

**Buckman Wells 10-13 (RG-20516-S10 through S13)  
Monitoring Program Biennial Report  
November 2012**



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## Contents

1.0	Introduction .....	2
1.1	Buckman Monitoring Program Requirements .....	2
1.2	Buckman Monitoring Program Biennial Report Requirements .....	3
2.0	Well Field Production.....	3
3.0	Water Level Data Analysis and Trends.....	3
3.1	Methods for trend analysis .....	3
3.2	Buckman Production Wells water level analysis.....	4
3.3	Piezometer water level analysis.....	5
3.4	Area monitoring well water level analysis – domestic and stock wells .....	6
3.5	Buckman MW water level analysis .....	7
3.6	Maps – contour rate of change .....	7
3.7	10- and 40-year projected water column for BMP area wells .....	8
3.8	Historic Regional Water Level Change Analysis .....	9
4.0	Comparison of Model Results to Observed Data.....	10
5.0	Discussion.....	10
6.0	Conclusions .....	11
7.0	Recommendations .....	12
8.0	References .....	13

## List of Figures

- Figure 1: Pumping and monitoring wells in the Buckman Well Field and surrounding area
- Figure 2: Annual rate of water level change in the Buckman Well Field and surrounding area since October 2003 – Wells with completion depths of 280 – 841 ft bgs.
- Figure 3: Annual rate of water level change in the Buckman Well Field and surrounding area since October 2003 – Wells with completion depths of 910 - 2440 ft bgs.
- Figure 4: USGS database wells located within the Lat/Long box designated by Core (2003)
- Figure 5: Modeled annual rate of water level change in the Buckman Well Field and surrounding area – Layer 1
- Figure 6: Modeled annual rate of water level change in the Buckman Well Field and surrounding area – Layer 2

## List of Tables

- Table 1: Buckman Monitoring Program Required Monitoring
- Table 2: Annual Buckman Well Field Diversions Between 2003 and 2012
- Table 3: Water Level Trends for Buckman Monitoring Program Wells
- Table 4: 10-year and 40-year Projections of Water Columns for Buckman Monitoring Program Area Wells

## Appendices

- Appendix A: Graphs of Buckman Well Field diversions and water levels in Buckman Monitoring Program area wells (A1 – A32)
- Appendix B: 10- and 40-year water column projections for Buckman Monitoring Program database wells
- Appendix C: USGS database wells used to calculate regional water level rate of change

## 1.0 Introduction

The City of Santa Fe (the City) is required to report production and water level monitoring data for the Buckman Well Field to meet requirements of the Office of the State Engineer (OSE) as stated in the document titled *Buckman Well Field Water-Level Monitoring Program Response to Condition of Approval No. 5, Permit No. RG-20516-S-10 thru RG-20516-S-13, City of Santa Fe*, which can be downloaded from the City's Water Division website at <http://www.santafenm.gov/index.aspx?nid=2309>. This biennial report presents the required data, data analysis and recommendations for continued implementation of the Buckman Monitoring Program (BMP) with emphasis on Buckman Wells 10 – 13, completed in 2003 under OSE water rights permits R-20516-S-10 through RG-20516-S-13. Buckman wells 1 – 9, completed between 1972 and 2003, are permitted under OSE file numbers RG-20516 through R-20516-S-9.

### 1.1 Buckman Monitoring Program Requirements

To fulfill the requirements for posting data for public access, the City has made the Buckman Well field production and water-level data available in two Microsoft Excel spreadsheets titled “BW RG20516 prod and wtr level 1981 to 2012.xls” and “USGS Buckman Area Water Level data.xls” at the following website: <http://www.santafenm.gov/index.aspx?nid=2309>

The spreadsheets contain the following data:

1. Buckman Well Field production data, monthly from 1981 through July 2012 and daily from January 2006 to July 2012
2. Water level data collected by the City municipal water utility and by the US Geological Survey (USGS) for the Buckman area
3. Graphs of ground water level changes over time

The Office of the State Engineer (OSE) defines the BMP area as a 4-mile radius around Buckman Wells (BW) 10 – 13 (Figure 1). The City is also responsible for monitoring under the original RG-20516 permit issued in May 1972. The BMP was expanded from the original permit requirements to include a wider area surrounding BW 10-13 when the permit was accepted. The BMP required well monitoring is summarized in Table 1 and locations are shown in Figure 1.

