

CWCB/DWR Sterling Groundwater Pilot Project Status Update

February 11, 2014



Sterling Groundwater Pilot Project

Scope of Work

- Acquire existing water level data and identify existing wells suited for monitoring
 1. Compile water level data acquired by others
 2. Identify existing alluvial wells that could be monitored
- Install new monitoring wells in select areas (see site maps)
 1. Advance borings for geologic characterization in Pawnee Ridge and Country Club Hills subdivisions
 2. Install nested piezometers in Pawnee Ridge and Country Club Hills to determine direction of groundwater flow
 3. Conduct pump test (24 hours or to stabilization) within Pawnee Ridge
 4. Instrument new monitoring wells with water level transducers and dataloggers
- Monitor and record South Platte stream flow and diversions
- Monitor and record diversion to recharge ponds
- Compile local climate data
- Monitor and record groundwater withdrawals by large-capacity wells.
- Compile and analyze decreed augmentation plans within study area.
- Integrate datasets and identify causal relationships. Report of findings and recommendations.

Colorado Department of Natural Resources

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Colorado Division of Water Resources

Focused on Colorado's People, Water and Stewards

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- > Division Offices > **Division 1 (Greeley)**
- Division 1 (Greeley)
 - Division 1 Events and Links
 - Active Calls in Division 1
 - High Ground Water Issues in Sterling
 - Division 2 (Pueblo)
 - Division 3 (Alamosa)
 - Division 4 (Montrose)
 - Division 5 (Glenwood Springs)
 - Division 6 (Steamboat Springs)
 - Division 7 (Durango)

Division 1 (Greeley): South Platte River Basin



Division 1 includes the South Platte River basin, Republican River basin, and Laramie River basin.

Staff administer water rights for water users, measure water flow and maintain gaging stations, ensure [interstate compact](#) and agreement compliance, inspect dams to determine safe water storage levels, and maintain water records within these basins.



Division 1 Contacts, Events and Links

[Division 1 Contact Info \(Main Office: Greeley\)](#)

[Division 1 Events and Links](#)

Water Court

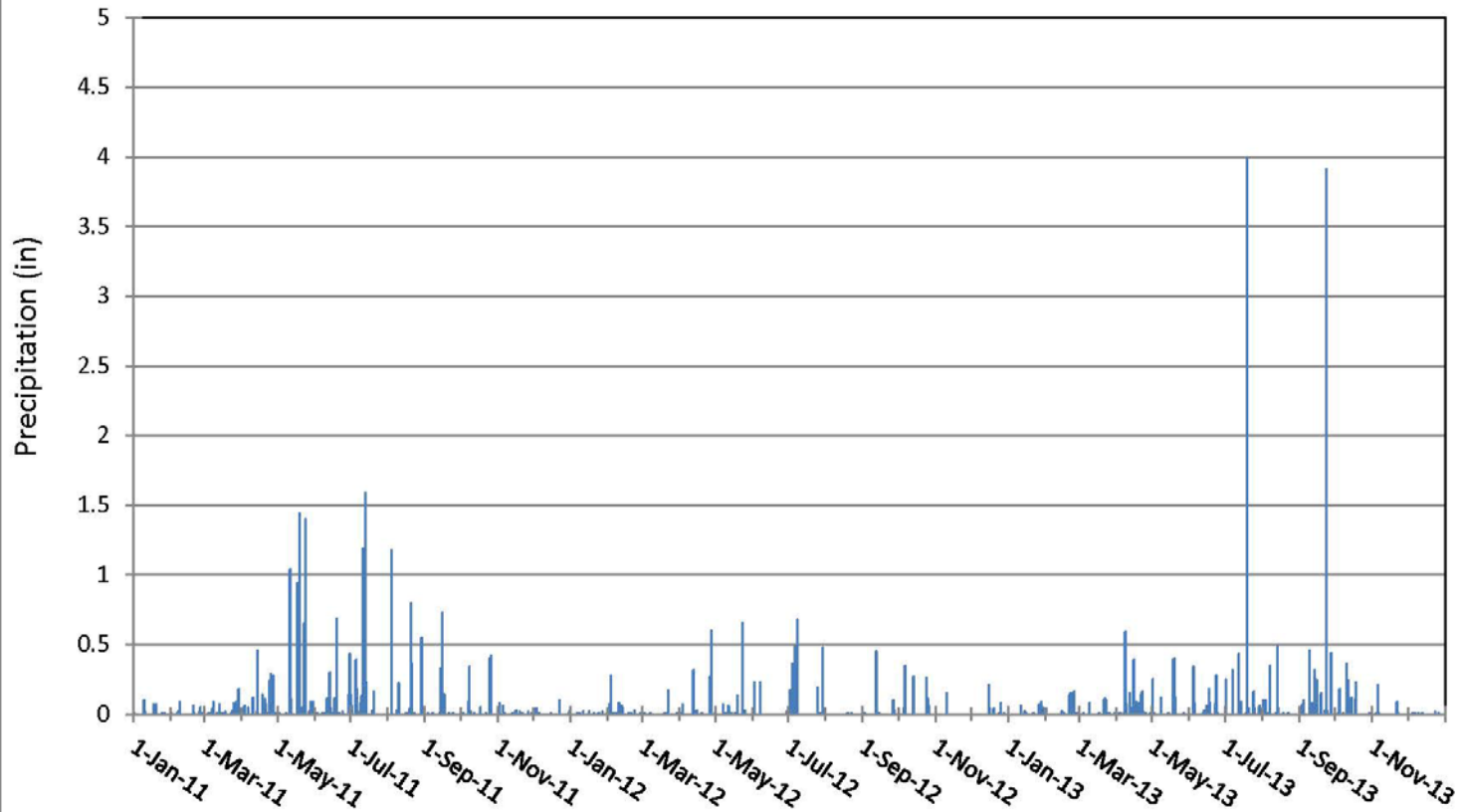
[Division 1 Water Court: South Platte River Basin](#)

