange, Avocado, Grapefruit, Lemon. As there are no known growing operations with crop use of groundwater received from this facility, the applicable standard for boron is 5000 µg/l.

3. Selenium groundwater concentrations in excess of the Colorado state ag groundwater standard documented at the Pueblo Facility are natural and explained by the distinctive water quality impacts from the Niobrara Formation in the Arkansas River basin in the reach above Pueblo, which includes the Fort Hayes Limestone Member. The specific constituent documented here as significantly impacting water quality from Niobrara-influenced inflows is selenium. As stated in the reference cited below, page 193, "The greater association of Se with pyrite, apparently in combination with the more permeable and calcareous nature of the Niobrara Formation, appear to be driving factors for Se mobility in the aqueous system."

1. Bern, C.R., and Stogner, R.W. Sr., 2017. The Niobrara Formation as a Challenge to Water Quality in the Arkansas River, Colorado, USA. Journal of Hydrology: Regional Studies, Volume 12, pp. 181-195. August.

4. Fluoride is a naturally occurring constituent, usually present in ionic form in groundwater, and the solubility of fluoride-bearing minerals can be increased in waters that are generally low in calcium

(Nordstrom and Smedley, 2022; Hem, 2005). It is likely that groundwater in the wells with elevated fluoride concentrations is saturated with respect to calcite (CaCO3) and dissolved concentrations of calcium remain low as calcite precipitates, increasing the solubility of the fluoride ion in solution (Nordstrom and Smedley, 2022).

1. Nordstrom, D.K., and P.L. Smedley, 2022. Fluoride in Groundwater. The Groundwater Project. Guelph, Ontario, Canada. Available at: https://books.gw-project.org/fluoride-in-groundwater/
2. Hem, J.D., 2005. Study and Interpretation of the Chemical Characteristics of Natural Waters. U.S. Geological Survey Water-Supply Paper 1473. Available at: https://pubs.er.usgs.gov/publication/wsp1473

Thank you,

Meghan Way

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