The City has negotiated a pending agreement with OSE to replace some of the wells as follows:

- RG-81860 will replace well RG-24584, which was never approved for monitoring by the property owner
- RG-25463 is approved as the required active (pumped) domestic well with a transducer
- RG-28112 will be added to the BMP. In addition, OSE has requested that the City obtain permission to measure RG-14162 (USGS GWSI well 354419105594201) in January–February 2013 so that the historic data from this well can be correlated to data from RG-28112.
- RG-24855 (USGS GWSI well 354443106011001) will replace RG-29524 due to accessibility issues.

The City is currently in the procurement process for the required 1200-ft deep monitoring well to be drilled within 4 miles of BW-13. Drilling is expected to start in December 2012 and to be completed and available for data collection in 2013.

## 1.2 Buckman Monitoring Program Biennial Report Requirements

The requirements for the BMP biennial report are as follows:

- Summarize RG-20516 production
- Summarize water-level trends of monitored wells
- 10-year and 40-year projection of water-level declines in monitored wells
- Projection of water-level declines for wells in the Monitoring Program area, or as specified in the RG-20516 permit
- 10-year and 40-year projections of water-level decline for one well near the western terminus of Tano Road Subdivision
- Water columns in wells senior to RG-20516-S-10 through S-13 are to be determined from NMOSE Drillers' Well Logs, actual static water-levels, site-specific studies, or a combination of these data
- Forecast whether remaining water column at the end of both projections will, in any monitored well, in any of the wells specifically identified in the Permit, or in any other senior well within Monitoring Plan Area, exceed 70 percent drawdown of the water column available at the initiation of monitoring program
- Include a map depicting water-level trends in the monitored wells
- Post report and generalized map on an internet site accessible to the public within 30 days of submittal to the State Engineer

## 2.0 Well Field Production

BW10-13 began producing water for the municipal utility between October and December 2003. Under NMOSE RG-20516 et al. permit, the City is permitted to pump 6,000 ac-ft annually from BW10-13.

Between 2003 and 2011, annual diversions from the entire Buckman Well Field have ranged from 1,725 to 5,823 ac-ft/yr (Table 2), and diversions from BW10 to BW13 have ranged from 570 to 3,378 ac-ft/yr. Since 2011 the City has used the Buckman Well Field primarily during the summer months (Figure A1) using only a subset of the wells (Figures A2-A13).

## 3.0 Water Level Data Analysis and Trends

### 3.1 Methods for trend analysis

For the trend analyses, linear regressions of water levels against date were used because they yield an average water level change versus time in the slope value (ft/day). This method is described and recommended in the USGS publication *Statistical Methods in Water Resources Techniques of Water Resources Investigations* (Helsel and Hirsch, 2002). The intercept represents a hypothetical water level on 1/1/1900, which projects the calculated rate of change to 1900. This value is an artifact of the regression and is not used in this report.

Some of the data had to be filtered prior to analysis by separating pumping and non-pumping data, where available, and excluding resultant outlier data points and non-linear trends. Where the data fit a linear trend, all data were used for trend analysis. For data that have significant non-linear trends, polynomial or logarithmic regressions can be fitted, but these result in water level change rates that vary from year to year. Since we are interested in an overall long-term trend, we chose to exclude the generally short periods of non-linearity from the trend analysis. The excluded data were plotted on the same graph as the trend analysis to show which data were not included in the linear regression. Outlier data points were excluded from trend analysis where appropriate. The process of filtering data is explained for each of the graphs in the following section.

Where sufficient data were available, a separate regression analysis was conducted for data collected prior to October 2003 to be able to differentiate the pre-October 2003 water level trends from those after BW10-13 came online. For area wells, data were supplemented from USGS and NMBGMR data bases.

