Grand Water & Sewer Service Agency

3025 E. Spanish Trail Rd. ♦ PO Box 1046 ♦ Moab, UT 84532
435-259-8121 ♦ 435-259-8122 fax ♦ www.grandwater.org

June 28, 2017

Marc Stilson, Regional Engineer
Southeastern Regional Office (PRICE)
319 North Carbonville Road
P.O. Box 718
Price, Utah 84501

Dear Marc,

Please find herein the completed Proof of Beneficial and the Monitoring Plan Report. We file these documents to complete the certification of the water 05-3656 A42139c a Segregated portion of 15-906 a26150.

A portion of the original project was conditionally approved; we believe we have completed the numbered 1 through number 4 conditions. We have pumped and used 816 acre feet which is 85% of the 965 acre feet approved.

Also, please find the completed Monitoring Plan Report. As the Monitoring data has not indicated "any negative affects", and the need for additional water for new area service growth remains constant, we approach you to consider this request for an additional allocation approval of the balance of a26150.

We believe the additional allocation is justified; we have used over 80% of the first allocation, which fulfills approval condition number four. With respect, we ask for your consideration and approval to further develop this municipal project.

Best Regards,

Dana Van Horn
Agency Manager

SUNRISE ENGINEERING

6875 South 900 East, Salt Lake City, Utah 84047
TEL 801.523.0100 | FAX 801.523.0990 | sunrise-eng.com

June 26, 2017

Mr. Marc Stilson, Regional Engineer
Utah Division of Water Rights
319 North Carbonville Road
P.O. Box 718
Price, Utah 84501

Subject: Groundwater Monitoring Report
Grand Water & Sewer Agency
Spanish Valley, Utah

Dear Mr. Stilson:

This letter presents a summary of the groundwater monitoring program implemented by the Grand Water & Sewer Agency (GWSSA) in Spanish Valley, Utah as part of the supporting document for the approval to use the Chapman and Spanish Valley Wells. GWSSA brought two monitoring wells on line for water level monitoring purposes in January 2011. The monitoring wells include the Golf Course Well (MW-1) installed in the Glen Canyon aquifer, and the White Horse Well (MW-2) installed in the Valley Fill aquifer. The well locations are shown in the attached map (**GWSSA Monitoring Well Plan Sites**). Water level monitoring data have been collected from the monitoring wells since January 2011. The water use data from the Chapman and Spanish Valley Wells has also been collected. Monitoring data from other wells have also been collected.

BACKGROUND

After GWSSA installed the Chapman and Spanish Valley Wells in 2003, a groundwater monitoring plan was developed. In accordance with the plan, two monitoring wells would be installed as part of the monitoring program. One well would monitor the Valley Fill aquifer, while the other would monitor the Glen Canyon aquifer. Wells would be located to provide monitoring data that was applicable to as many of the protestants of GWSSA's Change of Applications for water rights for the Chapman and Spanish Valley Wells as possible. The total discharge from all combined source wells for the GWSSA drinking water system would not change significantly in the first year following approval of the new applications. Therefore, the first year's monitoring data would be used to establish baselines and trigger points for determination of impact on the groundwater from the use of the Chapman and Spanish Valley Wells. The data from monitoring wells would be gathered on at least a monthly basis and recorded by GWSSA. The following existing wells would also be monitored through use of manual well probes on a monthly basis.

- Kirk Defond Well (Defond Well)
- Corbin Well/Louis Callister Well*
- Helen Sue Whitney Well (Whitney Well)
- Andrea Well
- Costellanos House Well (Costellanos Well)

*Note: It appears that the Corbin Well and Louis Callister Well are the same well.

Additionally, the monitoring plan required that permanent water level probes be installed in George White Well #4 (GW #4), George White Well #5 (GW #5), and the Chapman and Spanish Valley Wells. The probes would provide "real time" data acquisition of static and pumping levels as well as a constant record of those levels. GW #4 would provide "trigger points" for alerting water users. The normal operating range for GW #4 based on historic data is a static level between 70 and 75 feet below ground surface (bgs) and a pumping level between 75 and 84 feet bgs. A decline in static water level in GW #4 to 90 feet bgs and/or bedrock monitoring well data would be "trigger points".

As a result, a bedrock monitoring well (MW-1) and a valley fill aquifer monitoring well (MW-2) were brought on line in January 2011.

Water level monitoring data were collected from the above-mentioned wells and are presented in **Appendix A**. The well locations are shown in the attached map (**GWSSA Monitoring Well Plan Sites**). Please note that the water level presented in this report indicates the depth to the groundwater level in a monitoring or production well.

DATA ANALYSIS

Baseline, Mean, Max and Min Static Water Levels, and 95% Confidence Limits of Mean

Based on monitoring data records for monitoring wells MW-1, MW-2 and other wells for a period of more than 5 years (with the exception that the Defond Well was monitored for less than 3 years), the baseline static water level for production wells, as well as mean, maximum and minimum static water levels at each well were identified. Since the monitoring at the Defond Well didn't reflect any changes, monitoring was stopped by the well owner after nearly three years. Moreover, the 95% confidence limits of the mean static water level were estimated under the assumption that the static water levels have a normal distribution. The statistical data are presented in **Table 1**.

Table 1 indicates the average static water levels in the production wells are not much different from the baseline static water levels. For the Defond Well and GW #5, the average static water levels were higher than the baseline levels. However, the average static water levels in the other production wells are all

slightly lower than the baseline static water levels, with a maximum difference of 4.44 feet at GW #4. Overall, the difference is minimal.

Table 1 indicates that static water levels at each of the wells were generally stable during the monitoring period. The static water level at GW #4 had never been greater than 60 feet bgs during the monitoring period. Based on the collected data, the 95% confidence low limit of the mean water level in GW #4 is estimated to be approximately 58 feet bgs. Based on the monitoring data provided in **Appendix A** and as summarized in **Table 1**, groundwater withdrawal from the Chapman and Spanish Valley Wells would have minimal to no impact on static water levels in the monitoring or production wells.

Table 1. Statistical Analysis Summary

Statistical Parameter	MW-1	MW-2	Defond	Whitney	Andrea	Costellanos	Corbin	GW #4	GW #5
Monitoring Started	Jan-11	Jan-11	May-05	May-05	May-05	Apr-05	Apr-05	Jan-06	Jan-07
Monitoring Ended	Oct-16	Oct-16	Mar-08	Oct-16	Mar-11	Oct-16	Oct-16	Oct-16	Jun-16
Baseline Level*	+	+	108.62	136.66	122.76	76.92	114.94	47.30	51.84
Mean Water Level (FT)	73.49	121.66	108.29	138.87	123.18	80.09	117.26	51.74	47.60
High Water Level (FT)	67.80	126.13	106.48	122.65	119.80	67.53	110.60	42.28	39.20
Low Water Level (FT)	77.09	118.12	110.23	148.00	127.85	95.38	123.90	55.80	58.47
Standard Deviation (FT)	1.79	2.09	1.12	3.97	1.83	3.79	3.22	3.03	4.39
95% Confidence High (FT)	69.88	117.46	106.00	130.97	119.51	72.55	110.94	45.68	38.77
95% Confidence Low (FT)	77.09	125.85	110.57	146.76	126.85	87.62	123.58	57.81	56.43
Mean - Baseline (FT)**			-0.33	2.21	0.42	3.17	2.33	4.44	-4.24

Note: *Baseline static water level was estimated from first 12-month monitoring data.
+No baseline water level was estimated since MW-1 and MW-2 were brought on line in January 2011.
**Negative values indicate that water level rose.

Correlation Analysis

Table 2 summarizes the correlation of the static water level versus the total monthly groundwater withdrawal from the Chapman and Spanish Valley Wells. **Table 2** also assesses impact based on the correlation and the difference between the baseline static water level and the average static water level during the monitoring period. More detailed analysis for each well is presented following the summary table (**Table 2**).

The pumping level data recorded for GW #4, GW #5, Chapman Well, and Spanish Valley Well, as presented in **Appendix A**, does not show any correlation between the wells.

Table 2. Correlation Analysis Summary and Assessed Impact

Well Name	Coefficient of Determination	Mean - Baseline (FT)	Assessed Impact
MW-1	0.064		Negligible
MW-2	0.072		Negligible
Defond	0.620	-0.33	No
Whitney	0.093	2.21	Minimal
Andrea	0.464	0.42	Negligible
Costellanos	0.049	3.17	Minimal
Corbin	0.004	2.33	No
GW #4	0.104	4.44	Minimal
GW #5	0.078	-4.24	No

MW-1 (Golf Course Well)

Water level measurements began in January 2011 and ended in October 2016 at MW-1. Water levels in the well were generally stable and ranged from 67.8 feet bgs to 77.09 feet bgs during the monitoring period. A correlation analysis was performed on the water level data versus the total monthly groundwater withdrawal from the Chapman and Spanish Valley Wells, as shown in **Chart 1**.

