Watermaster's Report
Ground Water District 63-S (Stewart Gulch)
March 1, 2014 to March 1, 2015

Withdrawals

The total withdrawal of low temperature geothermal water in GWD63-S in WY14 was 167 mgal (Figure 1). This amount is 28 mgal less than the withdrawal in WY13, which is a 14.5% decrease. This decrease is mainly attributable to a significant reduction in withdrawals at the Quail Hollow Golf Course in WY14. Edwards Greenhouse also had a significant decrease in withdrawals, but the two nearby TTCI wells had a combined increase in withdrawals that exceeded the Edwards decreases by 4.3 mgal (Table 1).

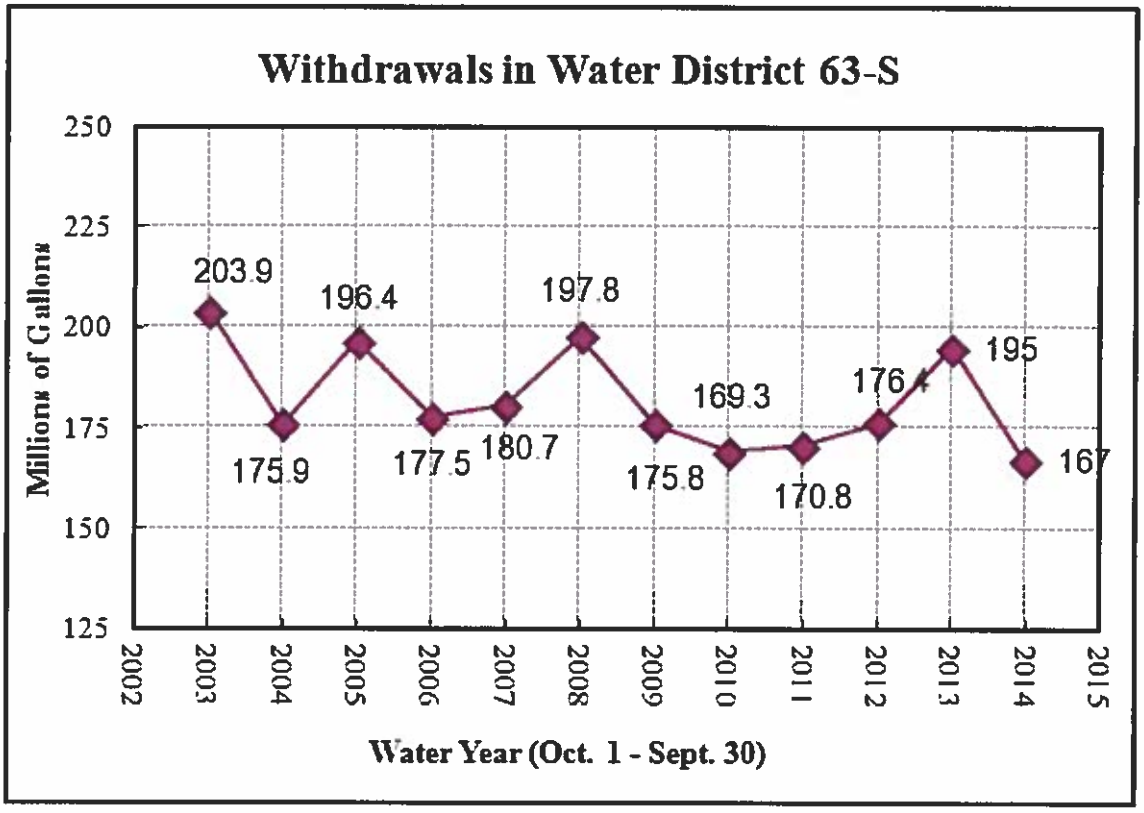

Figure 1. Low-temperature geothermal ground water withdrawals in Ground Water District 63-S for Water Years 2003-2014.

Table 1. Withdrawals[1] from Stewart Gulch Ground Water District 63-S geothermal wells for Water Year 2014 (October 1, 2013 through September 30, 2014).