Sterling Groundwater Pilot Project

NCWCD Total Daily Precipitation

NCWCD Sterling 108 Station

Period of Record: January 1, 2012 - December 31, 2013

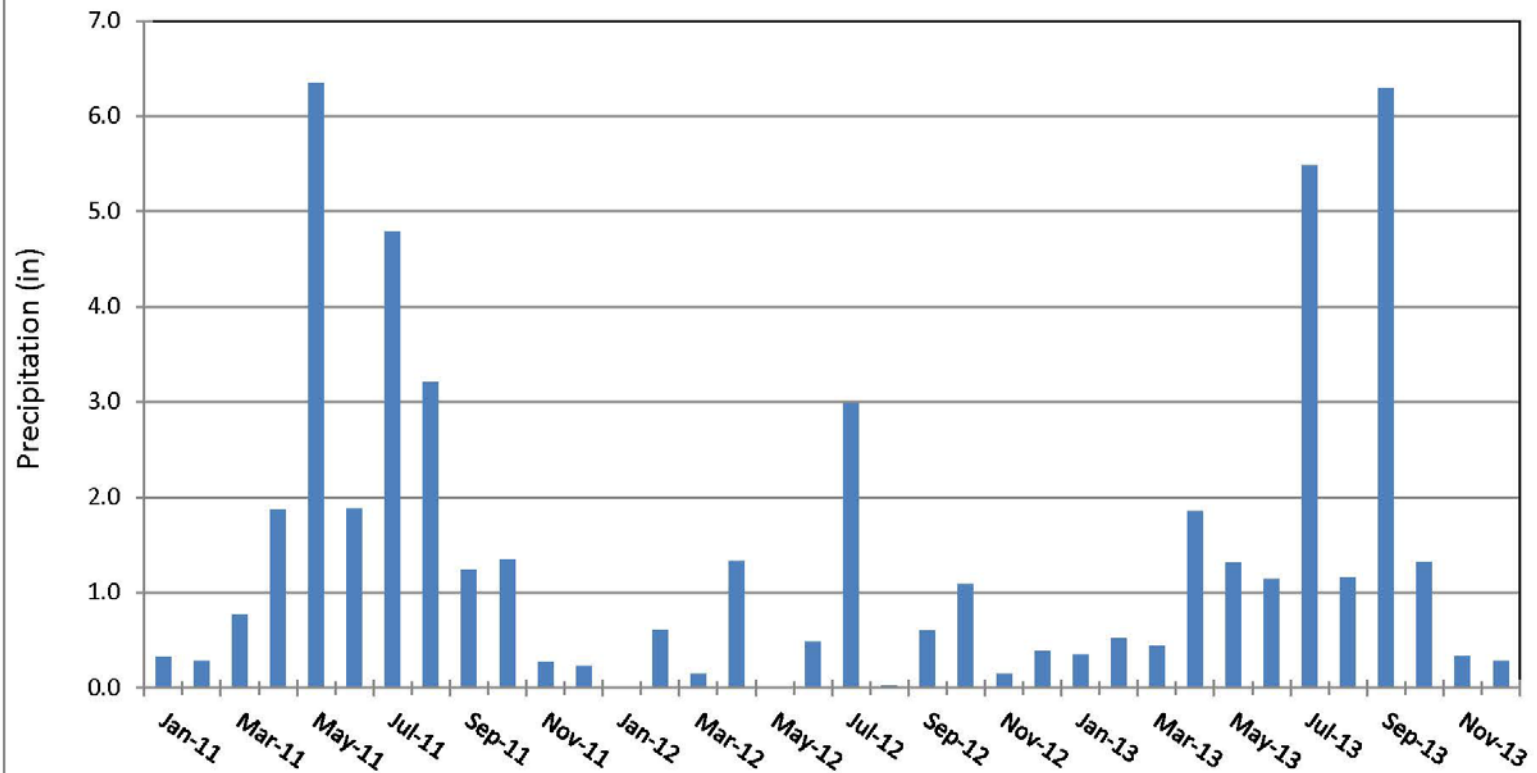


Sterling Groundwater Pilot Project

NCWCD Monthly Total Precipitation

NCWCD Sterling 108 Station

Period of Record: January 1, 2011- December 31, 2013

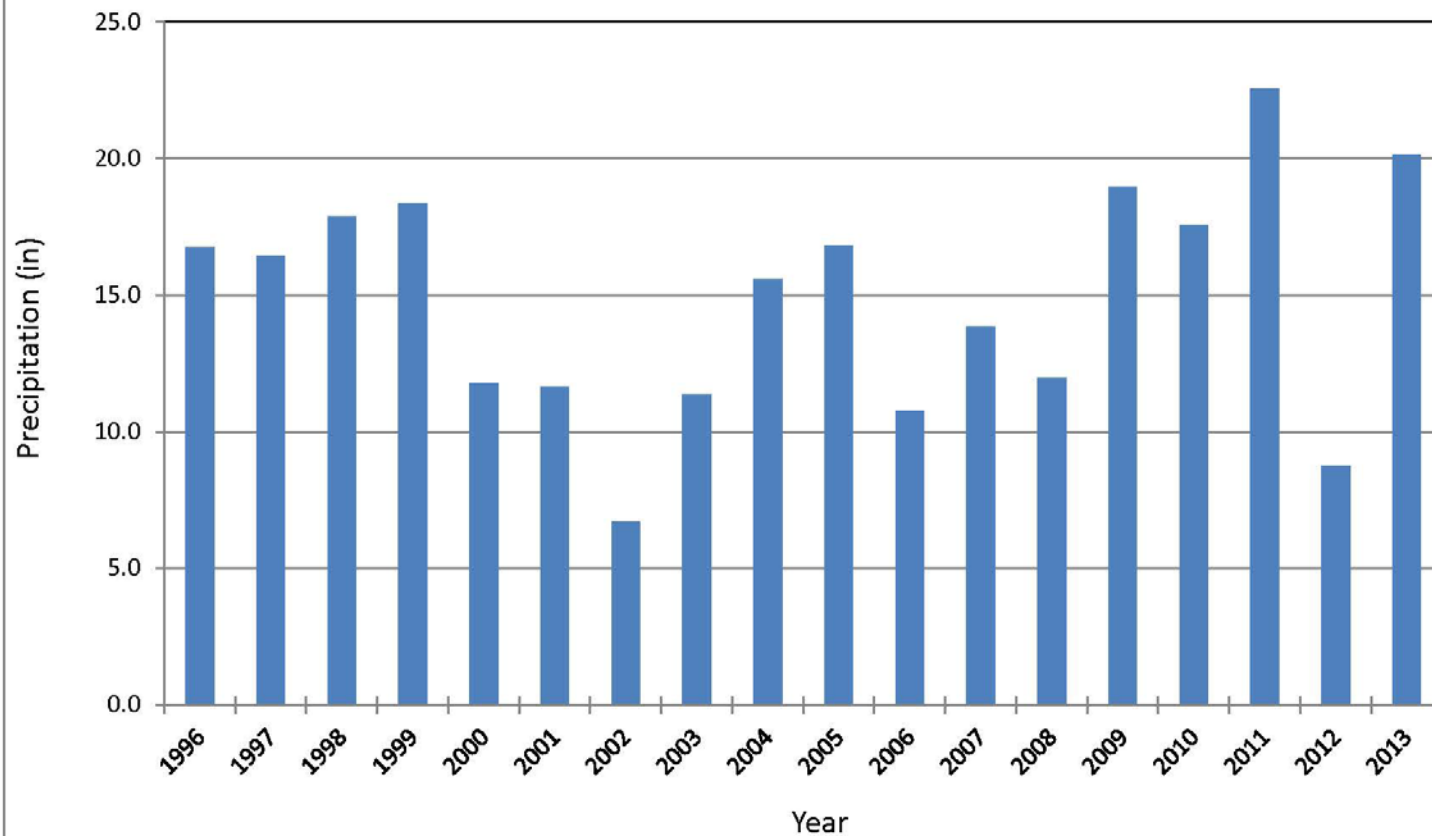


Sterling Groundwater Pilot Project

NCWCD Annual Precipitation

NCWCD Sterling 108 Station

Period of Record: 1996-2013



Sterling Country Club Hills Groundwater Pilot Project

Map Key

- Proposed Piezometers
- Wells
- Ditch
- Recharge Ponds



0 250 500 Feet
1" = 500'



Sterling Groundwater Pilot Project
Water Level Data Collection Sheet
Country Club Hills wells