### **3.2 Buckman Production Wells water level analysis**

Water level data were separated based on whether the wells were pumping or not as described in the notes accompanying the measurements. In spite of eliminating pumping water levels BW1-BW8 have highly variable and non-linear water levels that would not result in any reliable estimates of change (Figures A2-A9). Because USGS piezometer data are available for the original well field area, BW1 to BW8 water level trends were not statistically analyzed. The following is a general description of the trends in BW1 to BW8:

- BW1 and BW2 both have similar trends in their non-pumping water levels: Declining from 1982 to 2006/2007, followed by a steep recovery until summer 2009, and slight declines since (Figures A2, A3).
- BW3 and BW4 declined from 1988 until 2003 and have recovered since. Recent data are more variable than for BW1 and BW2 (Figures A4, A5).
- BW5 and BW6 had data with low variability between 1982 and 1988 and showed little to no decline over that time period. Between 1988 to ~2003 water levels declined and have been recovering since at variable rates (Figures A6, A7).
- BW7 and BW8 data begins in 1990, and both wells show a decline until 2001-2003 with a recovery to the 1990 water levels since (Figures A8, A9).

BW9 has much lower pumping rates than the other wells in the original well field and thus acts more like a monitoring well. Data are also less variable than in BW1 to BW8. BW9 has been monitored since 2003. For the statistical analysis, a few data points that were obviously impacted by pumping of BW9 and data points associated with the 2011/2012 summer spikes in Well Field pumping (Figure A10) were excluded. The regression indicates a 21.07 ft/yr water level rise since 2005 (Figure A10, Table 3).

Filtering out pumping water levels from the BW10 to BW13 data resulted in clean data sets for BW10 and BW11. BW12 and BW13 appear to have non-pumping water levels affected by recent diversions;

these were excluded from the regression analyses. The following summarize the water level trends in BW10 to BW13 since 2003:

- BW10 shows very little change (0.01 ft/yr rise) in water levels (Figure A11).
- BW11 shows a decline of 3.94 ft/yr (Figure A12).
- BW12 shows a decline of 8.18 ft/yr (Figure A13).
- BW13 shows a rise of 1.90 ft/yr (Figure A14). Note that even though the current water level is below the one measured during the video log in 2003, the regression analysis is dominated by the large number of data points after the video log, which show an overall rising trend.

### 3.3 Piezometer water level analysis

The SF6 (Buckman Piezometer) deep piezometer shows a steep initial decline in water levels (2003-2004). Including these non-linear data in the regression will result in a poor fit of a linear regression (Figure A15, dotted line). Excluding this non-linear period (2003/2004) from the analysis resulted in a decline of 5.26 ft/yr. The middle piezometer had a smaller initial decline in water levels. Because the magnitude was much smaller and duration shorter, all data were included in the analysis. The middle and shallow piezometers show a decline of 2.30 ft/yr and 1.02 ft/yr, respectively. Buckman Well Field pumping appears to affect water level dips in the middle piezometer (Figure A15). A clear relationship is not evident between the peaks in pumping and the water levels observed for the deep and shallow SF6 piezometers.

The Las Campanas piezometer came online in 2005. The middle piezometer has the only significant change over the recording period with an average annual rise of 1.79 ft. The shallow and deep piezometers show essentially flat water level trends (Figure A16).

The SF2 record goes back to 1986 with a large data gap from 1990 to 1997, and the deep piezometer was only measured during 1997-1999 (Figure A17). The middle piezometer exhibits a highly variable water level decline from 1997 to 2003, which was not statistically analyzed. In addition, both the shallow and especially the middle piezometer show a steep rise in the water level from the summer of 2003 to the summer of 2004. We excluded these data to avoid generating artificially high rates of water level increases. Further, the 2007 and 2012 dips in the water levels appear related to pumping in BW1 (Figure A17), which is closest to SF3 and SF4. We excluded these data as well. Post October 2003 rises in water levels are 16.9 ft/yr for the middle and 15.5 ft/yr for the shallow piezometer. Adding the summer 2003-summer 2004 data into the statistical analysis would increase the rate of water level rises.

