Status of water-level network, Elbert County Colorado, February, 2016

By Rhett R. Everett

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U.S. Department of the Interior
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Abbreviations

ARAP	Well completed in the Arapahoe aquifer
ARAPMAS	Well completed in the Arapahoe aquifer
CDWR	Colorado Division of Water Resources
DAWMAS	Well completed in the Dawson (upper of lower) aquifer
DENV	Well completed in the Denver aquifer
LARA	Well completed in the Laramie Fox-Hills aquifer
LDAW	Well completed in the lower Dawson aquifer
NAWQA	National Water-Quality Assessment
NWIS	National Water Information System
NWISWeb	National Water Information System Web interface
UDAW	Well completed in the upper Dawson aquifer
USGS	U.S. Geological Survey

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Project Basics

- Started soliciting volunteers and measuring water levels in January 2015
- Currently 42 wells in the network (11 upper Dawson, 10 lower Dawson, 7 Denver, 9 Arapahoe, 5 Laramie Fox Hills) *contract with CWCB states 30 wells will be monitored!
- Water levels measured bi-monthly (February, April, June, August, October, and December)
- Water levels are measured to the 100th of a foot
- Transducers are currently installed in 6 wells, (2 upper Dawson, 2 lower Dawson, 1 Denver, 0 Arapahoe, 1 Laramie Fox Hills)
- GPS Survey of well head elevation will be completed during the spring of 2016
- Water level data is available on the USGS web site http://nwis.waterdata.usgs.gov/nwis See NWIS Web section at the end of the report

Elbert County Water Use

All data in this section is from Ivahnenko, Tamara, and Flynn, J.L., 2010, Estimated withdrawals and use of water in Colorado, 2005: U.S. Geological Survey Scientific Investigations Report 2010–5002, 61 p.

- A 1,538-mi2 portion of eastern Elbert County is underlain by the Denver Basin aquifer system, and groundwater pumped from the aquifers is the primary source of municipal and domestic water supply.
- Estimated Percentage of the Withdrawal from the Denver Basin in 2005 for Elbert County: 4%
- Estimated Percentage of the Total Withdrawal from the Denver Basin in 2005 for Elbert County: Alluvial- 2%, upper Dawson- 33%, lower Dawson- 14%, Denver- 6%, Arapahoe- 2%, Laramie-Fox Hills- 1%
- Estimated Water Use in 2005 for Elbert County- 29.43 Mgal/d: Public Supply- 20.82 Mgal/day- 71%; Irrigation- 4.24 Mgal/day- 14%; Domestic/Livestock- 3.54 Mgal/day- 12%; Commercial- 0.75 Mgal/day- 3%; Household (domestic)- 0.08 Mgal/day- >1%
- Estimated Water Use in 2005 for Elbert County-29.43 Mgal/d: Alluvial- 8%; upper Dawson- 20%; lower Dawson- 25%; Denver- 27%; Arapahoe- 17%; Laramie-Fox Hills- 4%.

Elbert County Well Permits

- Over 14,600 Permit Events in Elbert County

- Approximately 5,500 events are not valid wells: 461- Outside Elbert County; 461- Outside Elbert County; 557- Abandoned; 2,247 Extended or Unknown; 658- No Status Remarks
- 9,311 Active Wells in Elbert County; 7,249 Domestic; 1,446 Stock; 235 Irrigation; 47 Municipal; 289 "Other"
- 5,096 Wells with Complete Records: 53 Alluvial- 1%; 2,875 upper Dawson- 56%; 550 lower Dawson- 11%; 931 Denver- 18%; 427 Arapahoe- 8%; 260 Laramie-Fox Hills- 5%

Elbert County Water Level Data

- See ElbertCounty_InitialWaterLevels.xls for summary of water level changes
- Began water level measurements in Jan 2015
- 14 of the wells in the current network have water levels previously measures by the USGS, most in 2004/2005
- To date (3/1/15) 296 manual water-level measurements have been made for this project
- For most wells the water level in June 2015 was higher than February 2015- average 0.30 ft higher. This is not typical, water levels usually decline during the summer months.
- All wells have at least one reported water level measured by the driller when the well was drilled
- Pressure transducers with data recorders are installed in 6 wells. They hourly water level measurements will be available on the web in the near future.
- Wells with Water Level Data: Municipal Wells (48), DWR Network (27), USGS (>200)
- Division of Water Resources 2014 Report http://dwrweblink.state.co.us/dwrweblink/0/doc/2769958/Electronic.aspx?searchid=f8f4e13a-93f5-431f-b05f-9595af1b69e0

- DWR Report shows between 2009 and 2014 water levels declined in most wells between 0 to 4 feet. Between 2004 and 2014 water levels were mixed; some declined 0 to 4 feet some rose 0 to 4 feet.

NWISWeb

- Water level data (current and historic) is published to the web via the USGS National Water Information System (NWIS) Web interface (NWISWeb).
- Link to site table:

http://nwis.waterdata.usgs.gov/nwis/inventory?multiple_site_no=393016104392601%2C392133104310201%2C392856104393801%2C391924104374101%2C392355104382001%2C392203104342301%2C392130104341401%2C391915104375001%2C391126104354701%2C391545104335401%2C390935104301001%2C392058104364401%2C392724104341901%2C392125104323701%2C391829104385301%2C391502104273601%2C391852104391301%2C393227104343401%2C392131104351701%2C391148104294101%2C391848104261401%2C393350104151701%2C393012104310701%2C391821104270601%2C391811104140301%2C391257104173601%2C390755104172501%2C391851104204501%2C393251104073701%2C393225104073601%2C392434104142701%2C391946104114501%2C391208104053301%2C390800104172601%2C391834104205601%2C391740104072401%2C392400104150601%2C392616103591001%2C392635103590001%2C391621104012001%2C391609104014001%2C390817104040301&format=station_list&group_key=NONE&list_of_search_criteria=multiple_site_no

- Link to hydrographs:

  http://nwis.waterdata.usgs.gov/nwis/gwlevels?multiple_site_no=393016104392601%2C392133104310201%2C392856104393801%2C391924104374101%2C392355104382001%2C392203104342301%2C392130104341401%2C391915104375001%2C391126104354701%2C391545104335401%2C390935104301001%2C392058104364401%2C392724104341901%2C392125104323701%2C391829104385301%2C391502104273601%2C391852104391301%2C393227104343401%2C392131104351701%2C391148104294101%2C391848104261401%2C393350104151701%2C393012104310701%2C391821104270601%2C391811104140301%2C391257104173601%2C390755104172501%2C391851104204501%2C393251104073701%2C393225104073601%2C392434104142701%2C391946104114501%2C391208104053301%2C390800104172601%2C391834104205601%2C391740104072401%2C392400104150601%2C392616103591001%2C392635103590001%2C391621104012001%2C391609104014001%2C390817104040301&group_key=NONE&sitefile_output_format=html_table&column_name=agency_cd&column_name=site_no&column_name=station_nm&format=gif&date_format=YYYY-MM-DD&rdb_compression=file&list_of_search_criteria=multiple_site_no

Publications Relevant to Elbert County

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