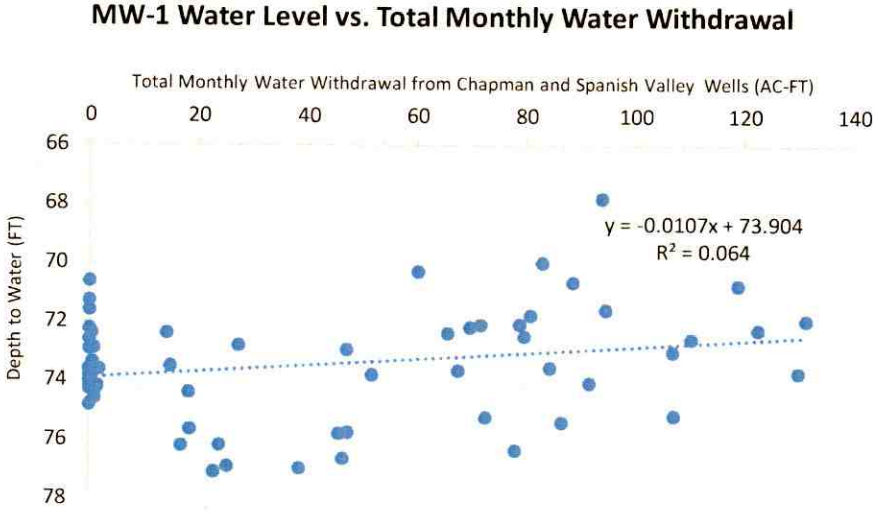


Chart 1. Correlation between Water Level in MW-1 and Total Monthly Groundwater Withdrawal from Chapman and Spanish Valley Wells

Chart 1 indicates the water level at MW-1 has little direct (linear) correlation with the total groundwater withdrawal from the Chapman and Spanish Valley Wells. An R^2 of 6.4% indicates that the water level at MW-1 is determined by other factors.

Therefore, based on the monitoring data collected from MW-1, groundwater withdrawal from the Chapman and Spanish Valley Wells has a negligible impact on the water level at MW-1.

MW-2 (White Horse Well)

Water level measurements began in January 2011 and ended in October 2016 at MW-2. Water levels in the well were generally stable and ranged from 118.12 feet bgs to 126.13 feet bgs during the monitoring period. A correlation analysis was performed on the water level data versus the total monthly groundwater withdrawal from the Chapman and Spanish Valley Wells, as shown in **Chart 2**.

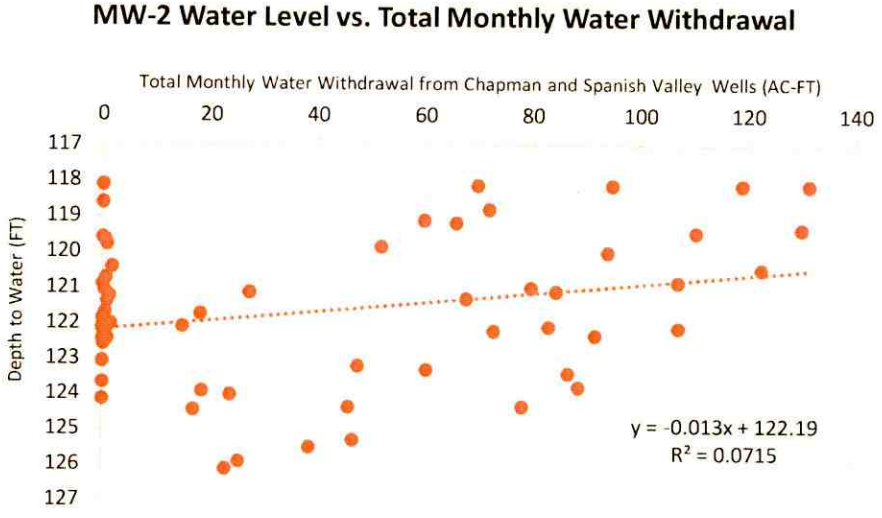


Chart 2. Correlation between Water Level in MW-2 and Total Monthly Groundwater Withdrawal from Chapman and Spanish Valley Wells

Chart 2 indicates that the water level at MW-2 has little direct (linear) correlation with the total groundwater withdrawal from the Chapman and Spanish Valley Wells. An R^2 of 7.2% indicates that the water level at MW-2 is determined by other factors.

Therefore, based on the monitoring data collected from MW-2, groundwater withdrawal from the Chapman and Spanish Valley Wells has a negligible impact on the water level at MW-2.

Kirk Defond Well (Defond Well)

Water level measurements began in May 2005 and ended in March 2008 at the Defond Well. The static water levels in the well were generally stable and ranged from 106.48 to 110.23 feet bgs during the monitoring period. The static water level appeared to be trending higher as monitoring progressed. A correlation analysis was performed on the static water level data versus the total monthly groundwater withdrawal from the Chapman and Spanish Valley Wells, as shown in **Chart 3**.

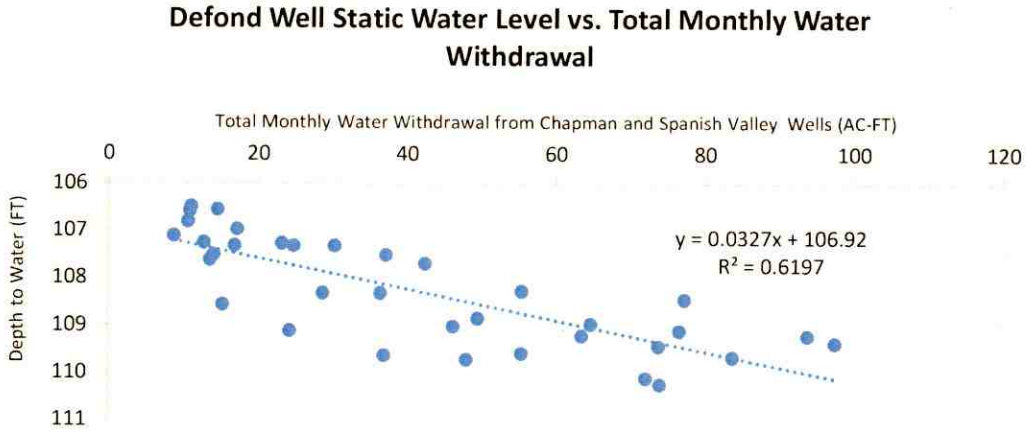


Chart 3. Correlation between Static Water Level in Defond Well and Total Monthly Groundwater Withdrawal from Chapman and Spanish Valley Wells

Chart 3 indicates that the static water level at the Defond Well has somewhat direct (linear) correlation (R^2 = 0.62 or 62%) with the total monthly groundwater withdrawal from the Chapman and Spanish Valley Wells. An R^2 of 62% indicates that groundwater withdrawal from the Chapman and Spanish Valley Wells has some correlation with the water level at the Defond Well.

The statistical analysis as summarized in **Table 1** indicates that the 95% confidence limits (high and low level) of the average static water level in the Defond Well were estimated to be 106.01 and 110.57 feet bgs, respectively. Therefore, we can state with 95% confidence that the static water level fluctuation in the Defond Well would be 4.56 feet (106.01-110.57 feet bgs) as long as the total monthly groundwater withdrawal from the Chapman and Spanish Valley Wells is within the recorded range of pumping data for the wells. Moreover, the average static water level as shown in **Table 1** was 0.33 feet higher than the baseline static water level.

Therefore, based on the monitoring data collected from the Defond Well and statistical analysis of the data, groundwater withdrawal from the Chapman and Spanish Valley Wells has no adverse impacts on the static water level at the Defond Well (does not cause the static water level to decline).

Whitney/Ezpeleta Well (Whitney Well)

Water level measurements began in March 2005 and ended in October 2016 at the Whitney Well. The static water levels in the well were generally stable and ranged from 122.65 feet bgs to 148.00 feet bgs during the monitoring period. A correlation analysis was performed on the static water level data versus the total monthly groundwater withdrawal from the Chapman and Spanish Valley Wells, as shown in **Chart 4**.

Whitney Static Well Water Level vs. Total Monthly Water Withdrawal

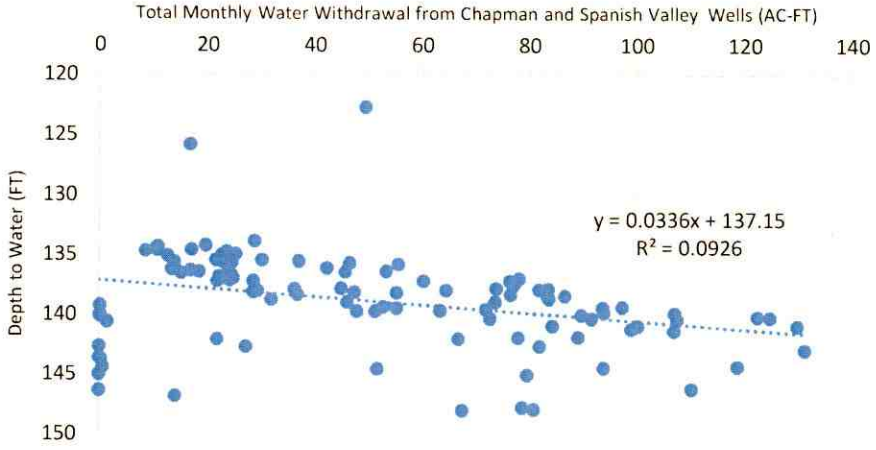


Chart 4. Correlation between Static Water Level in Whitney Well and Total Monthly Groundwater Withdrawal from Chapman and Spanish Valley Wells

Chart 4 indicates that the static water level at the Whitney Well has little direct (linear) correlation with the total groundwater withdrawal from the Chapman and Spanish Valley Wells. An R^2 of 9.3% indicates that the water level at the Whitney Well is determined by other factors. Also, **Table 1** indicates that the average static water level during the monitoring period was 2.21 feet lower than the baseline static water level.
Therefore, based on the monitoring data collected from the Whitney Well, groundwater withdrawal from the Chapman and Spanish Valley Wells has minimal impacts on the static water level at the Whitney Well.