SF3 and SF4, which are completed to similar depths, show similar water level patterns (Figures A18, A19). The deep piezometers (SF3A and SF4A), which are shallower than the shallow SF2 piezometer, show the greatest fluctuations in water levels. The initial 1988 data points and the drops in 2007 and 2012 in the deeper completions do not follow the trend of the remaining data and were eliminated from the statistical analyses. As with SF2, the 2007 and 2012 dips in the water levels appear related to pumping in BW1, which is closest to SF3 and SF4. The smallest change can be observed in the shallow completions. We fit separate regressions to the pre- and post-October 2003 data (Figures A18, A19). All completions show a decline in water levels until 2003 and a rise since (Figures A18, A19, Table 3).

SF5 is completed next to the river and only has a single shallow completion of similar depth as SF3 and SF4 shallow piezometers. Similarly, SF5 water levels are nearly flat over the entire period of record (Figure A20).

Data for the piezometers can be obtained from the USGS at this website:

[http://groundwaterwatch.usgs.gov/countymaps/NM\\_049.html](http://groundwaterwatch.usgs.gov/countymaps/NM_049.html)

### 3.4 Area monitoring well water level analysis – domestic and stock wells

Most area water levels are measured manually twice a year, when possible, as part of the Buckman Monitoring Program, which results in many fewer data points than for wells equipped with transducers that are measured at a higher frequency. Similarly, pre-2003 these wells were measured infrequently. Because of the limited data sets and no obvious changes in water level trends before and after the onset of BW10 to BW13 pumping, a single regression line was fit to the entire data set for each well (Figures A21-A25). Note that separate analyses for the pre- and post-2003 periods are possible; however, the results would not be robust. The following are the water level trends for monitoring wells with data prior to 2003:

- The Midway Windmill (RG-438) data exhibits a consistent decline over the entire record period (1962-2012) of 0.87 ft/yr (Figure A21).
- Tony's Windmill (RG-6386) has nearly flat water levels over the 1967-2012 record period (0.11 ft/yr decline, Figure A22).
- The Los Dos domestic well (RG-29524) has only three data points pre-October 2003. The combined data show a decline of 0.11 ft/yr (Figure A23).
- Well RG-25463 has two short periods of measurements in 1975-1977 and 2004-2012. The combined data show a decline of 0.26 ft/yr (Figure A24).
- Well RG-30777 has only one pre-October 2003 data point (1978), which was significantly below more recent water levels. Between 2004 and 2008 water levels were measured manually and show greater fluctuations than the recent transducer data. Using all data since 2004, the water level declined by 0.66 ft/yr (Figure A25), and using the transducer data only, water levels rose 0.29 ft/yr (not shown).

The remaining area wells have only water levels measured since BW10 to BW13 came online and show the following trends:

- The three unequipped domestic wells (RG-28112, RG79509, RG-79512) show parallel trends with 0.26-0.33 ft/yr water level declines since 2009 (Figure A26). The City proposed to use RG-28112 as an alternative to Los Dos (RG-29463), which requires confined space entry. The City and OSE have a pending agreement for the proposed substitution.
- The USFS well (RG-29723), which is located west of the Rio Grande has been declining at 0.47 ft/yr since 2004 (Figure A27).

In addition to the manual measurements presented above, both RG-25463 and RG-30777 wells have hourly transducer data available. The RG-25463 well was equipped in May 2012 and shows up to 7-ft declines from the overall trend presumably due to pumping effects when the well is in use (Figure A28). The RG-30777 well was equipped with a transducer in 2009. Because the well is non-pumping, daily and hourly data show the exact same trend in water levels as evidenced by the daily and hourly regression analyses (Figure A29): Both the slope (water level change) and the intercept of the regressions are identical for the hourly and daily data. Since the hourly data does not yield any additional information regarding water level trends in comparison to the daily data, the City requests that the RG-30777 well transducer be programmed to record water level data daily instead of hourly.