	CCE-2	CCE-3	CCE-4	CCN-1	CCN-2S	CCN-2M	CCN-2D	CCN-3	CCN-4
Date Constructed	4/9/2012	5/30/2012	4/10/2012	4/12/2012	5/24/2012	5/24/2012	5/24/2012	4/10/2012	4/9/2012
Water Level (bgs) at construction	16.2	6.6	10.4	23.4	5.5	9.0	14.9	6.7	18.5
Top screen interval (bgs)	17.7	10.3	20.2	24.3	14.0	30.0	63.7	11.5	24.8
Bottom screen interval (bgs)	22.7	15.3	25.2	29.3	19.0	35.0	68.7	16.5	29.8
Measuring Point (TOC) (ags)	2.7	3.0	2.5	2.7	3.0	2.8	2.9	2.4	2.5
Measuring Point Elevations (approx)	3996.7	3960.0	3962.5	3985.7	3968.0	3968.0	3967.0	3969.4	3982.5
Date of Manual Measurements									
5/3/2012	NA	NA	NA	NA	NA	NA	NA	8.5	NA
5/8/2012	14.2	NA	13.6	NA	NA	NA	NA	8.5	21.5
5/9/2012	NA	NA	NA	27.4	NA	NA	NA	NA	NA
5/25/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA
5/31/2012	13.6	9.6	13.1	25.7	8.2	11.2	16.8	8.4	22.2
6/6/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/2/2012	13.4	10.0	13.5	28.6	9.2	12.5	17.9	9.0	23.4
7/30/2012	13.5	10.4	13.5	29.5	9.8	12.5	NA	9.3	24.3
8/27/2012	14.0	11.2	14.3	30.4	10.7	14.1	22.2	10.0	25.2
10/1/2012	14.5	11.9	15.0	30.4	11.4	14.8	21.0	10.7	26.1
10/30/2012	14.3	12.2	15.3	31.0	11.7	14.0	18.8	11.1	22.6
11/26/2012	14.7	NA	NA	31.9	NA	NA	NA	11.4	23.4
11/27/2012	NA	12.6	15.6	NA	12.1	14.4	19.0	NA	NA
12/27/2012	15.3	12.6	15.4	28.2	12.0	13.4	18.4	11.6	22.2
12/28/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA
1/29/2013	16.0	12.4	15.6	30.8	11.7	13.7	18.4	11.3	22.1
1/30/2013	NA	NA	NA	NA	NA	NA	NA	NA	NA
2/27/2013	16.4	11.7	15.3	26.6	10.3	12.5	17.8	10.7	19.8
2/28/2013	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/28/2013	16.0	10.9	15.0	29.1	9.6	12.4	18.0	9.7	20.4
4/25/2013	15.9	10.9	14.9	30.3	9.8	12.8	18.0	9.4	21.1
6/6/2013	16.7	11.5	14.9	23.6	9.9	13.1	19.9	9.9	22.9
6/27/2013	16.8	10.3	14.5	27.1	8.6	12.4	20.0	9.3	23.0
7/23/2013	15.7	10.0	14.0	28.5	9.0	12.7	17.6	9.1	23.3
8/28/2013	16.1	10.6	14.0	30.1	9.9	13.5	20.7	9.5	24.3
9/26/2013	14.9	10.8	13.8	30.5	10.5	13.0	17.1	9.7	24.9
10/30/2013	14.8	11.2	14.0	31.0	11.2	13.3	17.4	10.4	25.9
11/26/2013	15.3	11.7	14.4	29.9	11.6	13.5	17.7	11.0	25.4
12/26/2013	15.8	11.5	14.5	29.9	11.1	13.1	17.8	11.1	22.1
Troll Depth (BTOC)	24.5	15.0	24.0	31.0	15.0	NA	NA	16.0	30.0

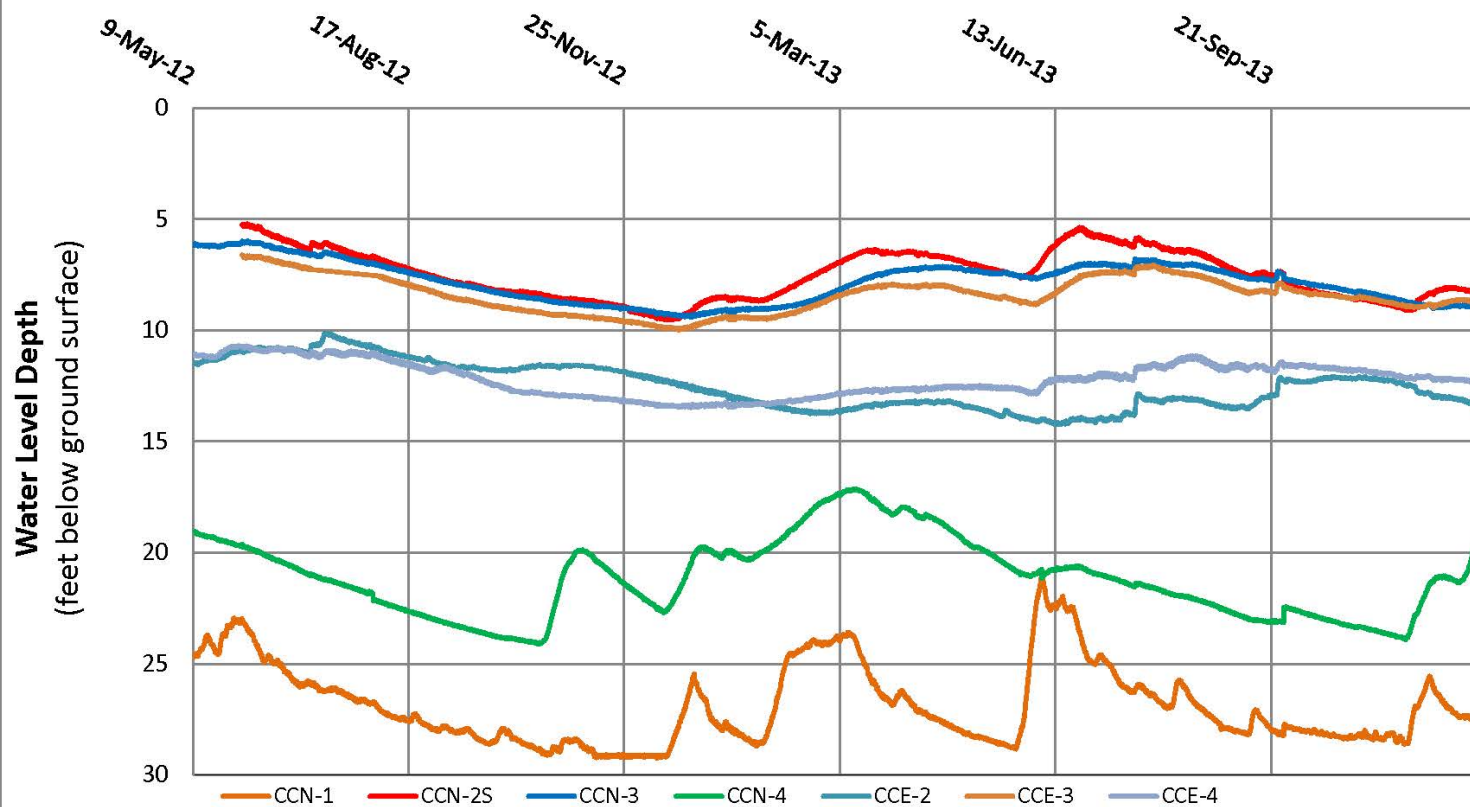
Notes:

TOC - Top of Casing

bgs - feet below ground surface

ags - feet above ground surface

Sterling Groundwater Pilot Project
Country Club Hills Wells Groundwater Level
Period of Record: May 9, 2012 - December 27, 2013





State of Colorado
Division of Water Resources

Sterling Groundwater Pilot Project Pawnee Ridge Area

Map Key

- Proposed Piezometer Locations
- Ditch
- Recharge Ponds



0 250 500 Feet
1" = 500'



Sterling Groundwater Pilot Project
Water Level Data Collection Sheet
Pawnee Ridge Wells