Well	Withdrawals in WY14 (millions of gallons)	Change from WY13 (millions of gallons)	Percent Change from WY13
TTCI Tiegs (Triangle)	0	0	0
TTCI Silkey (Shed)	19.8	+11.1	+126%
TTCI House (Office)	3.4	+2.9	+570%
Edwards Greenhouse	48.3	-9.7	-17%
Terteling Ranch Windsock	65.5	+3.5	+6%
Terteling Ranch Pool	21.0	+2.5	+3%
Quail Hollow (Tee Ltd) Upper	1.2	-7.7	-87%
Quail Hollow (Nibbler) Lower	1.9	-30.4	-94%
Whitehead	5.8	-0.1	-1%
Total	**167**	**-28**	**-14.5%**

[1]These numbers contain some degree of uncertainty which is typically associated with measurement equipment and methods. Therefore, the amounts are being reported in millions with one decimal place.

The ownerships and locations of the wells allow them to be grouped into four individual withdrawal centers, which is a useful approach for summarizing the withdrawals in these localized areas within the District. Table 2 shows the four centers and the changes in withdrawals from WY13 to WY14

Table 2. Four withdrawal centers in GWD63-S and changes from WY13 to WY14.

Withdrawal Center	Number of Wells	Numerical change from WY13 to WY14	Percentage change from WY13 to WY14
Edwards Greenhouse and Terteling Garden Center	4 (3 in use; 1 unused)	+4.3 mgal	+7%
Quail Hollow	2	-38.1 mgal	-92%
Terteling Ranch	2	+5.9 mgal	+7%

Water Levels

Four wells are currently monitored for water levels by their owners: Tiegs, Edwards, Quail Hollow Lower, and Quail Hollow Upper. The Silkey well is used as a backup for the Tiegs well in the event that the transducer in the Tiegs wells should fail. Additionally, the Water Master conducted water level measurements at all nine wells listed in Table 1 in October, 2014.

Overall, ground water levels in GWD63-S wells showed a decreasing trend in WY14 until April 2014, followed by an increasing trend. The minimum values declined in all four wells with declines ranging from 5.4 feet to 6.9 feet. The maximum values increased in three of the four wells, and decreased in one well.

The water level in the TTCI Tiegs well at the beginning of WY2014 (early October 2013) was about six feet lower than the water level in early October 2012. This was due to higher than normal pumping at Quail Hollow in the summer and fall of 2013. Consequently, the Tiegs well had a minimum water level value in January 2014 that was 6.1 feet lower than the minimum reading in January 2013 (Figure 2). The Tiegs well had an increase in the maximum water level of 2.7 feet, based on June readings in 2013 and 2014.

The minimum water level for the Edwards wells, which occurs annually in the December – February period, declined 6.9 feet from January 2013 to February 2014. The current trend indicates the minimum value in early 2015 will be similar to 2014. The Edwards well had an increase in the maximum water level of 2.3 feet from June 2013 to June 2014 (Figure 3). Water levels stayed at approximately the same level from early May to mid October. This pattern is different from previous years when the maximum levels peaked in June and began declining immediately.

The maximum water levels in the Quail Hollow (QH) wells were different from each other. The QH Lower well declined 1.3 feet, but the QH Upper well increased 4.3 feet (Figures 4 and 5). The minimum levels for the Lower and Upper wells declined 5.4 feet and 5.8 feet, respectively, from January 2013 to January 2014.

