

# Twin Falls Low Temperature Geothermal Moratorium Area Update, 2016

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There are 9 low-temperature (> 85 degrees Fahrenheit) geothermal wells in the Twin Falls Geothermal Moratorium area, plus the Filer Test well which has “warm water” temperatures (greater than ambient but less than 86 degrees Fahrenheit) (Figure 1). Currently, six of these wells are being monitored. IDWR (Southern Region) collects operating pressure, temperature, flow rate, and totalizer readings at the Pristine Springs, Canyon Springs, and Twin Falls High School wells on a monthly basis. IDWR (Southern Region) collects shut-in pressure readings at the Filer Test well on a monthly basis. The College of Southern Idaho (CSI) collects operating pressure, shut-in pressure or water levels, temperature, flow rate, and totalizer readings at their two wells on a monthly basis.

## *Withdrawals*

The total withdrawal for the Twin Falls geothermal system in 2016 was 7,424 acre-feet, which was 122 acre-feet more than the withdrawal in 2015. This change equates to an increase of about 2%. The increase in withdrawals in 2016 followed a similar increase from 2014 to 2015, which means that total withdrawal has increased 4% since 2014. Increases in withdrawals at the College of Southern Idaho and the Twin Falls High School accounted for the increase in total withdrawals in 2016 (Figure 2). Individual withdrawals for each geothermal user are shown in Figure 3. The changes in withdrawals (acre-feet and percentages) from 2015 to 2016 were:

Twin Fall High School	+87 acre-feet	+275%
College of Southern Idaho	+109 acre-feet	+17%
Canyon Springs	-64 acre-feet	-2%
Pristine Springs	-10 acre-feet	<-1%