Andrea Well

Water level measurements began in March 2005 and ended in March 2011 at the Andrea Well. The static water levels in the well were generally stable and ranged from 119.80 to 127.85 feet bgs during the monitoring period. A correlation analysis was performed on the static water level data versus the total monthly groundwater withdrawal from the Chapman and Spanish Valley Wells, as shown in **Chart 5**.

Andrea Well Static Water Level vs. Total Monthly Water Withdrawal

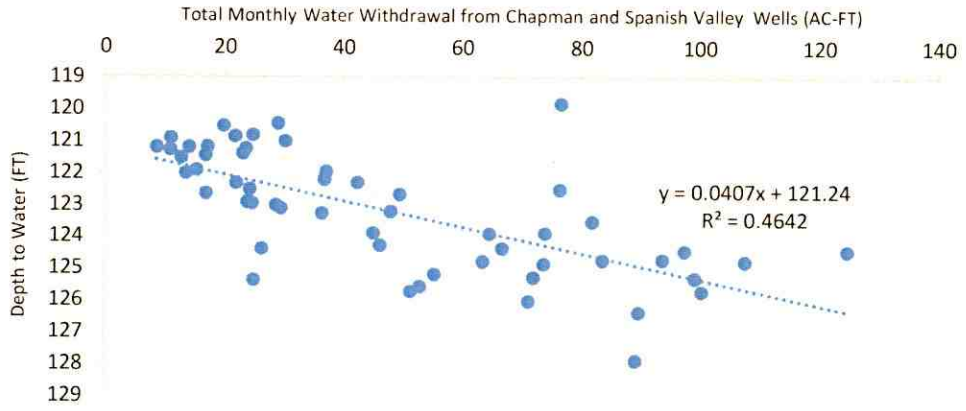


Chart 5. Correlation between Static Water Level in Andrea Well and Total Monthly Groundwater Withdrawal from Chapman and Spanish Valley Wells

Chart 5 indicates that the static water level at the Andrea Well has somewhat direct (linear) correlation (R^2 = 0.46 or 46%) with the total groundwater withdrawal from the Chapman and Spanish Valley Wells. An R^2 of 46% indicates that groundwater withdrawal from the Chapman and Spanish Valley Wells has some correlation with the water level at the Andrea Well.

The statistical analysis as summarized in **Table 1** indicates that the 95% confidence limits (high and low level) of the average static water level in the Andrea Well were estimated to be 119.51 and 126.85 feet bgs, respectively. Therefore, we can state with 95% confidence that the static water level fluctuation in the Andrea Well would be 7.34 feet (119.51-126.85 feet bgs) as long as the total monthly groundwater withdrawal from the Chapman and Spanish Valley Wells is within the recorded range of pumping data for the wells. Moreover, the average static water level as shown in **Table 1** was only 0.42 feet lower than the baseline static water level at the well.

Therefore, based on the monitoring data collected from the Andrea Well and statistical analysis of the data, groundwater withdrawal from the Chapman and Spanish Valley Wells has a negligible impact on the static water level at the Andrea Well.

<u>Costellanos Well</u>

Water level measurements began in April 2005 and ended in October 2016 at the Costellanos Well. The static water levels in the well were generally stable and ranged from 67.53 feet bgs to 95.38 feet bgs during the

monitoring period. A correlation analysis was performed on the static water level data versus the total monthly groundwater withdrawal from the Chapman and Spanish Valley Wells, as shown in **Chart 6**.

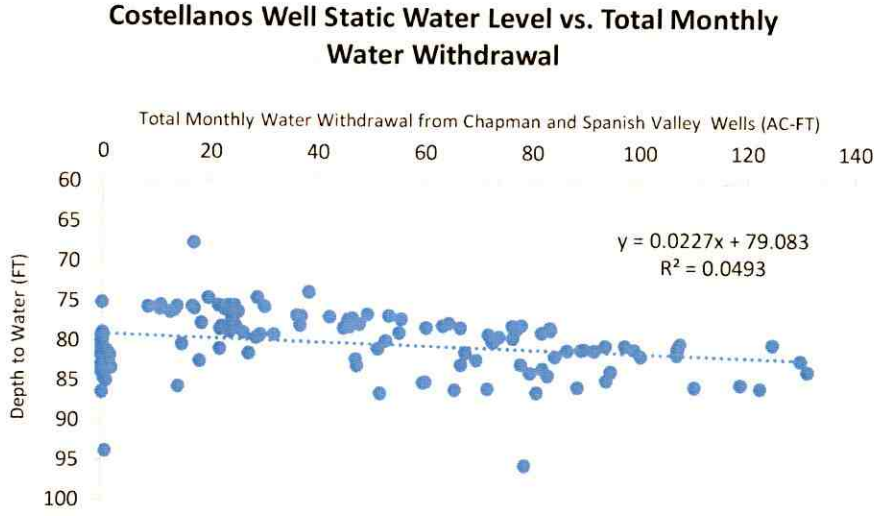


Chart 6. Correlation between Static Water Level in Costellanos Well and Total Monthly Groundwater Withdrawal from Chapman and Spanish Valley Wells

Chart 6 indicates that the static water level at the Costellanos Well has little direct (linear) correlation with the total groundwater withdrawal from the Chapman and Spanish Valley Wells. An R^2 of 4.9% indicates that the water level at the Costellanos Well is determined by other factors. As shown in **Table 1**, the average static water level during the monitoring period was 3.17 feet lower than the baseline static water level in the well.

Therefore, based on the monitoring data collected from the Costellanos Well, groundwater withdrawal from the Chapman and Spanish Valley Wells has minimal impacts on the static water level at the Costellanos Well.

Corbin Well

Water level measurements began in April 2005 and ended in December 2016 at the Corbin Well. The static water levels in the well were generally stable and ranged from 110.60 feet bgs to 123.90 feet bgs during the monitoring period. A correlation analysis was performed on the static water level data versus the total monthly groundwater withdrawal from the Chapman and Spanish Valley Wells, as shown in **Chart 7**.

Chart 7 indicates that the static water level at the Corbin Well has little direct (linear) correlation with the total groundwater withdrawal from the Chapman and Spanish Valley Wells. An R^2 of 0.4% indicates that the

water level at the Corbin Well is determined by other factors. As shown in **Table 1**, the average static water level during the monitoring period was 2.21 feet lower than the baseline static water level in the well.

Corbin Well Static Water Level vs. Total Monthly Water Withdrawal

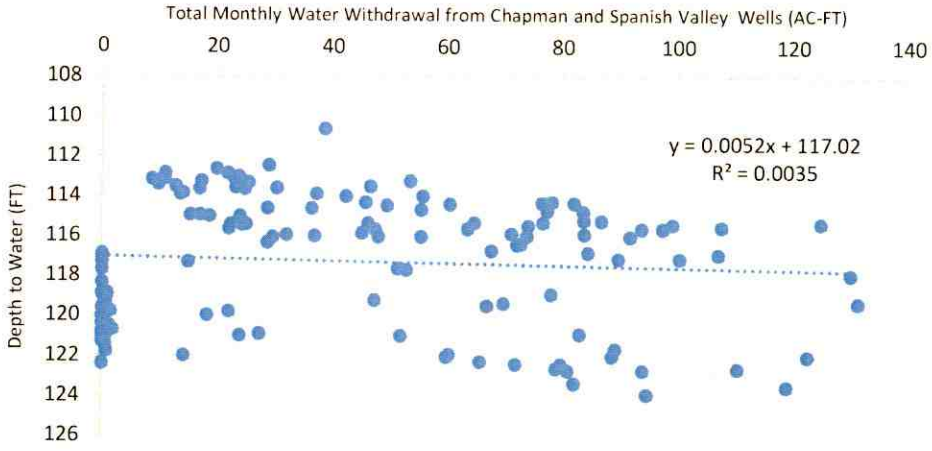


Chart 7. Correlation between Static Water Level in Corbin Well and Total Monthly Groundwater Withdrawal from Chapman and Spanish Valley Wells

Therefore, based on the monitoring data collected from the Corbin Well, groundwater withdrawal from the Chapman and Spanish Valley Wells has no impact on the static water level at the Corbin Well.

George White Well #4 (GW #4)

Water level measurements began in January 2006 and ended in October 2016 at GW #4. The static water levels were generally stable and ranged from 42.28 feet bgs to 55.80 feet bgs during the monitoring period. A correlation analysis was performed on the static water level data versus the total monthly groundwater withdrawal from the Chapman and Spanish Valley Wells, as shown in **Chart 8**.