### 3.5 Buckman MW water level analysis

Three additional wells have been monitored by the City since the original Buckman Wells were installed. The Permit well (RG-16681) pre-2003 data set has distinct offsets in the data (6 ft and 10 ft), and we excluded from the statistical analysis those sets that were not in line with the recent measurements and overall dataset. The overall water level trend is nearly flat pre-October 2003 (decline of 0.04 ft/yr) and shows a slight decline after (0.18 ft/yr, Figure A30).

The Skillet well (RG-21318) had a period of water level declines in the 1970's followed by relatively constant water levels in 1982-1988. Both of these periods were excluded from the final statistical analyses because of the poor fit (dotted line in Figure A31). During 1988-2003 water levels declined 6.43 ft/yr and have been recovering since at 0.73 ft/yr.

The Corral well (RG-439) has several periods of non-linear water level changes (Figure A32), rather than trying to fit individual segments, we decided to not statistically analyze the data. In general, water levels declined from 1988 to 1995 and have been rising again since 2003.

### 3.6 Maps – contour rate of change

Two water level contour maps were generated, each using water level data from wells completed in a range of depths, referred to as shallow and deep (Figures 2 and 3). The shallow and deep ranges were chosen based on the depths of wells in the BMP and split at the lowest depth for the non-Buckman monitored wells (wells discussed in section 3.2). The depth ranges are 280 to 841 feet (shallow wells) and 910 – 2440 feet (deep wells). Most wells of concern (domestic wells of other ownership) are of similar or shallower depths than the wells on the shallow well completion contour map (280 ft to 841 ft total depth). Both the shallow and deep well completion contours show two distinct zones of water level changes (Figures 2 and 3): water levels show a profound rising trend in the original Buckman Well Field (BW1 – 9) and declining in the immediate vicinity of the new Buckman wells (BW10 – 13).

The shallow well completion rate of water level change contours show a maximum decline of 1 ft/yr in the immediate vicinity of BW10 to BW13 (Figure 2). The shallow Las Campanas piezometer indicates the southern boundary of water level declines with a 0.01 ft/yr decline. To the east the zero contour is undefined since the eastern-most monitoring wells have declines of 0.1 ft/yr. Dramatic water level rises of up to 16.9 ft/yr (SF2 middle piezometer) are observed in the immediate vicinity of the original Buckman Well Field.

Within the deep well completion contour map, the SF6 middle and deep piezometers do not fit the remaining data (Figure 3): BW1-BW9 generally show rising water levels as does the one deep monitoring well close by (Skillet – RG-21318). Water level trend in BW10 is flat. No significant pumping aside from the Buckman wells, which have rising water levels, occurs in the vicinity of the SF6 piezometer. It is, therefore, unclear why the SF6 middle and deep piezometers would show declining water level trends. Excluding the SF6 piezometer data from the contours shows a cone of depression centered around BW12 and a steep recovery around the original well field (Figure 3). Water level trends in the SF6 middle and deep piezometers will be further analyzed in the next biennial report when there will be more data available to discern trends and possibly determine structural controls on water level trends.

### **3.7 10- and 40-year projected water column for BMP area wells**

Table 4 shows the 10- and 40-year projected water columns for monitored BMP wells and area wells of other ownership. The wells shown in Table 4 are monitored BMP wells and wells of other ownership that were presented in tables 30-A and 30-B of the OSE Hearing No. 03-004. The table also includes one well from the Tano Road area, as required by the BMP. The location of this well, RG-77553, was verified by JSAI in June 2008 (JSAI, 2011).