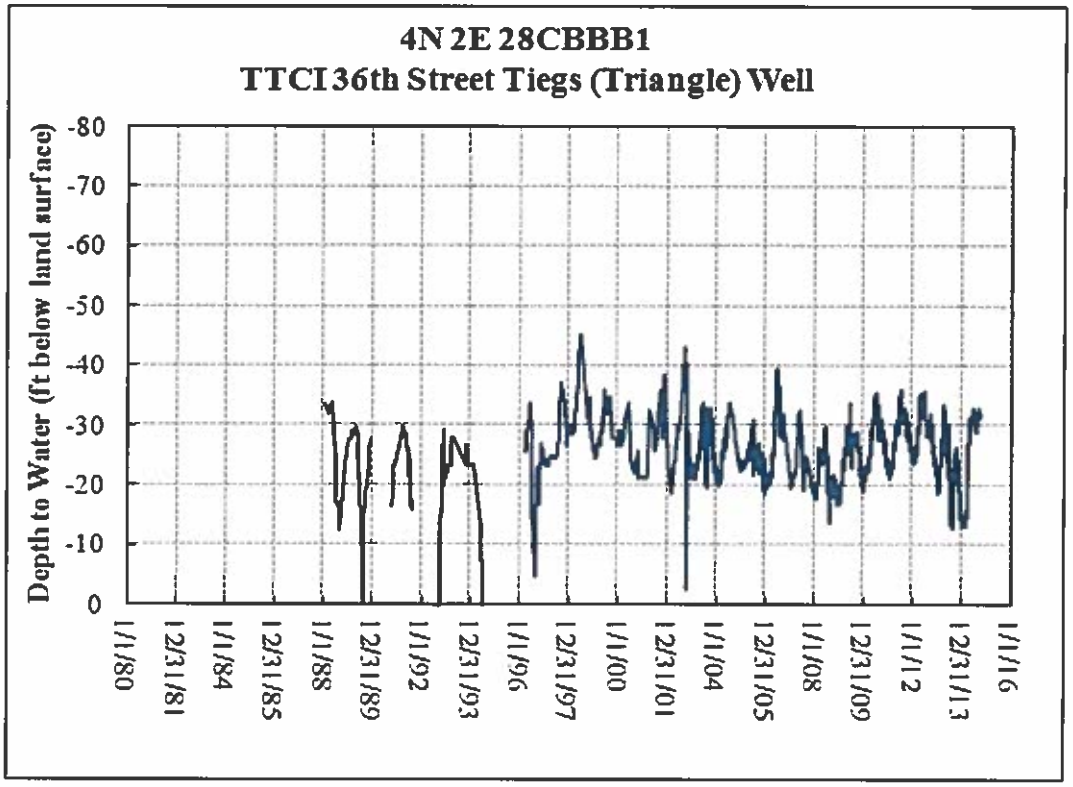

Figure 2. Water level hydrograph for the TTCI 36th Street Tiegs (Triangle) well.