Chart 8 indicates that the static water level at GW #4 has a low direct (linear) correlation with the total groundwater withdrawal from the Chapman and Spanish Valley Wells. An R^2 of 10% indicates that the water level at GW#4 is determined by other factors. **Table 1** indicates that the average static water level during the monitoring period was 4.44 feet lower than the baseline static water level.

Therefore, based on the monitoring data collected from GW #4, groundwater withdrawal from the Chapman and Spanish Valley Wells has minimal impact on the static water level at GW #4.

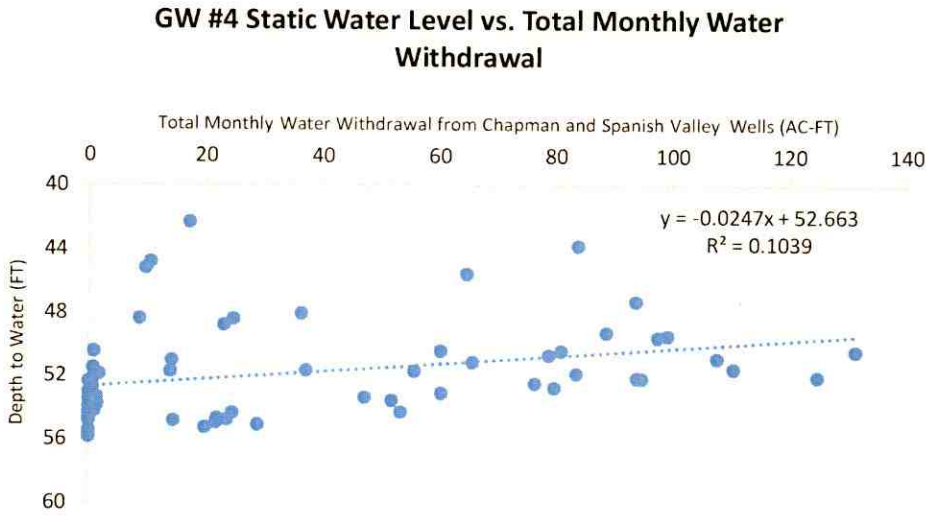


Chart 8. Correlation between Static Water Level in GW #4 and Total Monthly Groundwater Withdrawal from Chapman and Spanish Valley Wells

George White Well #5 (GW #5)

Water level measurements began in January 2007 and ended in June 2016 at GW #5. The static water levels in the well were general stable and ranged from 39.20 feet bgs to 58.47 feet bgs during the monitoring period. A correlation analysis was performed on the static water level data versus the total monthly groundwater withdrawal from the Chapman and Spanish Valley Wells, as shown in **Chart 9**.

Chart 9 indicates that the static water level at GW #5 has a low direct (linear) correlation with the total groundwater withdrawal from the Chapman and Spanish Valley Wells. An R^2 of 7.8% indicates that the water level at GW#4 is determined by other factors. **Table 1** indicates that the average static water level during the monitoring period was 4.24 feet higher than the baseline static water level.

Therefore, based on the monitoring data collected from GW #5, groundwater withdrawal from the Chapman and Spanish Valley Wells has no adverse impact on the static water level at GW #5.

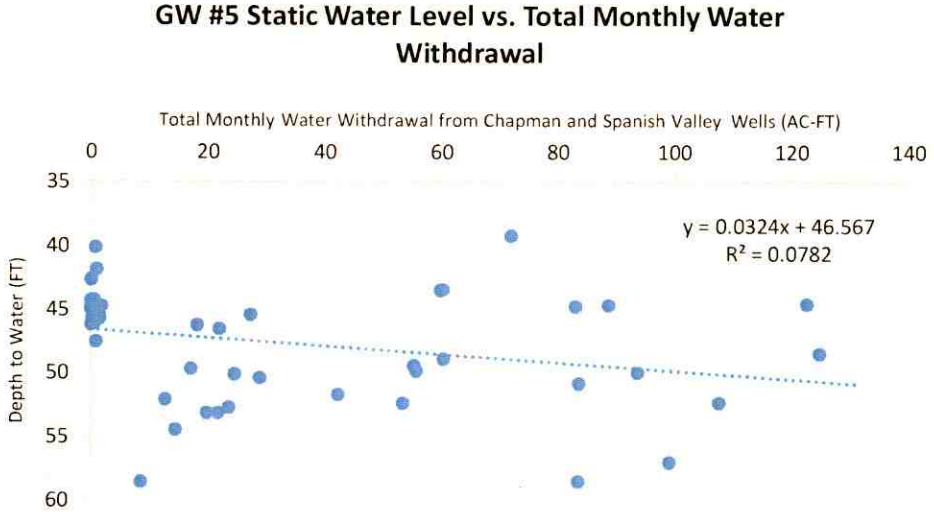


Chart 9. Correlation between Static Water Level in GW #5 and Total Monthly Groundwater Withdrawal from Chapman and Spanish Valley Wells

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

GWSSA has implemented a groundwater monitoring plan since 2005 in an effort to observe any impacts of groundwater withdrawal from the Chapman and Spanish Valley Wells on static water levels in two monitoring wells (MW-1 and MW-2) and other production wells (Defond, Whitney, Andrea, Costellanos, Corbin, GW #4 and GW #5). MW-1 and MW-2 were brought on line in January 2011 to monitor the groundwater level in the Glen Canyon aquifer and the Valley Fill aquifer, respectively.

Based on the water level monitoring data from MW-1 and MW-2, groundwater withdrawal from the Chapman and Spanish Valley Wells has negligible impacts on the water level in MW-1 and MW-2.

The static water level monitoring data collected from other production wells indicates that groundwater withdrawal from the Chapman and Spanish Valley Wells have no adverse impacts or have negligible to minimal impacts on static water levels in the production wells.

Moreover, the static water level at GW #4 Well was not lower than 52 feet bgs, and the 95% confidence low limit was estimated to be 55.80 feet bgs based on the collected monitoring data.

The pumping level data recorded for GW #4 Well, GW #5 Well, Chapman Well, and Spanish Valley Well does not show any correlation between the wells.

Therefore, groundwater withdrawal from the Chapman and Spanish Valley Wells has minimal impacts on the static water levels of the Glen Canyon aquifer and the Valley Fill aquifer. Therefore, further groundwater monitoring does not appear to be warranted at this time and it is recommended that GWSSA's water rights change application be approved.

CLOSURE

Our conclusions and recommendations contained in this letter apply to the data collected by GWSSA and are intended only for the purposes, locations, and time frames of this letter. Sunrise Engineering does not warrant the accuracy of information supplied by others.

Should you have any questions about this letter, or if we may be of further service in any way, please contact us at (801) 523-0100.

Sincerely,
SUNRISE ENGINEERING, INC.

Prepared by:

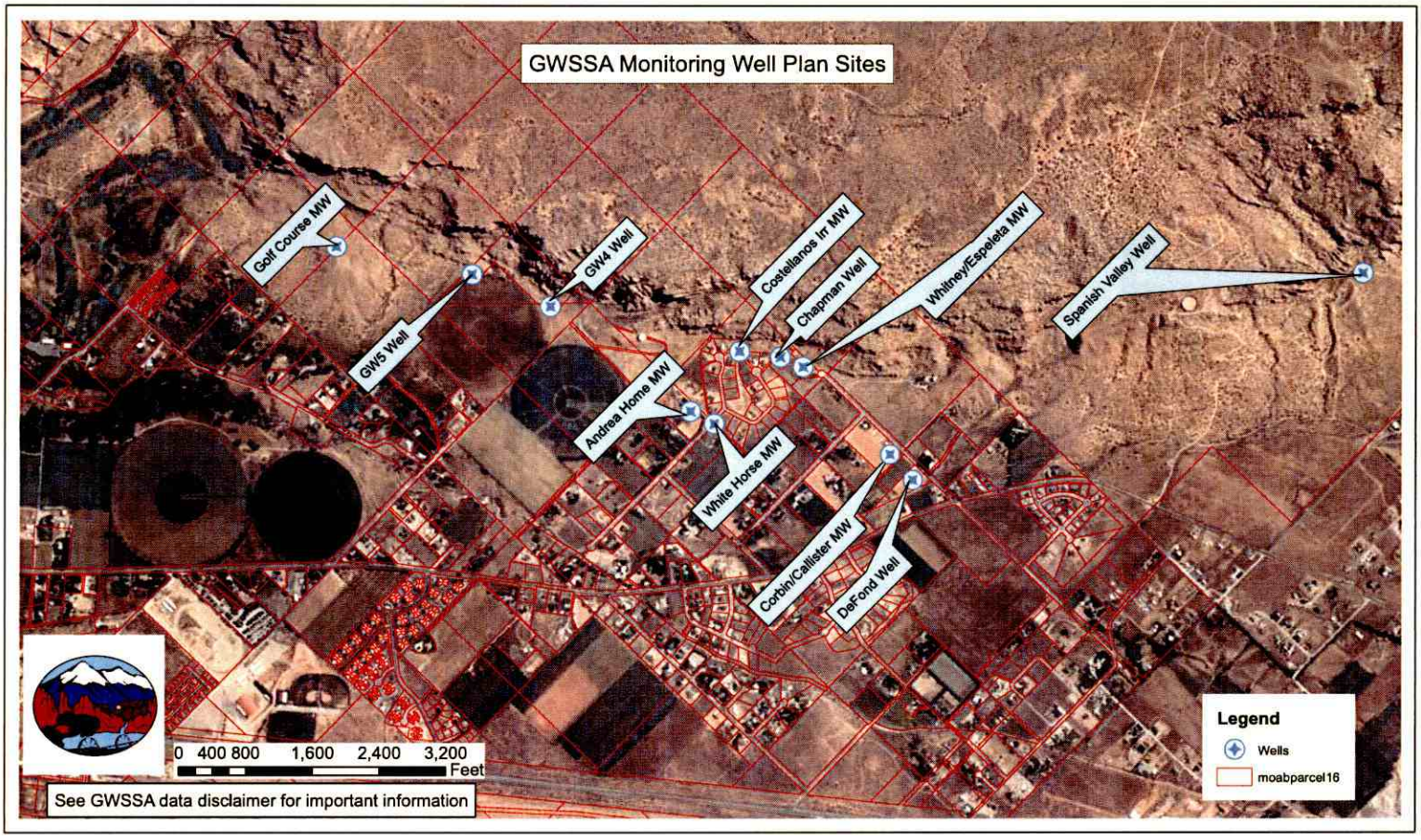
Dao Yang, P.E.
Project Manager/Hydrogeologist