	PRE-1	PRE-2	PRE-3	PRN-1	PRN-2S	PRN-2D	PRN-3	PRN-4	PR-1	PR-2
Date Constructed	4/11/2012	4/11/2012	4/10/2012	4/12/2012	5/22/2012	5/22/2012	4/10/2012	4/11/2012	5/30/2012	5/30/2012
Water Level (bgs) at construction	21.2	12.5	6.4	12.4	9.9	13.2	1.3	14.0	7.2	6.5
Top screen interval (bgs)	21.2	14.3	8.6	16.3	24.8	48.0	4.9	19.0	8.2	17.5
Bottom screen interval (bgs)	26.2	19.3	13.6	21.3	29.8	53.0	11.2	24.0	13.2	22.5
Measuring Point (TOC) (ags)	2.9	2.9	2.6	3.0	2.6	2.8	1.8	2.7	2.9	2.8
Measuring Point Elevations (approx)	4011.9	3997.9	3982.6	3987.0	3993.6	3993.6	3983.8	3954.7	3992.9	3938.8
Date of Manual Measurements										
5/3/2012	24.8	15.2	8.5	10.3	NA	NA	3.6	12.9	NA	NA
5/8/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5/9/2012	24.8	15.2	8.4	10.8	NA	NA	3.5	12.5	NA	NA
5/25/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5/31/2012	25.0	15.6	8.6	11.1	12.6	16.2	3.8	11.3	10.2	10.5
6/6/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7/2/2012	26.2	16.1	9.3	11.6	13.0	16.6	4.5	11.5	10.8	9.9
7/30/2012	27.0	16.5	9.3	12.1	13.2	18.9	4.6	11.8	11.1	10.0
8/27/2012	28.2	17.3	9.8	13.0	13.9	17.6	5.4	12.6	11.7	10.4
10/1/2012	27.9	17.9	9.7	13.6	14.4	17.8	5.7	13.7	12.2	11.8
10/30/2012	26.9	17.6	9.4	13.2	14.1	17.4	5.3	15.4	11.8	12.3
11/26/2012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/27/2012	26.6	17.1	9.4	12.8	13.7	17.3	5.0	16.5	11.3	13.2
12/27/2012	NA	16.8	NA	NA	NA	NA	NA	15.9	11.1	12.6
12/28/2012	26.0	NA	9.1	12.6	13.4	17.0	4.7	NA	NA	NA
1/29/2013	NA	16.5	8.6	12.3	13.1	16.8	4.4	15.7	NA	12.8
1/30/2013	25.8	NA	NA	NA	NA	NA	NA	NA	10.8	NA
2/27/2013	NA	15.9	8.7	12.0	12.8	16.6	4.0	16.1	10.2	13.0
2/28/2013	23.7	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/28/2013	24.1	15.2	8.4	11.5	12.2	16.2	3.5	16.6	9.7	13.2
4/25/2013	24.5	15.2	8.2	11.3	12.0	16.0	3.4	16.5	9.8	12.8
6/7/2013	24.4	15.4	8.1	11.5	12.2	16.2	3.6	12.6	10.0	10.5
6/27/2013	25.4	15.6	8.8	11.6	12.6	16.5	3.9	11.4	10.2	9.6
7/23/2013	25.3	15.8	8.7	11.8	12.6	16.5	3.8	11.3	10.3	9.5
8/28/2013	25.9	16.3	9.4	12.4	13.3	17.2	4.6	12.1	10.7	9.2
9/26/2013	25.6	16.2	8.6	11.9	12.6	16.5	3.9	12.4	10.5	10.9
10/30/2013	24.4	15.5	8.7	11.7	12.4	16.4	3.7	15.1	9.9	11.7
11/26/2013	25.0	15.6	8.5	11.8	12.3	16.3	3.7	15.8	10.1	12.4
12/26/2013	25.3	15.7	8.4	11.6	12.4	16.3	3.7	16.3	10.2	12.7
Troll Depth (BTOC)	28.0	20.0	15.0	23.0	20.0	NA	10.0	25.0	14.0	18.0

Notes:

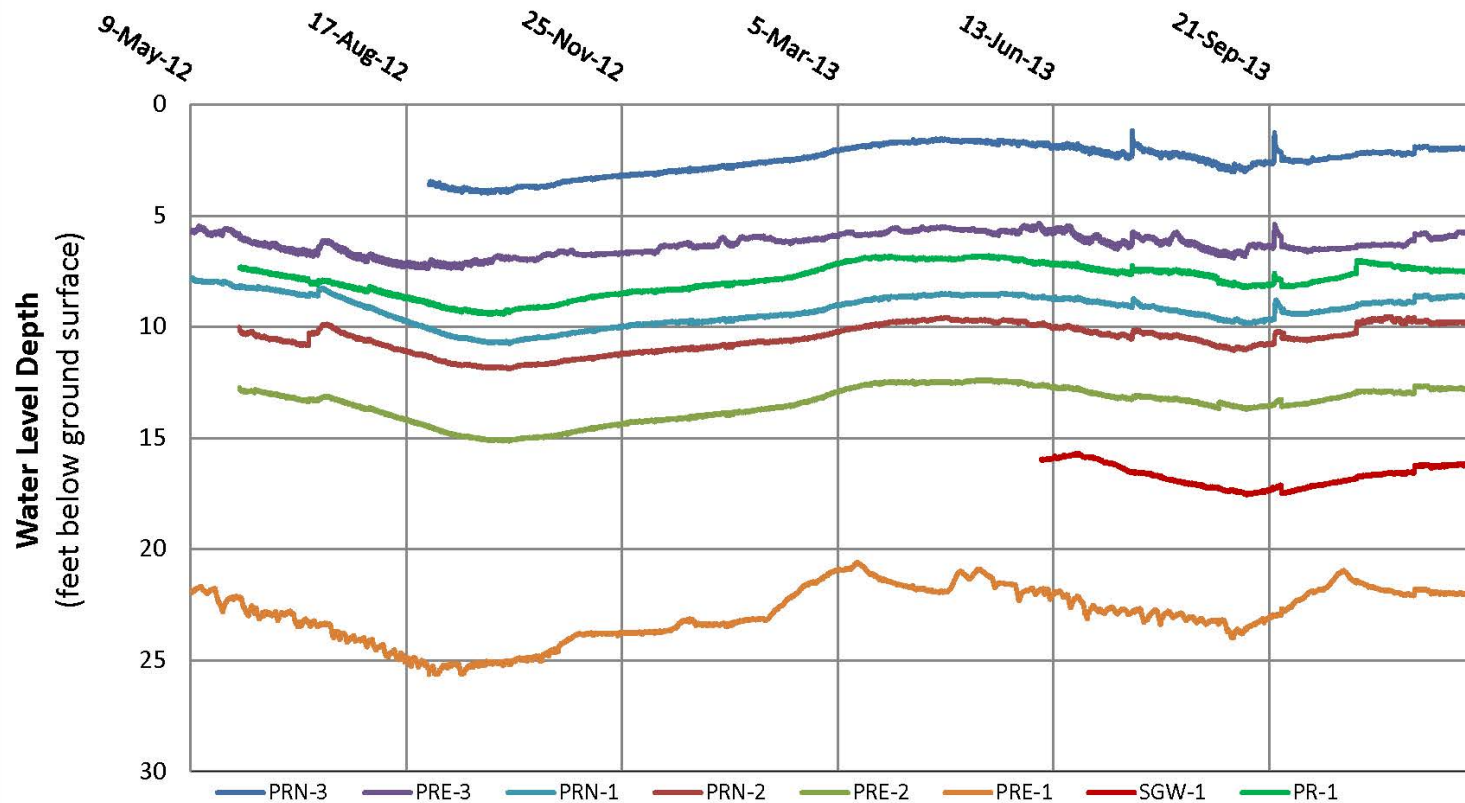
bgs - feet below ground surface

ags - feet above ground surface

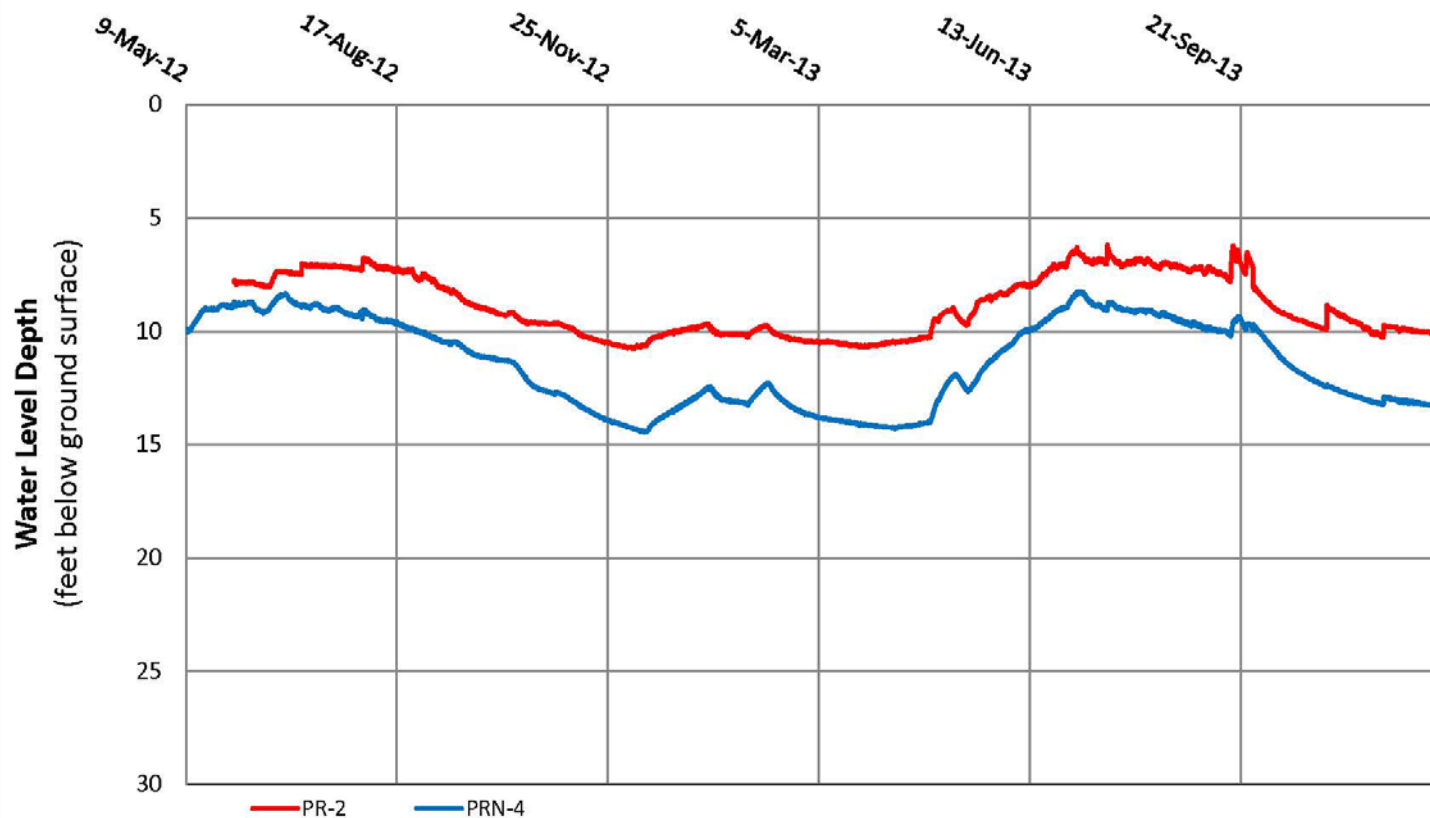
Sterling Groundwater Pilot Project

Pawnee Ridge Wells North of CR 30 and SGW-01 Groundwater Level

Period of Record: May 9, 2012 - December 27, 2013



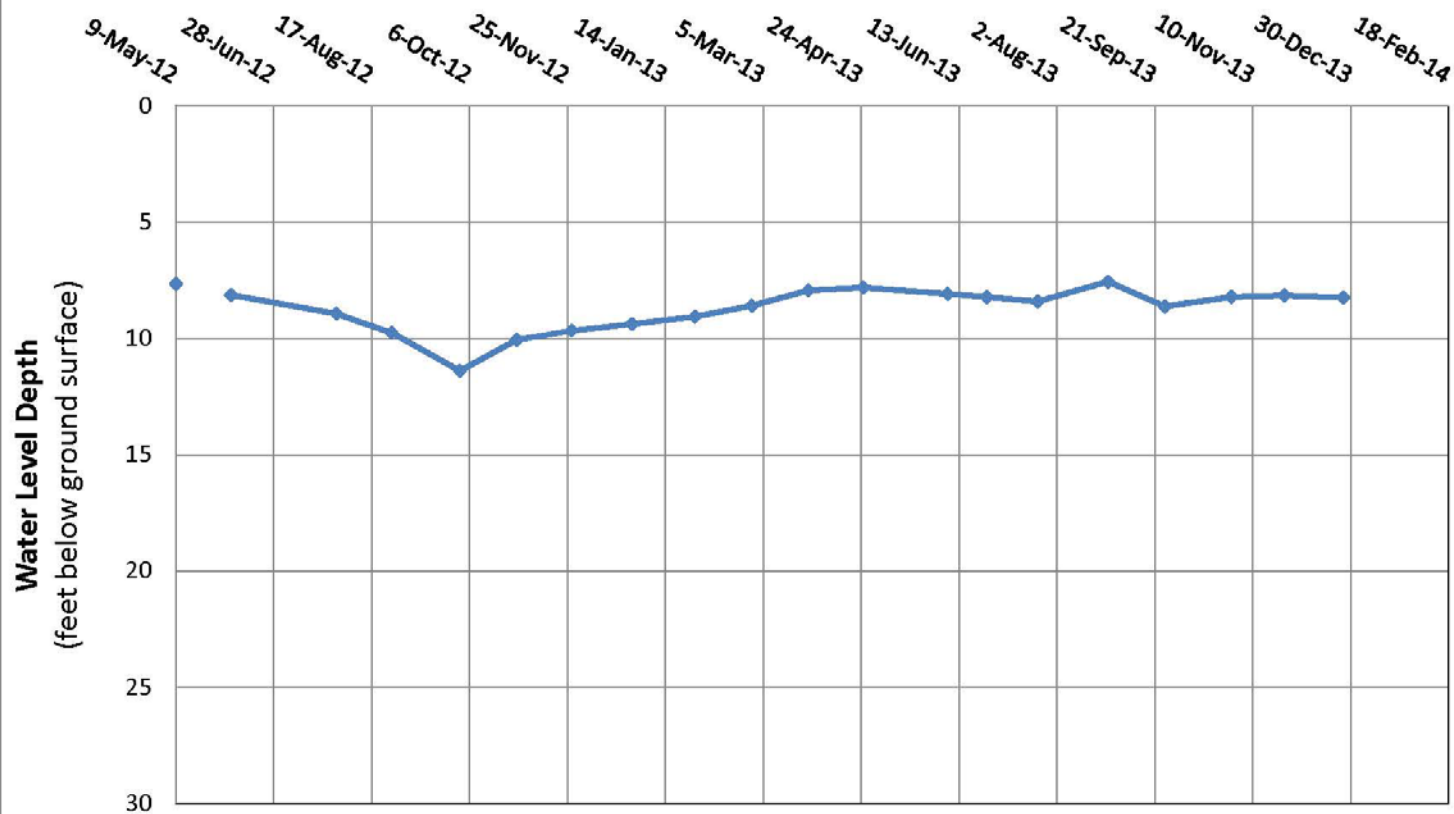
Sterling Groundwater Pilot Project
Pawnee Ridge Wells South of CR 30 Groundwater Level
Period of Record: May 9, 2012 - December 27, 2013