BW 10-13 Permit Condition 6 requires that the City provide information to establish that any wells impacted under this permit including those wells listed in table 30-A “will not go dry in 40 years.” BW 10-13 Permit Condition 7 requires that the City provide information to establish that wells listed in table 30-B “will not go dry due to Applicant’s pumping authorized under this Permit, or that owners or users of said wells have waived or released any claim of liability...” For this analysis, well water columns were calculated from the well depth and water level in the well as provided in well logs, well completion reports or monitoring data. The water level rate of change was calculated from the BMP-monitored wells as described earlier in this report and from the contours of rate of change shown in Figure 2. The water column height and percent of the water column remaining after 10 and 40 years was then calculated. The BMP (and OSE Finding 31) requires that the biennial report forecast whether the remaining water column at the end of the 10- and 40- year projections will exceed 70% drawdown of the water column available at the initiation of this monitoring program (or a remaining water column of 30%). Several of the wells that are located in or near the northwest portion of the well field have a rising water level trend. These wells are projected to have an increase in water column over time and, in some cases, are calculated to have water columns greater than the well depth. In Table 4, these wells water columns were restricted to the total depth of the well. In reality, it is more likely that the rising water level trend will flatten over time and that the water level in the northwestern well field will equilibrate to a condition between the lowest water level declines and the pre-development water levels. Additional wells identified in the 2007 well survey and projected water column data are presented in Appendix B. A total of 285 wells had total depth and depth to water data available, thus making them appropriate to be evaluated for projected water column after 10 and 40 years.

Of the 285 wells evaluated, all are projected to maintain a water column of greater than 84% of the original water column after 10 years and greater than 37% of their original water column after 40 years. Therefore, there are no wells in the database that are expected to experience more than 70% drawdown of the starting water column after 10 or 40 years.

OSE analysis of moving 6,000 afy in BW10-13 application (1500 afy per well) from the original Buckman wells (BW1 – 9) showed that the move may cause wells of other ownership to go dry in 40 or 100 years. These wells are listed in hearing Table 30-A and 30-B (OSE, 2004). The analysis for water level decline contained in this report (Tables 4 and Appendix B) show that at the current rate of diversion from the Buckman Well field, none of the wells listed in hearing Table 30-A or 30-B will go dry or experience a 70% reduction in well water column in 40 years.

### 3.8 Historic Regional Water Level Change Analysis

As part of the OSE evaluation of the 2003 BW10-13 application, an analysis of water level data from the USGS database was conducted to determine a regional water level change for the area around the BW10 – 13 wells. This analysis was summarized in an internal OSE memo from Andy Core dated May 7, 2003 (Core, 2003). This memo concluded that a range of water level changes from a rise of 0.89 to a decline of 7.41 feet per year and a mean water level decline of 1.18 feet per year were occurring in a data search area defined by a latitude-longitude box described in the memo. GGI contacted Mr. Andy Core at OSE to see if he had files or recalled the methods used to calculate the 1.18 ft/year regional water level decline. Mr. Core did not have any additional information regarding the methods of calculation other than the summary and latitude-longitude box shown in the 2003 memo. Therefore, GGI conducted a new analysis of available USGS water level data using the same latitude-longitude box listed in the 2003 memo. This box was used since it was chosen by the OSE, and the results of the OSE analysis were listed as a finding in the application hearing.

Data were obtained from the USGS Ground Water Site Inventory (GWSI) database for Santa Fe County. The data set contains all of the water level data in the USGS database, but not all have been checked for accuracy and therefore are not available on the on-line NWIS database.

Data were filtered by the following methods:

- Data were culled by deleting all wells that included only a single measurement.
- Remaining data were grouped by well.
- Wells were selected that fall within the latitude/longitude box indicated in the Core (2003) memo (Figure 4).
- Data were filtered by limiting the data to the first and last measurements for the period of record.
- For wells with a period of record spanning pre- and post-2003 measurements, two separate rates were calculated.
- Wherever possible, to prevent seasonal biases, start and end data points were selected that were both during the non-irrigation season (Nov-March) or both during the irrigation season (April-October). If this was not possible due to a limited number of data points, and it appeared that comparing results from irrigation and non-irrigation seasons created an unreasonable rate of water level change, the data were not utilized for calculations.
- Average water level change rates were calculated for both pre- and post-2003 data sets.
- Well identifications for wells used in the calculation are included in Appendix C.