Reviewed by:

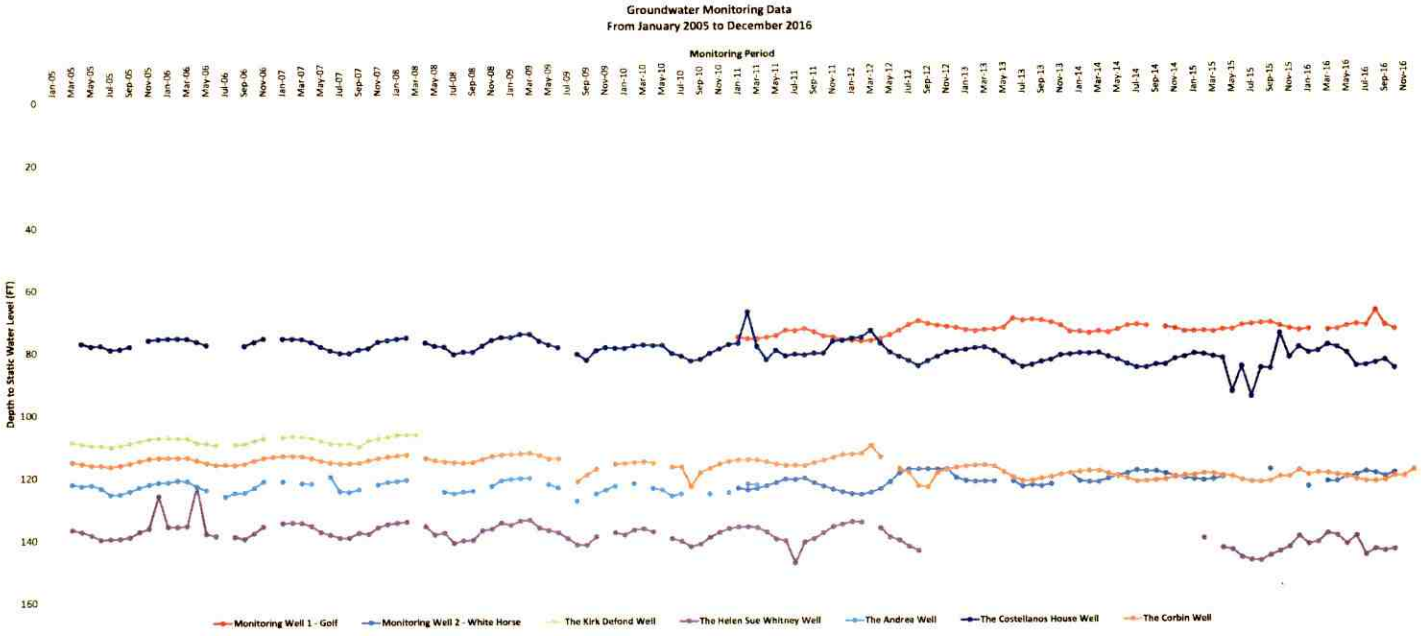
Derek Anderson, P.E.
Environmental Division Manager

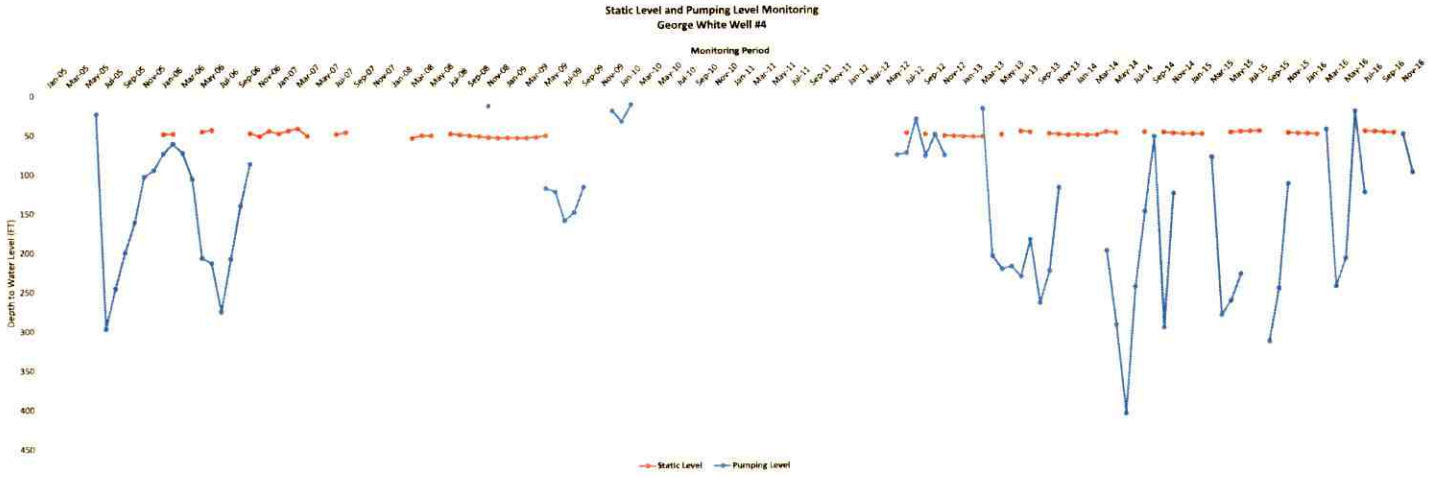
Enclosures: GWSSA Monitoring Well Plan Site Map
Appendix A – Monitoring Data