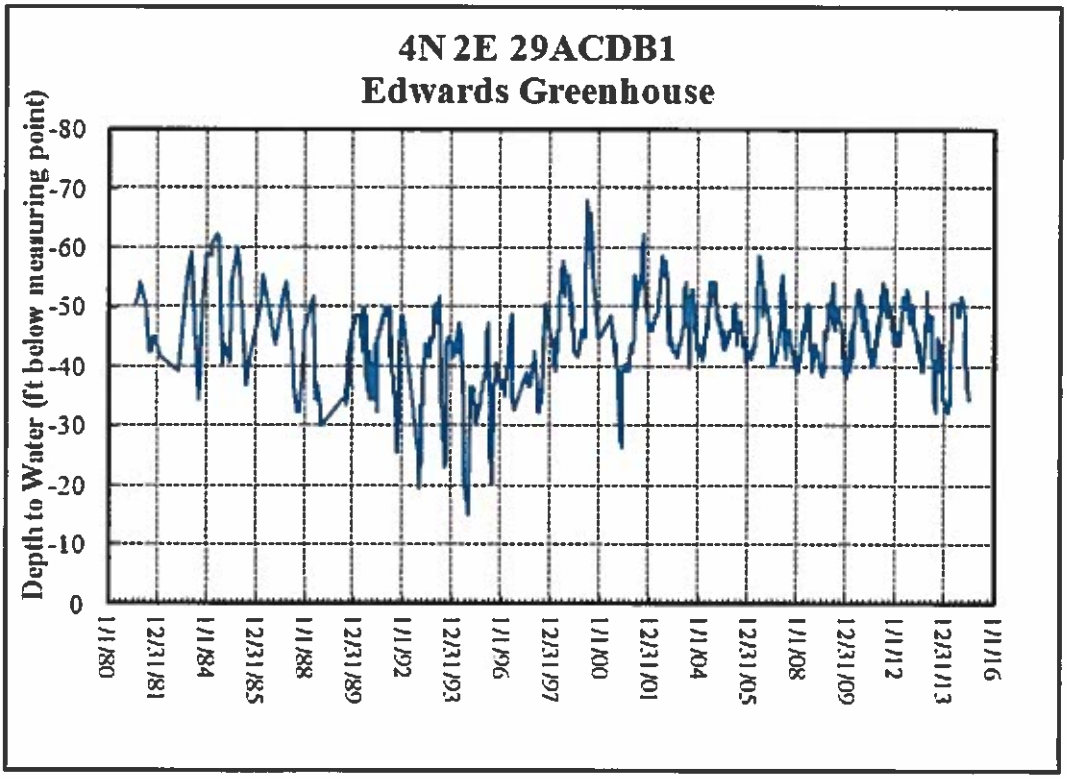

Figure 3. Water level hydrograph for the Edwards Greenhouse well.

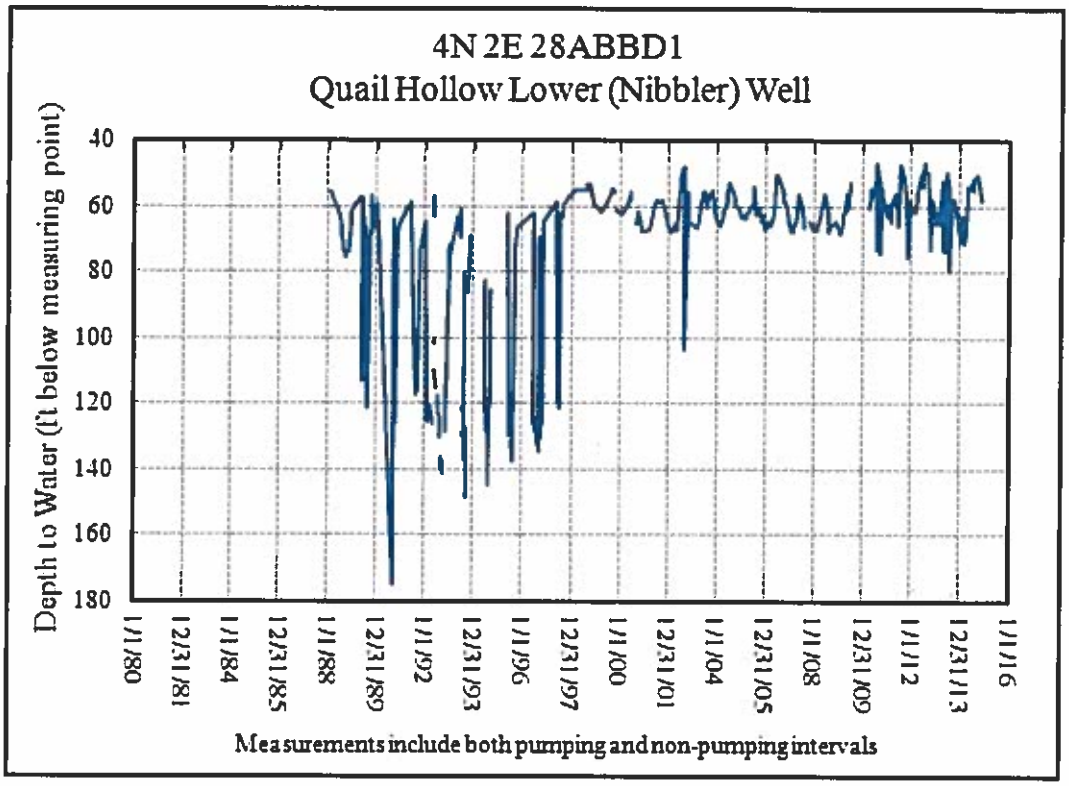

Figure 4. Water level hydrograph for the Quail Hollow Nibbler (Lower) well.