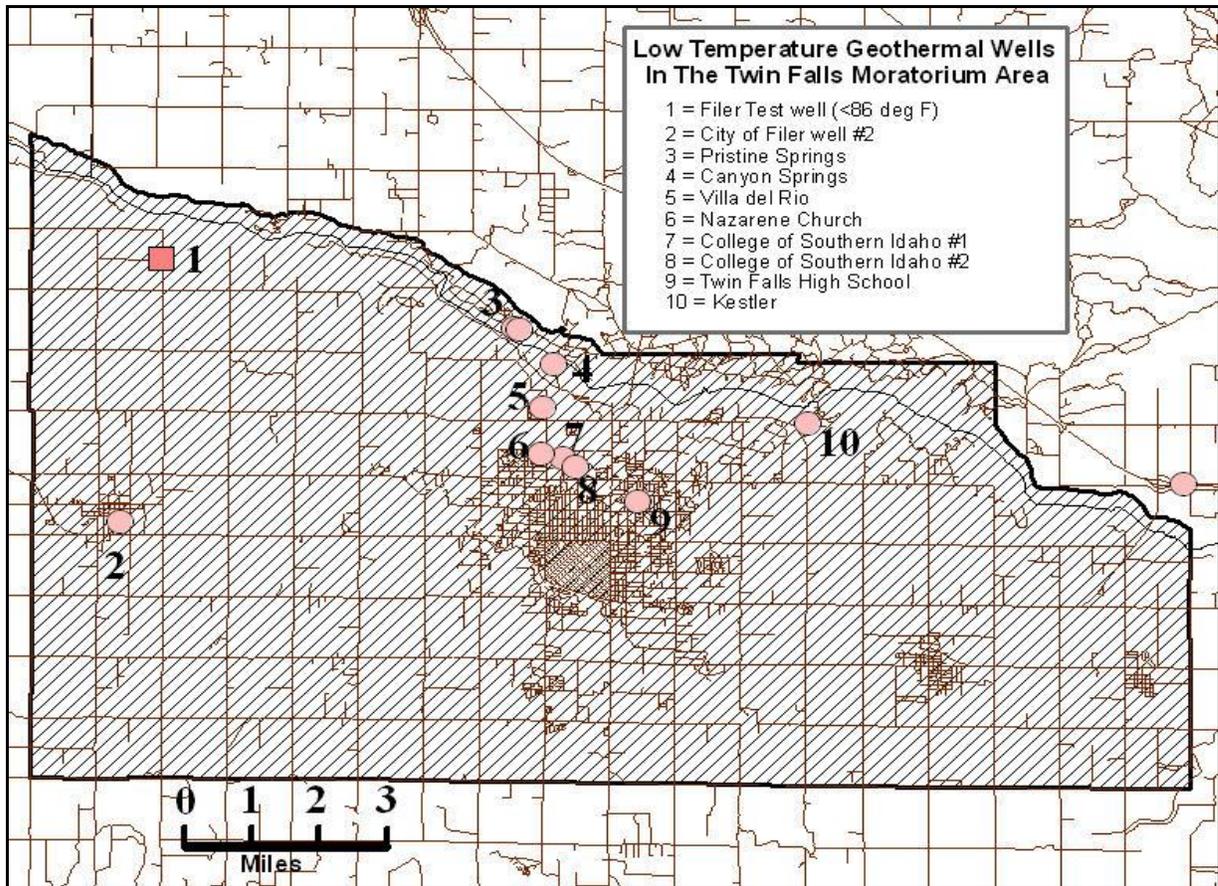


Figure 1. Low temperature geothermal wells in the Twin Falls Moratorium area.

### ***Water Level Analysis***

Water level data are collected at the two CSI wells, and the Filer Test well (Figure 1). The Filer Test well was not measured from the fall 2012 until the fall of 2015 because the well head was leaking. The leak was fixed in 2015. Since the repair in September 2015, the well has been measured five times through December 2016 (Figure 4). The measurement responsibility was transferred from IDWR State Office to IDWR Southern Region in the summer of 2016. Southern Region has been asked to measure the well on a monthly basis.

The CSI wells are measured by CSI staff on an approximately monthly basis. Water levels in the wells declined about 60 feet from the late 1980's to the mid 1990's (8.6 feet per year) (Figure 5). Then, water levels declined about 35 feet from 1995 to 2008 (2.7 feet per year), followed by 20 feet of increase from 2008 through 2010 (6.7 feet per year). Since 2010, water levels in the CSI wells have declined an average of 13.5 feet, which equates to a yearly average of 2.3 feet per year.

The changes in the average annual water levels in the CSI wells and the Filer Test well are shown in Figure 6, which indicate that the low temperature geothermal system has been in decline since 2010. Figure 7 shows the water levels and withdrawals over the last 30+ years.

### ***Recommendations***

The following action items for 2017, and the responsible parties, are:

1. IDWR Southern Region measures the Filer well on a monthly basis.
2. IDWR Southern Region continues collecting monthly data at the CSI wells (CSI), and the Pristine Springs, McCullum and Twin Falls High School wells (IDWR).
3. IDWR State Office determines the feasibility for installing a pressure transducer on the Filer Test well.
4. IDWR State Office and/or IDWR Southern Region conducts calibration checks on all flow meters.
5. Water Users repair or replace any meter that fails within one month of identifying the failure.