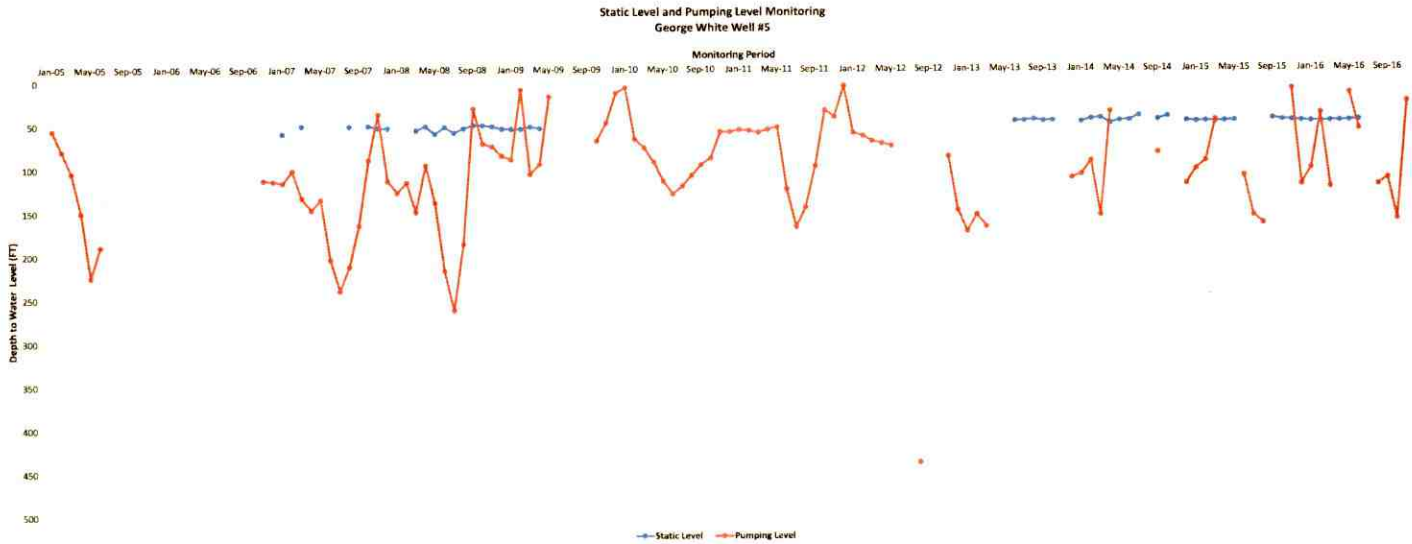
GWSSA Monitoring Well Plan Sites Map

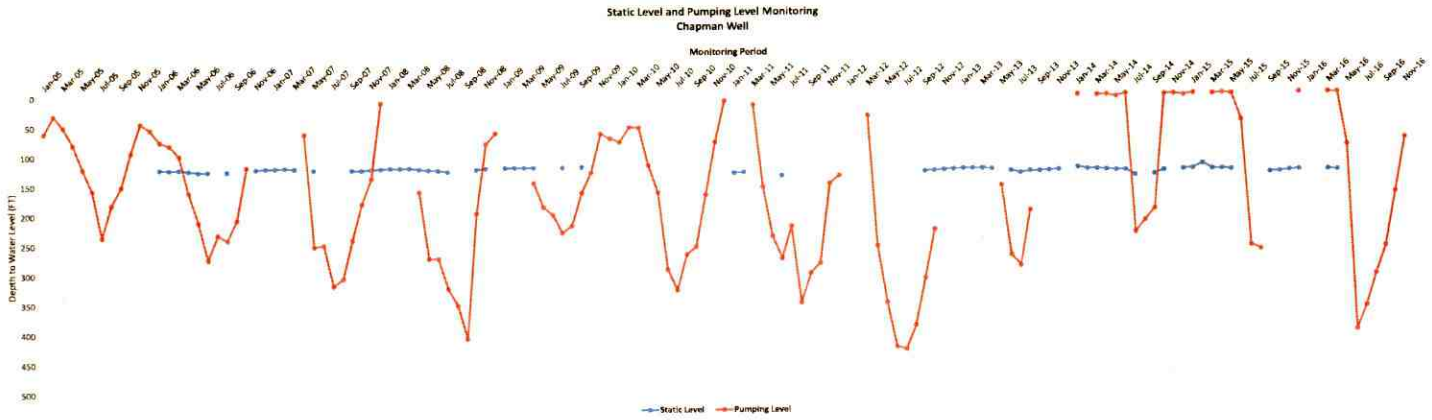

GWSSA Monitoring Well Plan Sites
Golf Course MW
GW5 Well
GW4 Well
Costellanos Irr MW
Chapman Well
Whitney/Espeleta MW
Spanish Valley Well
Andrea Home MW
White Horse MW
Corbin/Callister MW
DeFond Well
0 400 800 1,600 2,400 3,200
Feet
See GWSSA data disclaimer for important information
Legend
Wells
moabparcel16

Appendix A


Groundwater Monitoring Data
From January 2005 to December 2016
Monitoring Period
Depth to Static Water Level (FT)
0
20
40
60
80
100
120
140
160
Monitoring Well 1 - Golf
Monitoring Well 2 - White Horse
The Kirk Defond Well
The Helen Sue Whitney Well
The Andrea Well
The Costellanos House Well
The Corbin Well


Static Level and Pumping Level Monitoring
George White Well #4
Monitoring Period
Depth to Water Level (FT)
0
50
100
150
200
250
300
350
400
450
Static Level
Pumping Level


Static Level and Pumping Level Monitoring
George White Well #5
Monitoring Period
Jan-05 May-05 Sep-05 Jan-06 May-06 Sep-06 Jan-07 May-07 Sep-07 Jan-08 May-08 Sep-08 Jan-09 May-09 Sep-09 Jan-10 May-10 Sep-10 Jan-11 May-11 Sep-11 Jan-12 May-12 Sep-12 Jan-13 May-13 Sep-13 Jan-14 May-14 Sep-14 Jan-15 May-15 Sep-15 Jan-16 May-16 Sep-16
Depth to Water Level (FT)
0
50
100
150
200
250
300
350
400
450
500
Static Level
Pumping Level


Static Level and Pumping Level Monitoring
Chapman Well
Monitoring Period
Depth to Water Level (FT)
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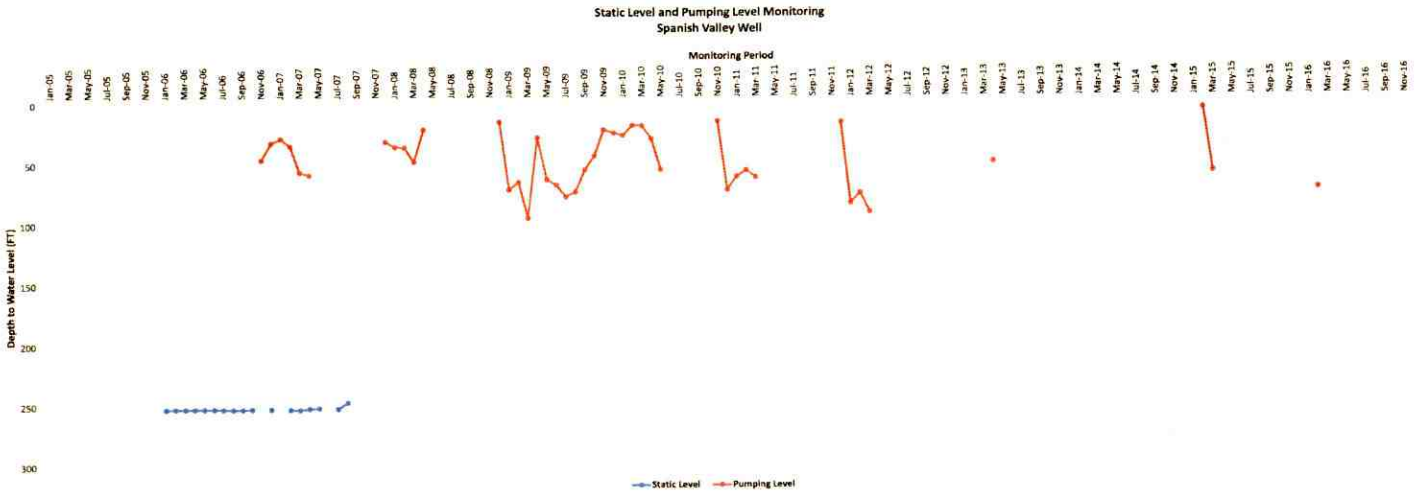
50
100
150
200
250
300
350
400
450
500
Static Level
Pumping Level


Static Level and Pumping Level Monitoring
Spanish Valley Well
Monitoring Period
Depth to Water Level (FT)
0
50
100
150
200
250
300
Jan-05
Mar-05
May-05
Jul-05
Sep-05
Nov-05
Jan-06
Mar-06
May-06
Jul-06
Sep-06
Nov-06
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Nov-15
Jan-16
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May-16
Jul-16
Sep-16
Nov-16
Static Level
Pumping Level

MONITORING PLAN INFORMATION 2017 PROOF 05-475, 906, 3656, a26150

SUMMARY TABLES

MW-1 (Golf Course W

14.8

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static
Jan							75.64	76.90	73.63	74.32	74.27	73.8
Feb							76.20	77.09	74.00	74.82	74.19	
Mar							76.18	76.96	73.61	74.19	74.4	74
Apr							75.73	76.34	73.50	74.61	73.78	73.8
May							75.23	75.15	72.95	73.63	73.71	72.8
Jun							73.54	73.71	70.00	72.4	72.39	72.26
Jul							73.66	71.93	70.65	72.1	72.08	72.57
Aug							73.01	70.76	70.30	72.39	71.78	67.8
Sep							74.07	71.59	70.64		71.6	72.5
Oct							75.38	72.19	71.30	72.9	72.62	73.8
Nov							75.78	72.59	72.24	73.38	73.56	
Dec							76.63	72.92	74.29	74.3	74.12	

NOTES:

(All note comment calculations are using numbers from January or March) Static water level elevated from 75.64 baseline in 2011 to 59.00 feet in 2016

Notes: Added 14.8 to all the static level from Jan 2014 to October 2016. The jump in the static level data is likely due to adjustment in the equipment.

MW-2 (White Horse W

34.10 88.30

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static
Jan							123.92	125.93	121.87	122.15	121.70	124.17
Feb							124.46	126.13	122.20	122.45	122.04	
Mar							124.04	125.51	122.10	122.45	121.75	122.60
Apr							123.21	124.36	122.10	121.40	121.09	122.61
May							122.23	122.13		120.44		121.14
Jun							121.11	119.35	122.10	119.66		120.49
Jul							121.31	118.12	123.80	118.80		119.45
Aug							120.85	118.12	123.30	119.17		120.00
Sep							122.35	118.12	123.69	119.10	118.63	121.00
Oct							123.42	118.12	123.08	119.80		119.85
Nov							124.38	118.12		120.75		
Dec							125.31	120.92	119.60	121.25		

NOTES:

Static water level elevated from 123.92 baseline in 2011 to35.87 feet in 2016

Notes: No change in static level from July 2012 to November 2012
Added 34.10 to all static level data from June 2013 to Decemeber 2013. The jump in the static level data is likely due to adjustment in the equipment.
Added 88.30 to all static level data from January 2014 to October 2016. The jump in the static level data is likely due to adjustment in the equipment.