Sterling Groundwater Pilot Project

St. John Dewatering Well Groundwater Level

Period of Record: May 9, 2012- December 26, 2013

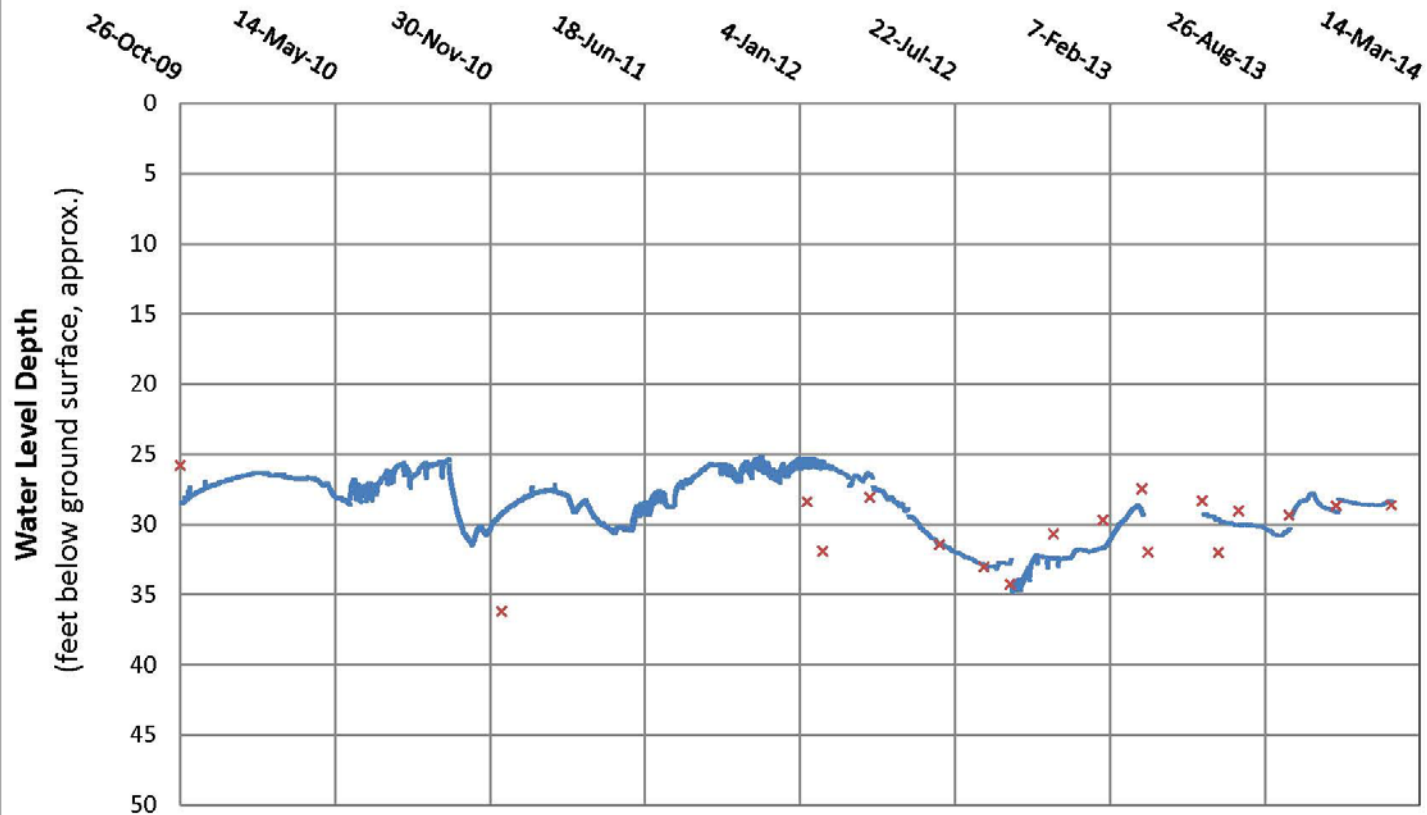


Data Provided by the Colorado Division of Water Resources
Project Funded by Colorado Water Conservation Board

Sterling Groundwater Pilot Project

DSS10STR/Sterling #13 2880-F Groundwater Level

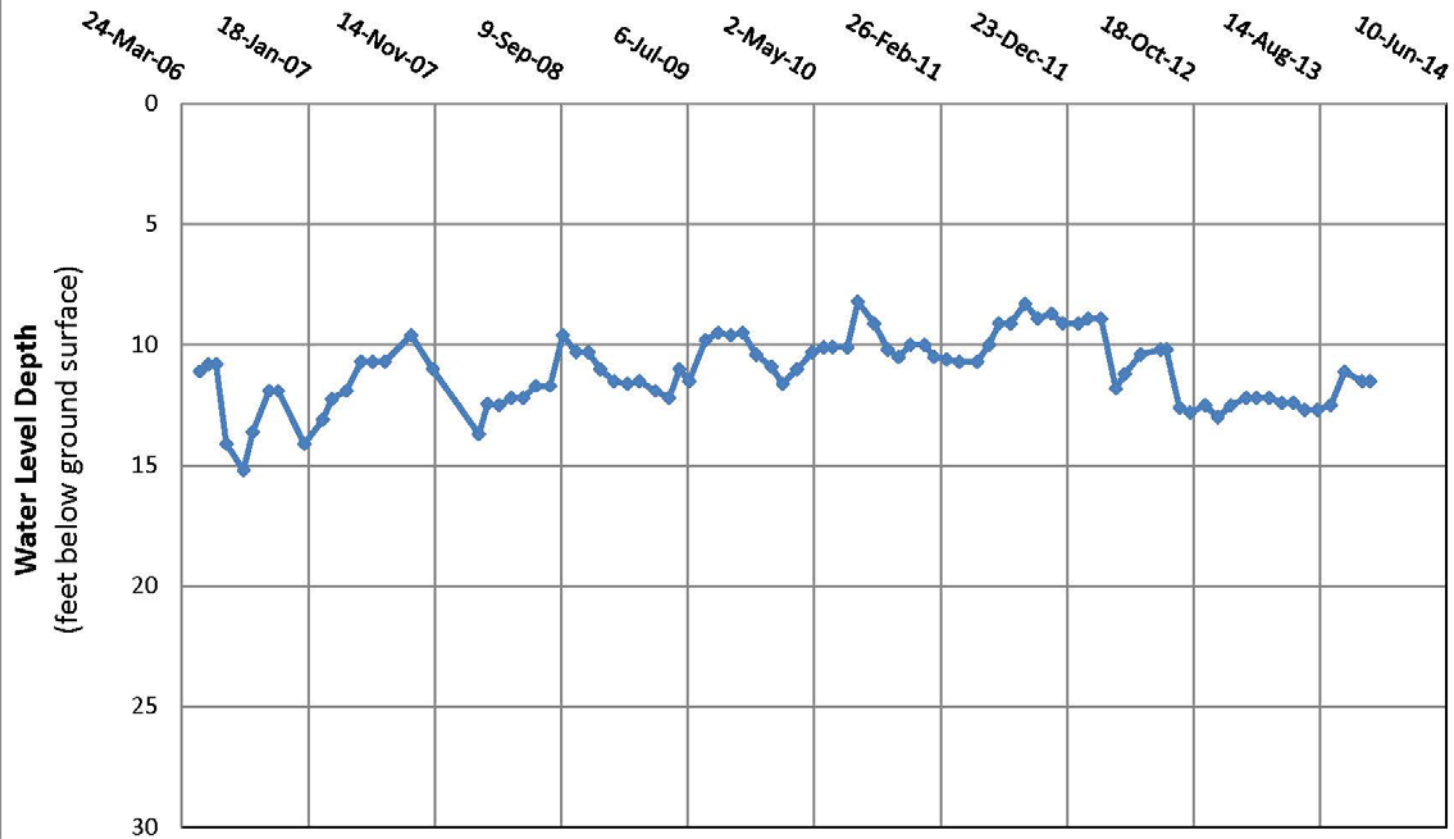
Period of Record: October 26, 2009- December 31, 2013