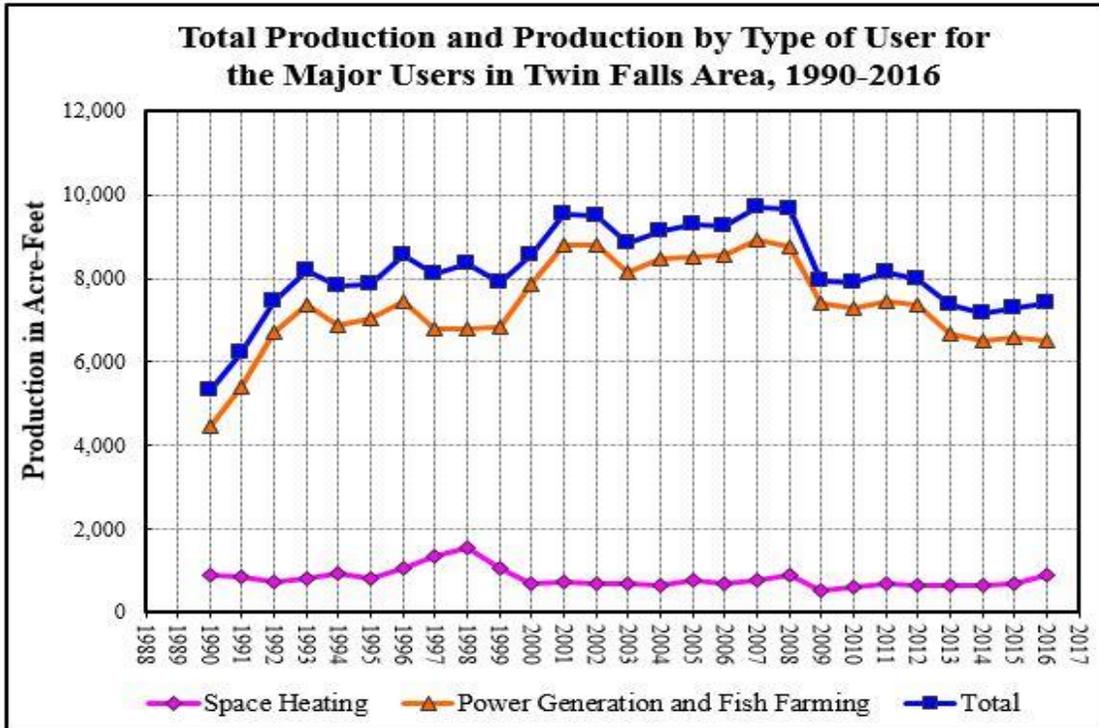


Figure 2. Total withdrawals for the Twin Falls geothermal system, and withdrawals by the two major types of uses.

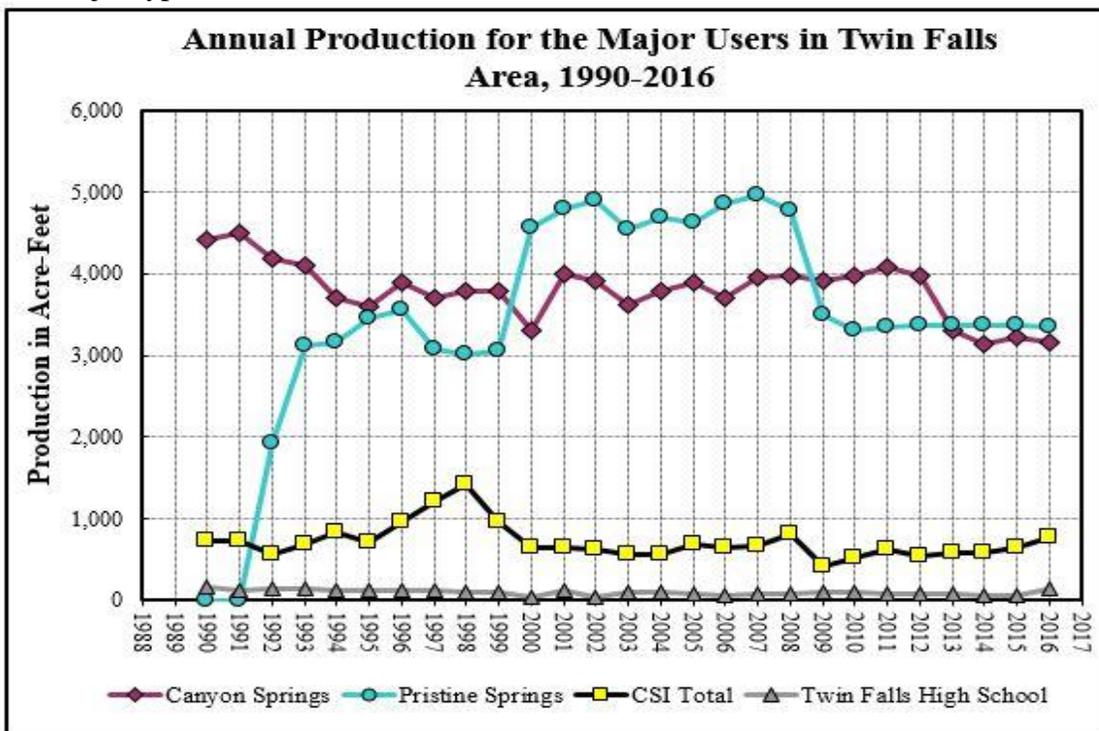


Figure 3. Annual withdrawals by individual geothermal producers in the Twin Falls system.