Defond

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static
Jan		107.25	107.1	106.57								
Feb		107.3	106.8	106.48								
Mar	108.55	107.3	106.95	106.54								
Apr	109.1	108.84	107.5	N/A*								
May	109.62	108.95	108.44	N/A*								
Jun	109.7	109.65	109.1	N/A*								
Jul	110.1		109.35	N/A*								
Aug	109.57	109.42	109.2	N/A*								
Sep	109	109.2	110.23	N/A*								
Oct	108.3	108.3	108.27	N/A*								
Nov	107.6	107.5	107.68	N/A*								
Dec	107.3		107.24	N/A*								

*Kirk Defond requested that his well no longer be monitored.

NOTES:

Static water level elevated from 108.55 baseline in 2005 to106.57 feet in 2008
*Kirk Defond requested that his well no longer be monitored.

Whitney/Ezpeleta

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static
Jan		135.57	134.65	134.62	135.45	138.70	136.4	134.9	n/r	n/r	n/r	142.65
Feb		135.6	134.46	134.31	134.18	137.18	136.33	134.99	n/r	n/r	140.62	142.03
Mar	136.5	135.43	134.57	N/A	133.84	136.80	136.6	N/R	n/r	n/r	n/r	139.22
Apr	137.15	122.65	135.55	135.77	136.37	137.81	138.11	136.96	n/r	n/r	143.76	140
May	138.28	137.93	137.5	138.45	137.20	n/a	140.31	139.85	n/r	n/r	144.4	142.65
Jun	139.7	138.65	138.3	137.85	137.90	140.02	140.9	140.9	n/r	n/r	146.8	140.13
Jul	139.51		139.35	141.16	139.8	140.9	148	142.91	n/r	n/r	147.74	146.2
Aug	139.45	138.91	139.4	140.40	141.85	142.63	141.35	144.31	n/r	n/r	147.9	144.42
Sep	138.93	139.63	137.79	140.21	142.00	141.90	140.3	N/R	n/r	n/r	146.33	145
Oct	137.2	137.85	138.17	137.19	139.33	139.7	138.4	N/R	n/r	n/r	145	144.5
Nov	136.2	135.65	136.08	136.65	n/a	138.1	136.39	N/R	n/r	n/r	143.6	
Dec	125.8		135.08	134.70	138.00	136.9	135.71	N/R	n/r	n/r	140.1	

NOTES:

Static water level elevated from 136.50 baseline in 2011 to 134.90 feet in 2012. The record indicates a decline in water level of 7.08 feet by 2016, which was also recorded in 2010. These numbers would indicate the aquifer did rebound from the 142.63 in 2010 to 134.9 in 2012

Andrea Home

46.5

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static
Jan		121.38	121.2	121.26	120.84	n/a	n/r	N/R	n/r	n/r	n/r	n/a
Feb		120.8		120.9	120.52	122.3	122.63	N/R	n/r	n/r	n/r	n/a
Mar	121.9	121	121.18	N/A	120.45	n/a	122.9	N/R	n/r	n/r	n/r	n/a
Apr	122.5	122.65	121.94	N/A	n/a	123.87	n/r	N/R	n/r	n/r	n/r	n/a
May	122.19	123.88	N/A	N/A	122.5	124.35	n/r	N/R	n/r	n/r	n/r	n/a
Jun	123.2	N/R	119.8	124.71	123.5	126.35	n/r	N/R	n/r	n/r	n/r	n/a
Jul	125.25	126	124.42	125.28	n/r	125.7	n/r	N/R	n/r	n/r	n/r	n/a
Aug	125.15	124.83	124.7	124.76	127.85	n/a	n/r	N/R	n/r	n/r	n/r	n/a
Sep	124.25	124.76	123.87	124.43	n/r	n/a	n/r	N/R	n/r	n/r	n/r	n/a
Oct	123	123.25	N/A	N/A	125.55	125.7	n/r	N/R	n/r	n/r	n/r	n/a
Nov	122	121.2	122.29	122.95	124.36	n/a	n/r	N/R	n/r	n/r	n/r	
Dec	121.45		121.52	121.24	123.1	125.34	n/r	N/R	n/r	n/r	85	

NOTES:

Static water level elevated from 121.90 baseline in 2005 to 74.34 feet in 2009

Notes: Added 46.5' to the static level data from January 2007 to March 2011
Not using the reading from December 2015 because there is no other readings within 4.5 years from it; therefore, there is no evidence of it's accuracy

Costellanos

44.6

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static
Jan		75.42	75.6	75.8	75.4	79.03	77.6	76.15	79.95	81.2	81.4	81.32
Feb		75.4	75.61	75.41	74.43	78.28	67.53	75.86	79.4	81.3	81.7	80.81
Mar	N/R	75.5	75.74	N/A	74.4	78	78.7	73.7	79.2	81.13	82.4	78.81
Apr	77	76.43	76.7	76.96	76.6	78.16	82.93	77.75	80.3	82.37	82.94	79.61
May	77.85	77.51	78.2	78.07	77.8	78.09	79.95	80.66	82.09	83.3	93.8	81.4
Jun	77.65	N/R	79.4	78.38	78.7	80.75	81.7	82.1	84.1	84.7	85.6	85.6
Jul	78.95	N/R	80.27	80.8	n/r	81.6	81.2	83.43	85.5	85.8	95.38	85.47
Aug	78.77		80.3	80	80.87	83.21	81.4	85.15	84.9	85.9	86.2	84.71
Sep	78	77.86	79.19	80.04	82.77	82.7	80.9	83.56	83.9	85	86.4	83.8
Oct		76.6	78.75	78.1	79.74	80.8	80.91	82.15	83.3	84.9	75.1	86.4
Nov	75.97	75.55	76.73	76.3	78.8	79.4	77.06	80.75	81.82	83.1	82.8	
Dec	75.56		76.23	75.4	79	78	76.89	80.27	81.6	82.5	79.51	

NOTES:

Static water level declined from 75.42 baseline in 2006 to 125.92 feet in 2016 (-50.5 feet). The data indicates a possible error in the data, a change in 44.6 feet in 30 days (Dec. 2005 to Jan 2006, which is vertyaklky impossible. Also supporting the error posibility is that since Jan 2006 through Jan 2016 the decline is only 5.72 feet.

Notes: Subtracted 44.6' from the static level data from January 2006 to October 2016. The jump in the static level data is likely due to adjustment in the equipment.

Corbin

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static
Jan		113.53	113.15	113.10	112.85	115.90	115	113.3	117.28	119.2	120.4	120.4
Feb		113.6	113.1	112.85	112.62	115.60	114.94	113.05	117.02	118.9	119.8	119.8
Mar	114.92	113.58	113.24	N/A	112.44	115.40	115	110.6	116.91	118.9	119.98	119.98
Apr	115.42	114.44	113.85	113.97	113.20	115.83	115.63	114.24	117.3	119.78	120.55	120.55
May	115.97	115.3	114.7	114.73	114.30	n/a	116.36	N/R	119.21	120.7	120.9	120.9
Jun	116	115.87	115.31	115.17	114.30	117.11	116.79	117.9	120.88	121.41	122	122
Jul	116.42	115.84	115.6	115.38	n/r	117.1	116.72	119.32	122	122.4	122.62	122.62
Aug	116	115.98	115.6	115.50	121.62	123.36	116.9	123.5	121.9	122.28	122.7	122.7
Sep	115.32	115.59	115.45	115.34	119.47	118.90	116	123.9	121.3	122.04	122.41	122.41
Oct	114.6	114.6	114.66	114.38	117.66	117.6	115.22	119.36	120.8	121.8	121	121
Nov	113.87	113.83	113.98	113.48	n/a	116.3	114.29	118.35	120.03	121.06	121	121
Dec	113.6	113.40	113.47	113.00	116.05	115.4	113.48	117.66	119.6	120.52	119	119

NOTES:

Static water level declined from 114.92 baseline in 2005 to 120.4 feet in 2009.

Geo # 4

44.6	20.5

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static
Jan		48.72	48.36	N/A	54.88	n/a	n/r	N/R	55.4	53.96	53.77	53.9
Feb		48.34	44.76	N/A	55.2	n/a	n/r	N/R	55.8	54.61	53.73	54.63
Mar			42.28	54.76	54.99	n/a	n/r	N/R	55.7	54.21		
Apr			51.6	51.62	54.2	n/a	n/r	N/R		50.42		
May		45.5		51.79	52.4	n/a	n/r	N/R	53.29	51.86	52.14	
Jun		43.75	N/A		n/a	n/a	n/r	N/R			50.98	
Jul			49.5	49.37	n/a	n/a	n/r	50.35	49.2		50.61	51.45
Aug			47.24	50.83	n/a	n/a	n/r	N/R	50.35	51.05	50.36	52.05
Sep			N/A	51.95	n/a	n/a	n/r	52.1				52.66
Oct		48	N/A	53.02	n/a	n/a	n/r		52.3	51.45		53.47
Nov		51.66	N/A	54.28	n/a	n/a	n/r	54.28	53.38	52.65	52.96	
Dec		45.15	N/A	54.71	n/a	n/a	n/r	54.79	54.26	53.26	53.65	

NOTES:

Static water level declined from 48.72 baseline in 2006 to 74.40 feet in 2016. The water use reported shows a 50% decrease in water use from the well 2014 to 2016, the water level varied .06 feet in the positive, indicating a positive move in the water level in the aquifer. Very little water use by the District of this well from 2007 to 2012 as the water level declined from 48.36 to

Notes: Subtracted 44.6' from the static level data from March 2008 until May 2009. The jump in static level data is likely due to adjustment in the equipment.
Subtracted 20.5' from the static level data from July 2012 until May October 2016. The jump in static level data is likely due to adjustment in the equipment.