Sterling Groundwater Pilot Project

A. Fritzler 27 Groundwater Level Graph

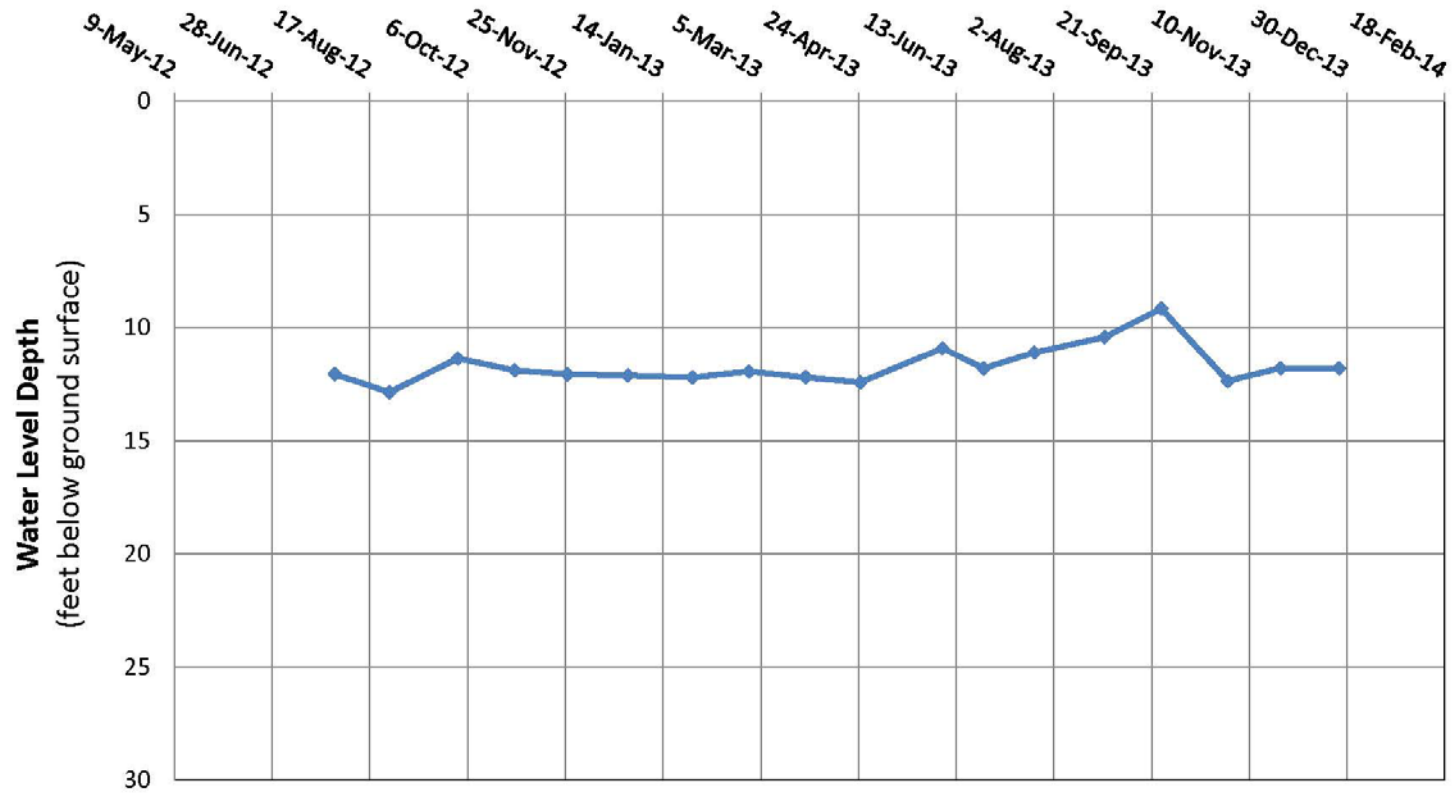
Period of Record: May 5, 2006 - December 10, 2013