Figure 4. Hydrograph for the Filer Test well.

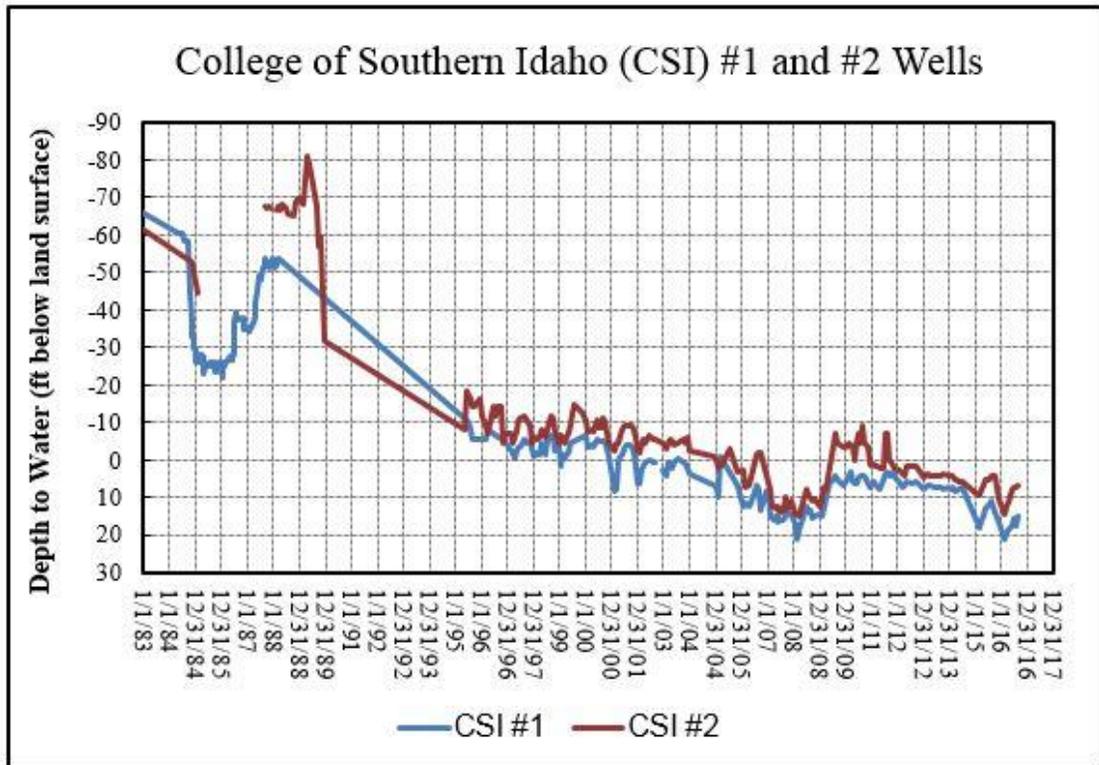


Figure 5. Hydrographs for the CSI #1 and CSI #2 wells.