Water Use as reported for the Geo. White # 4 Well POD

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump
Jan		73.49				34.45						
Feb		61.02				12.80						
Mar		72.83							19.69		83.01	48.56
Apr		105.64							208.01	201.77	284.78	249.02
May		206.69			119.42				224.41	296.26	266.40	213.25
Jun	22.97	213.25			124.02			78.08	221.46	409.45	232.61	25.59
Jul	296.59	274.93			160.76			75.79	234.25	248.03		129.59
Aug	245.08	208.01			150.59			32.81	187.34	152.23		
Sep	199.48	140.42			117.78			79.72	268.04	56.76	318.57	
Oct	161.09	86.94			0.00			52.49	227.36	229.99	251.31	
Nov	103.02			13.78	0.00			79.07	121.06	129.27	117.78	55.12
Dec	94.49				20.67							104.00

Note: Original data was collected in meters. For comparison purposes, all values were converted to feet.

Geo White #5

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static
Jan			58.47		53.08	n/a	n/r	N/R	n/r	46.03	45.91	46.15
Feb					53.08	n/a	n/r	N/R	n/r	42.66	45.66	46.49
Mar			49.64	54.37	50.32	n/a	n/r	N/R	n/r	41.82	46.21	46.1
Apr			N/A	49.82	52.30	n/a	n/r	N/R	n/r	47.52	45.63	45.65
May				58.41	n/a	n/a	n/r	N/R	n/r	44.73	45	45.4
Jun				50.77	n/a	n/a	n/r	N/R	44.73	44.22		44.54
Jul			279.00	56.95	n/a	n/a	n/r	N/R	44.63	39.2		
Aug			49.9	52.29	n/a	n/a	n/r	N/R	43.4			
Sep				48.42	n/a	n/a	n/r	N/R	45.01	43.47	42.61	
Oct			49.37	48.86	n/a	n/a	n/r	N/R	44.7	40.08	44.28	
Nov			51.62	50.04	n/a	n/a	n/r	N/R			44.82	
Dec			52.01	52.63	n/a	n/a	n/r	N/R		45.29	45.67	

NOTES:

Static water level elevated from 58.47 baseline in 2007 to 46.15 feet in 2016.

Notes: Static level data collected for July 2007 was disregarded because it was significantly different then the rest of the data collected and likely to be an error.

Water Use as reported for the Geo. White # 5 Well POD

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump
Jan	55.12		115.49	126.31	88.25	5.91	54.46	58.07	171.92	106.63	100.72	100.39
Feb	79.07		101.38	114.83	7.87	65.29	55.45	61.68	152.89	91.21	91.21	36.75
Mar	104.00		132.55	148.62	105.31	75.13	57.41	67.59	166.67	153.54	44.29	122.05
Apr	149.93		146.33	94.82	93.83	91.54	54.13	70.54		34.45		
May	224.08		134.51	138.12	15.75	113.52	51.51	73.16				13.78
Jun	188.65		203.41	216.54		128.61	123.03				108.60	55.12
Jul			239.17	261.81		119.42	166.67				154.53	0.00
Aug			211.29	185.04		106.96	143.70	438.32			163.39	119.42
Sep			164.04	29.86		94.49	96.78			81.69		111.88
Oct			88.58	70.21	66.93	86.94	32.15					159.12
Nov		112.53	36.09	73.16	46.26	56.76	39.70	85.63			8.86	23.62
Dec		113.52	112.86	83.99	12.14	56.76	4.27	147.64	110.56	117.45	119.09	

Note: Original data was collected in meters. For comparison purposes, all values were converted to feet.

Chapman

0.00
78.6

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static
Jan		122.28	121.07	121.22	121.22	n/a	131.26	N/R	126	125	128	
Feb		123.04	120.2	121.30	121.1	n/a	130.19	N/R	126	128	120	
Mar		122.21	121.36	121.12	121.25	n/a		N/R	126	128	129	131
Apr		124.16		123.19	121.1	n/a		N/R	127	129	129	132
May		126.22	124.05	124.29	n/a	n/a		N/R	n/r	130	130	
Jun		126.23		125.35	n/a	n/a	136.1	N/R	130	130		
Jul				127.22	121.19	n/a			134	139		
Aug		126.34			n/a	n/a	n/r		131			
Sep			124.1		120.4	n/a	n/r	130	131	137	135	
Oct			124.16	124.00	n/a	n/a	n/r	129	130	131	134	
Nov		122.19	123.11	122.13	n/a	n/a	n/r	128	129		132	
Dec		121.15	122.12		n/a	n/a	n/r	127		129	131	

NOTES:

Static water level declined from 122.28 baseline in 2006 to 128.00 feet in 2015

Notes: January through March 2014 had two recorded values. The values selected where those that were most consistent with the rest of the data. Subtracted 78.6' the static level data collected betweenJanuary 2009 to December 2009. The jump in original static level data was likely due to an adjustment in the equipment.

Water Use as reported for the Chapman Well POD

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump
Jan	60.04	75.79				78.41				2.30	1.64	
Feb	30.84	81.04				53.81						
Mar	49.87	99.08				54.79	16.73	35.76		3.28	2.30	0.66
Apr	79.40	162.07	63.32	161.75	147.31	118.44	155.51	256.23		2.95	1.31	0.66
May	120.73	211.94	253.28	273.95	187.99	164.04	238.52	351.71	154.86	5.91	2.30	89.57
Jun	157.15	274.61	250.98	274.28	201.44	294.29	276.25	426.51	272.31	1.64	46.59	402.23
Jul	236.22	233.27	319.55	325.13	231.30	329.07	221.78	430.77	290.68	235.56	258.53	362.20
Aug	181.43	241.80	307.41	353.02	219.49	269.03	351.05	390.09	197.51	215.55	265.42	308.07
Sep	151.25	208.01	242.45	409.45	164.37	255.91	300.85	310.70		196.19		261.48
Oct	93.83	119.09	181.43	197.83	129.92	168.31	284.45	228.67		2.62		169.95
Nov	44.29		138.78	80.71	64.63	79.07	149.93			1.97		78.41
Dec	55.12		10.83	62.66	72.51	9.84	136.81			4.27	0.66	

Note: Original data was collected in meters. For comparison purposes, all values were converted to feet.

Spanish Valley

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static	Static
Jan		252.48		N/A	n/a	n/a	n/r	N/R	n/r	n/r	n/r	n/r
Feb		252.29	252.62	N/A	n/a	n/a	n/r	N/R	n/r	n/r	n/r	n/r
Mar		252.15	252.82	N/A	n/a	n/a	n/r	N/R	n/r	n/r	n/r	n/r
Apr		252.3	251.88	N/A	n/a	n/a	n/r	N/R	n/r	n/r	n/r	n/r
May		252.19	251.41	248.22	n/a	n/a	n/r	N/R	n/r	n/r	n/r	n/r
Jun		252.12	N/A	474.00	n/a	n/a	n/r	N/R	n/r	n/r	n/r	n/r
Jul		252.4	252	474.00	n/a	n/a	n/r	N/R	n/r	n/r	n/r	n/r
Aug		252.52	247	235.94	n/a	n/a	n/r	N/R	n/r	n/r	n/r	n/r
Sep		252.5	166.9	186.55	n/a	n/a	n/r	N/R	n/r	n/r	n/r	n/r
Oct		252.28	79.37	104.00	n/a	n/a	n/r	N/R	n/r	n/r	n/r	
Nov			N/A	45.98	n/a	n/a	n/r	N/R	n/r	n/r	n/r	
Dec		252.30	N/A	N/A	n/a	n/a	n/r	N/R	n/r	n/r	n/r	

Notes: Data recorded after August 2007 is inconsistant and is likely to contain errors; therefore, it will not be used.

NOTES:

Static water level elevated from 252.48 baseline in 2005 to 45.98 feet in Nov. 2008. This would indicated errors in the data. The well is used sparingly at best.

Water Use as reported for the Spanish Valley Well POD

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump	Pump
Jan			28.22	35.43	71.19	26.25	60.70	83.01				
Feb			34.45	35.76	64.96	18.04	55.45	74.80			4.92	71.85
Mar			56.10	47.57	94.82	18.37	61.35	90.55			57.41	
Apr			58.40	21.00	27.89	29.20			48.88			
May					62.66	54.79						
Jun					67.26							
Jul					77.10							
Aug					73.16							
Sep					54.79							
Oct					43.31							
Nov		45.93			21.65	14.76						
Dec		31.82	30.84	14.76	24.28	71.85	15.75					

Note: Original data was collected in meters. For comparison purposes, all values were converted to feet.