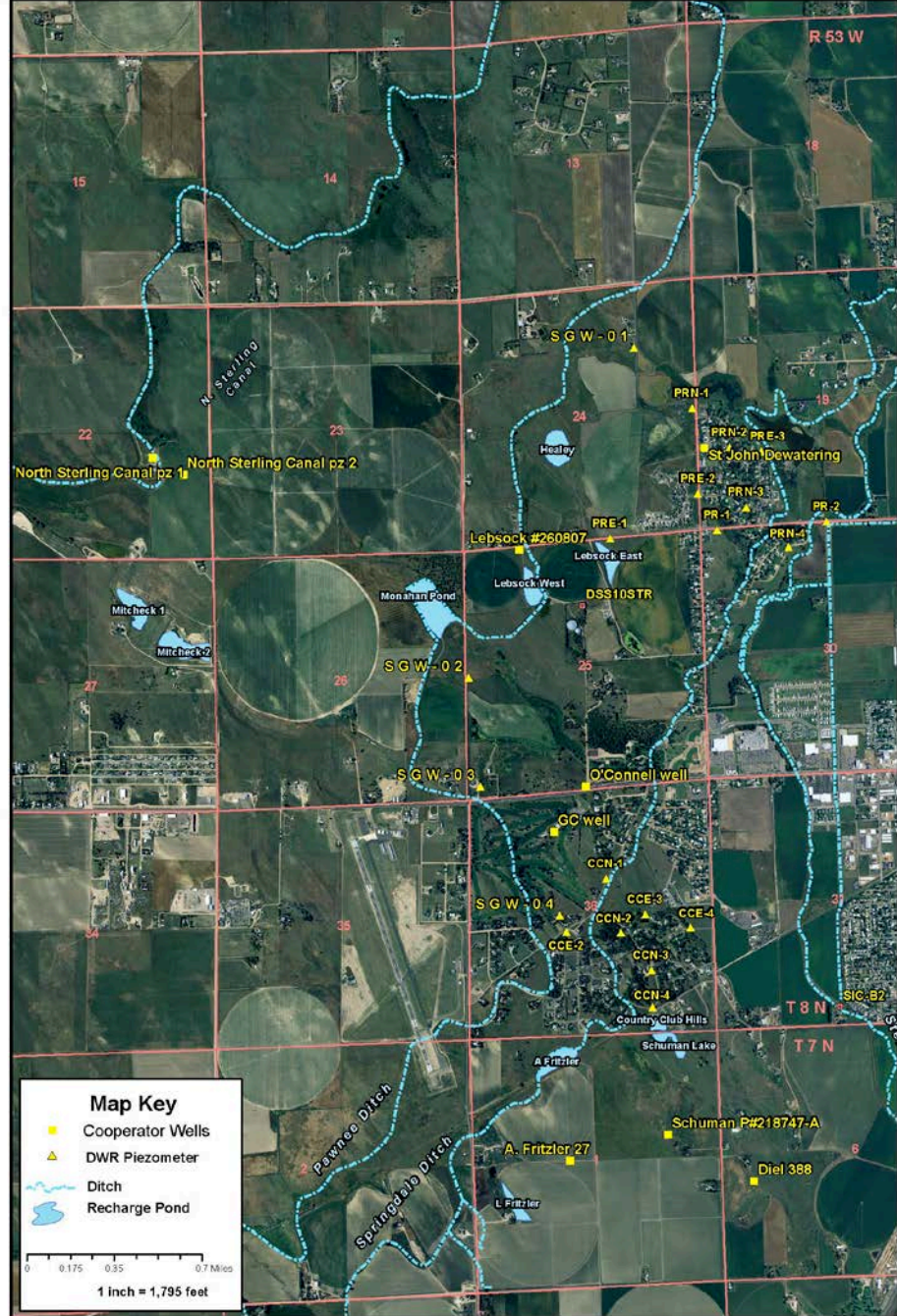
Sterling Groundwater Pilot Project

Walker P#216147-A Groundwater Level

Period of Record: May 9, 2012- December 26, 2013

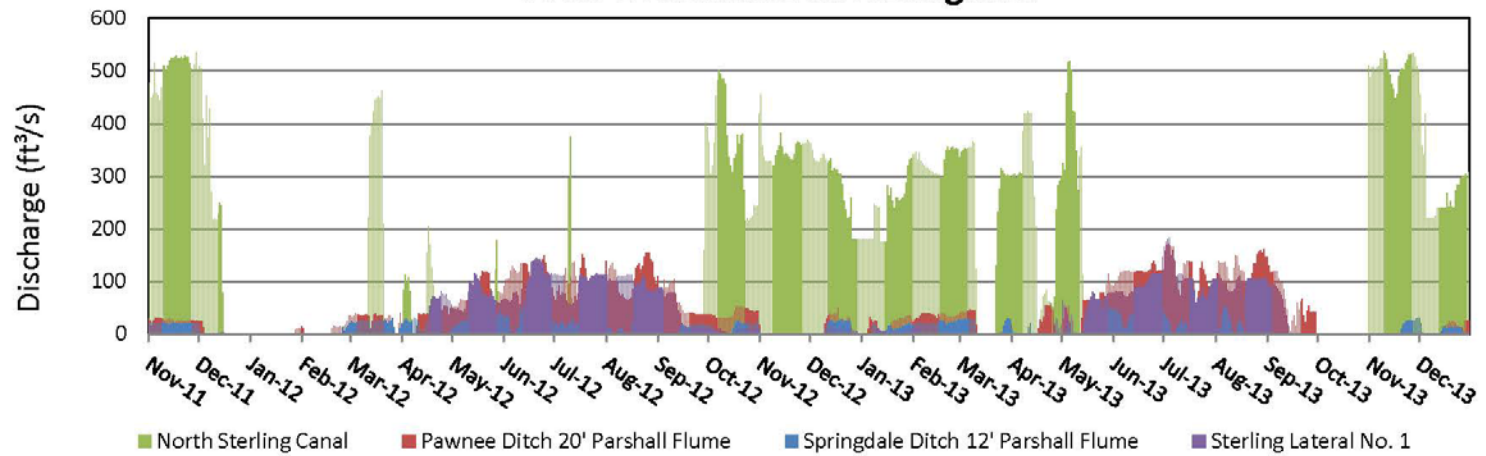


Data Provided by the Colorado Division of Water Resources
Project Funded by Colorado Water Conservation Board

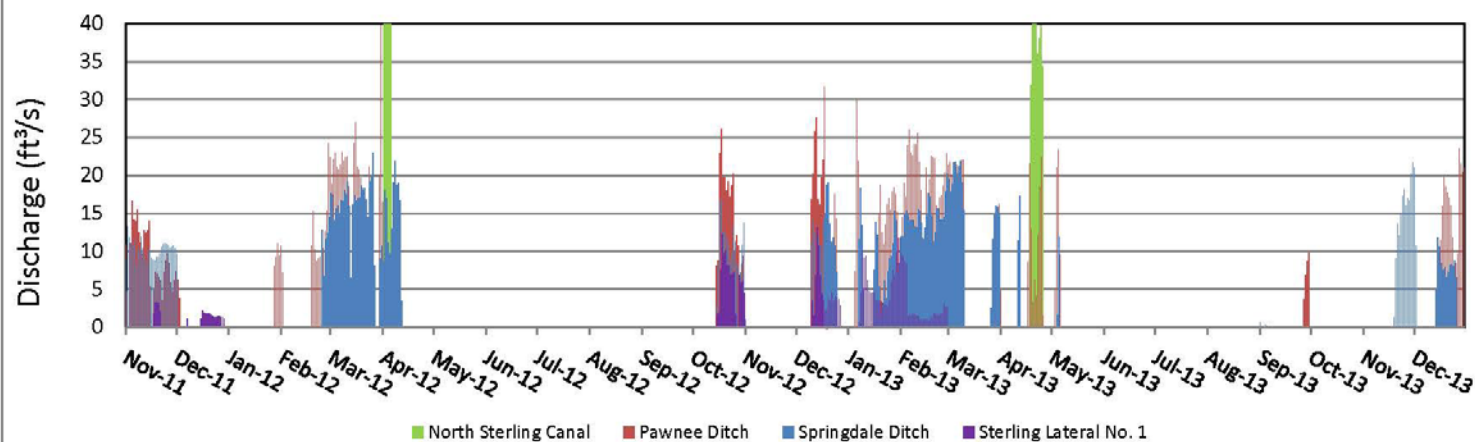


State of Colorado -- Division of Water Resources
Sterling Groundwater Pilot Project
Groundwater Level Monitoring Network

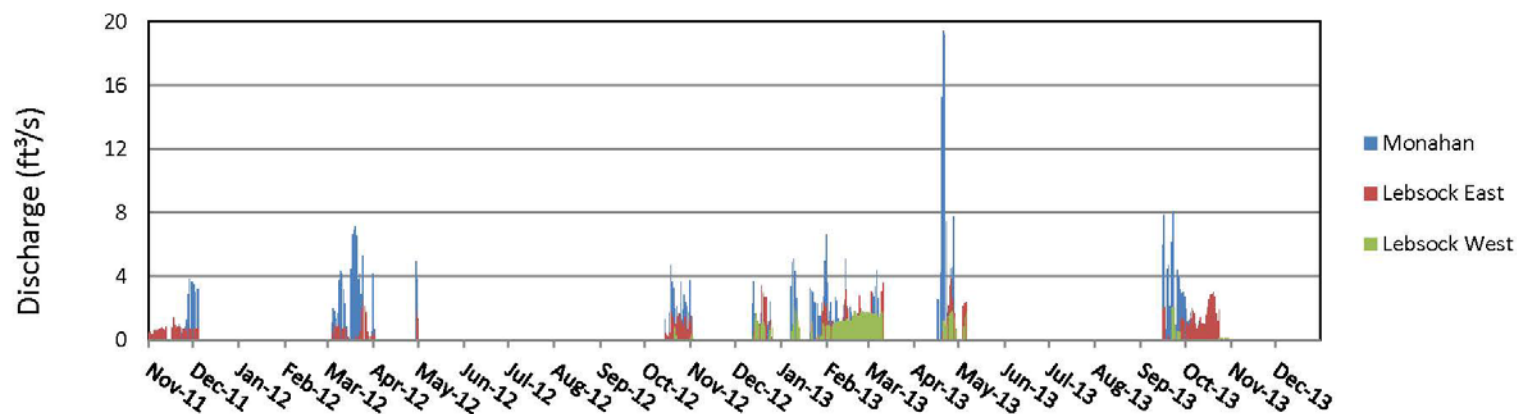
Total Diversions at Headgates



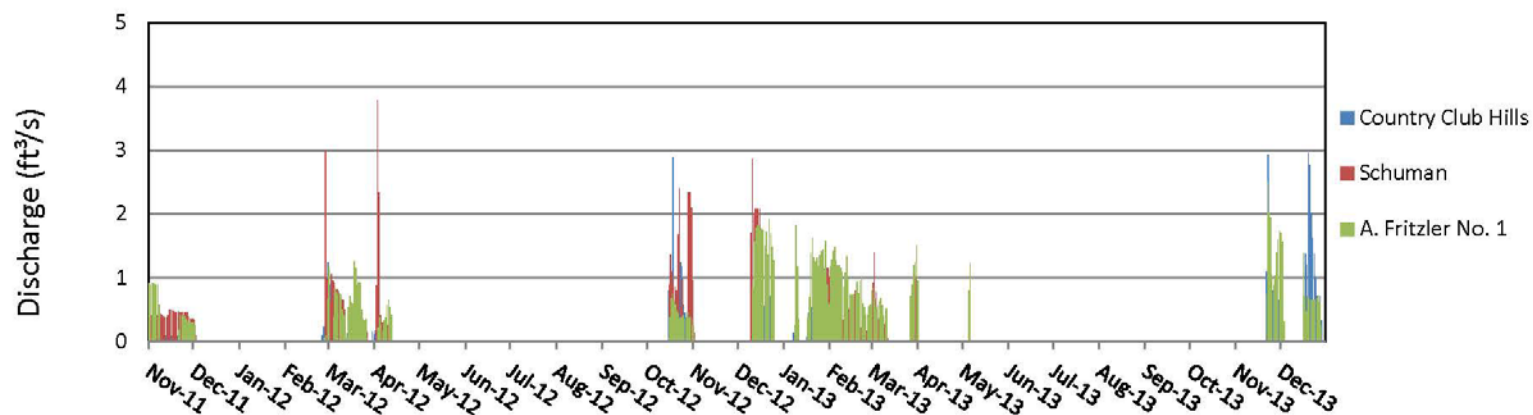
Ditch Recharge in Sterling, CO Water Years 2012-2013



Daily Recharge to Ponds on Pawnee Ditch



Daily Recharge to Ponds on Springdale Ditch



A photograph of a pond with lily pads and tall grasses, with a house and trees in the background. The word "Questions?" is overlaid in white text.

Questions?

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