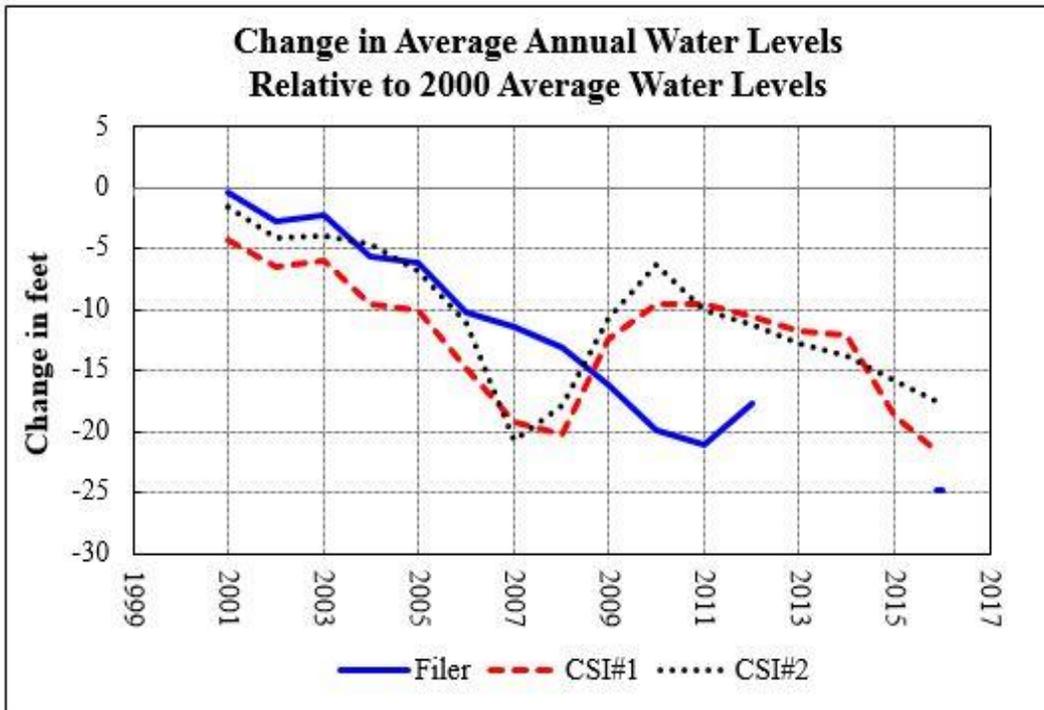


Figure 6. Changes in the average annual water levels in the Filer, CSI #1 and CSI #2 wells, relative to the average water levels in 2000.

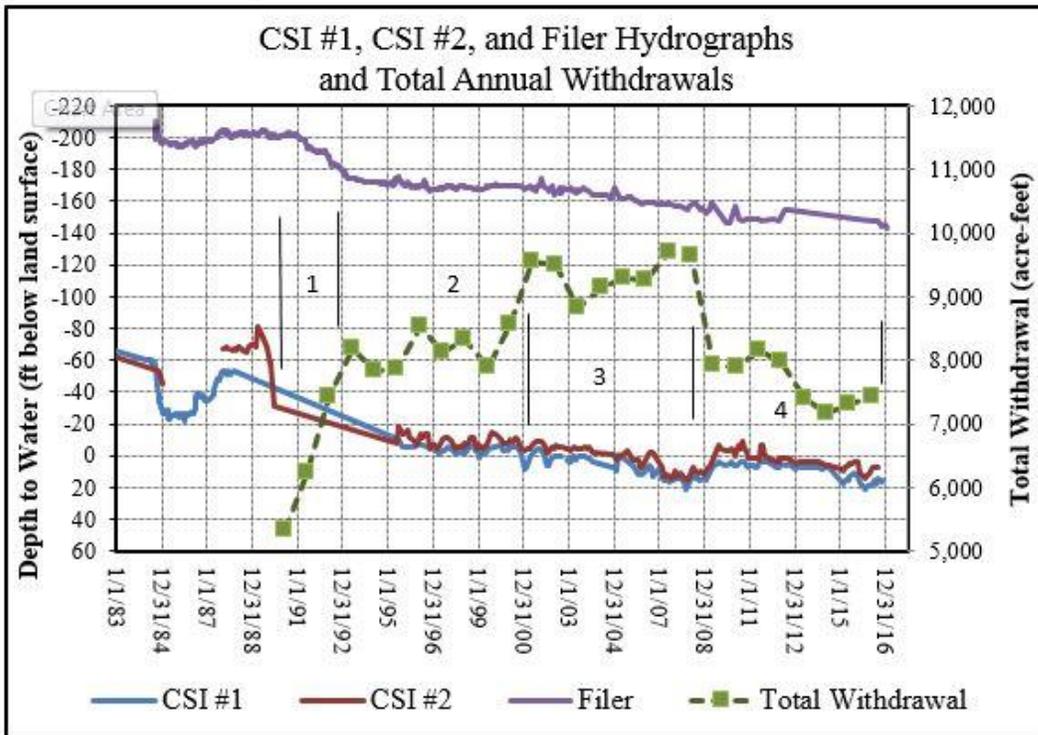


Figure 7. CSI and Filer Test hydrographs and Total Withdrawal for the Twin Falls geothermal system.