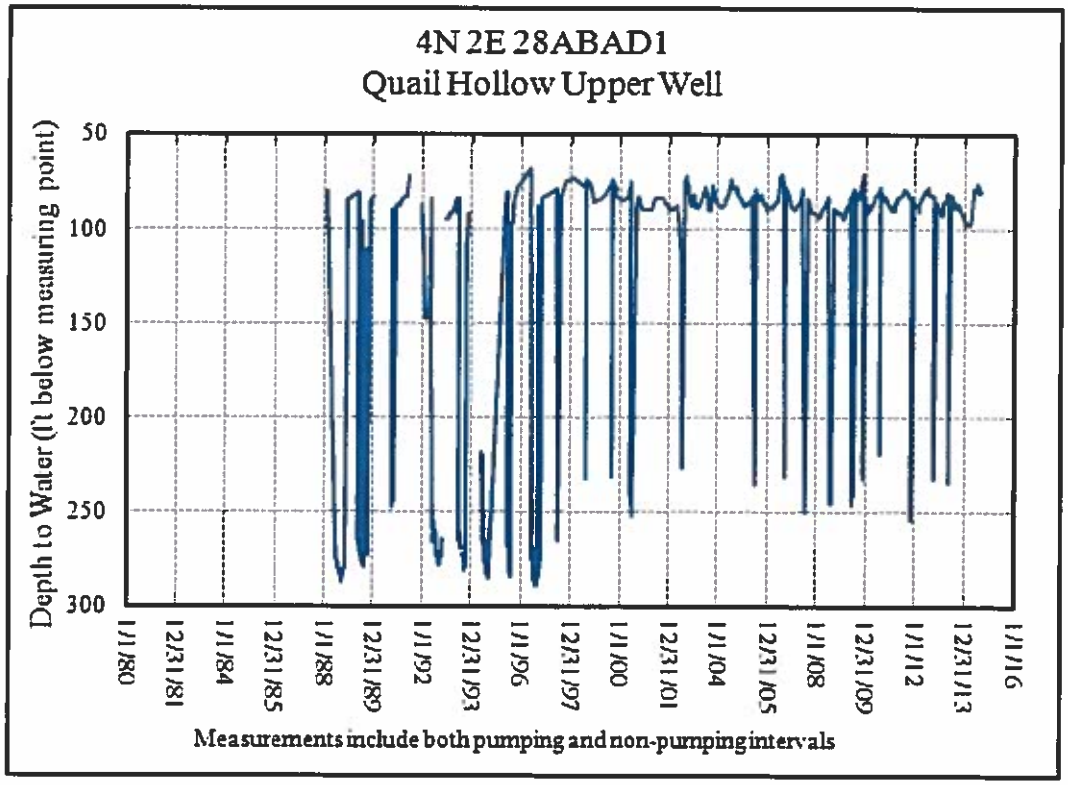

Figure 5. Water level hydrograph for the Quail Hollow Tee Ltd (Upper) well.

Watermaster Expenses

The Watermaster worked 3.5 hours in the time period from March 1, 2014 to February 28, 2015. The billing for these services is as follows:

Salary	$	99.16
Fringe	$	38.95
Supplies	$	0.00
Indirect	$	55.66
Total	$	193.77

Table 3 is the assessment for the Watermaster's expenses for Ground Water District 63-S for March 1, 2014 through February 28, 2015.

Table 3. Assessment for Watermaster's expenses for Water District 63S for March 1, 2014 through February 28, 2015.

Owner	Name	Percentage[1]	Assessment[2]
Terteling Company	Flora Tiegs	0.000	$0.00
Terteling Company	Flora Silkey	20.723	$40.15
Terteling Company	Flora House	1.566	$3.03
Edwards Greenhouses	Edwards	22.864	$44.30
Terteling Company	Terteling Windsock	36.147	$70.04
Terteling Company	Terteling Pool	9.714	$18.82
Quail Hollow Golf Course	Quail Hollow Upper	6.562	$12.72
Quail Hollow Golf Course	Quail Hollow Lower	2.444	$4.74
Rose and Mary Ryan	Ryan	-	$10.00
David Niznik	Whitehead	-	-
	Total	**100**	**$203.80**

[1]Percentages as determined at the 2004 Annual Meeting.
[2]Based on percentages in Column 3 times the Watermaster's Fees for this time period ($193.77).

Respectfully submitted,

Kenneth Neely

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Watermaster for Ground Water District 63-S