The following average water level change rates resulted:

**Average water level change rate, pre-2003 = 1.74 ft/yr decline, n=30 wells**  
**Average water level change rate, post-2002 = 0.72 ft/yr decline, n=17 wells**

The results of the data analysis yield a different pre-2003 result than was reported by the OSE (Core, 2003). The difference may be due to the wells chosen from within the latitude-longitude box, the method of calculating water level change, or the location of the latitude-longitude box described in the 2003 memo. A direct reconstruction of the OSE calculation cannot be done since there are no records of the wells used for the OSE analysis. Therefore, the methods and results from the analysis above are a reasonable substitute for the 2003 calculation.

#### **4.0 Comparison of Model Results to Observed Data**

The OSE superposition ground water flow model of the Santa Fe area was run with Buckman Well Field pumping from 1988 to July 2012 (Core, 1996; latest version obtained from Laura Petronis at the OSE on September 14, 2012). The model-predicted drawdown for September 2003 and July 2012 was used to calculate a water level rate of decline from the model for this time period. The model-predicted water level rates of change for model layers 1 and 2 were compared to the observed water level rates of change (Figures 5 and 6). In general, the model results for Layer 1 predict a slightly lower rate of decline centered around BW12 than was observed in the shallow (280 to 841 ft deep) wells. The model also predicts a negligible water level decline in wells located east of BW10 to BW13 as compared to an observed rate of decline between 0.11 and 0.26 ft/yr. This discrepancy is likely due to the fact that the model was run only with pumping in the Buckman well field and does not take into account pumping in the area east of the BMP area and closer to the City, which contain active domestic wells and the City well field. The model predicts a slower rise in water levels in the BW1 to BW9 area than was observed. The model predicted water level rate of change for model layer 2 shows a similar pattern to the contours, but a difference in magnitude compared to the deep (910 – 2440 ft deep) observed water level rates of change. The model predicts a slower rate of decline centered around BW12 and a slower rate of water level rise centered around BW3. The reason for the difference between simulated and observed data could be related to structural controls on water flow or local variation in hydraulic conductivity that are not accounted for in the model, or may be an artifact of the model grid size.

#### **5.0 Discussion**

Overall water levels in and near the Buckman Well Field had been declining prior to BW10 to BW13 coming online (Table 3). This trend has been reversed for wells that are close to the original Buckman Well Field since 2003 (Table 3, Figures 2, 3). Monitoring wells south and east of the original Buckman Well Field show no obvious or statistically defensible change in their water level trends when comparing pre- and post-2003 data, which was the reason to combine all available data for these wells in the trend analysis (Figures A21-A24). Further, high resolution data in the Bernstein well (RG-30777) suggests a rise in water levels during the last three years adjacent to BW13 (Figure A29). These data indicate that pumping wells BW10 to BW13:

1. have ameliorated Buckman pumping effects in the northwestern portion of the area of interest,
2. have NOT significantly affected water levels in the southeastern portion of the area of interest.

In addition, the analysis of USGS database wells within the area selected by Core (2003) resulted in a water level decline of 1.74 ft/yr prior to BW10 to BW13 coming online and a 0.72 ft/yr decline thereafter. This change in water level rate of change indicates that BW10 to BW13 have not negatively affected water levels in the area.

A comparison of the model results for the 2003 BW10-13 application (OSE, 2004), in which the model was run with BW10-13 pumping a total of 6,000 afy, to the observed water level rates of change calculated in this report shows that the observed rates of change are less than the model-predicted 40-year drawdown for wells of other ownership in the area surrounding the Buckman Well Field.

## 6.0 Conclusions

- The total well production from BW10 – BW13 has an average annual diversion of 1,217 acre-feet, which is less than the total application amount of 6,000 afy. Therefore, the pumping effects on water levels have also been less than predicted in the permit application ground water model analysis.
- The statistical trend analysis of linear regression used in this report is a valid tool for assessing water level decline rates (Helsel and Hirsch, 2002).
- Water level monitoring and data trend analyses of the Buckman wells show a general trend of decline in BW1 – BW8 prior to 2003 and a water level rise after 2003. The USGS piezometers located near these wells show a similar trend.
- Trend analysis of BW10 – BW13 show a general decline of water level in BW 11 and BW12, but a rise in BW13, which appears to be related to the amount of pumping in each well.
- The analysis of water columns in wells of other ownership in the BMP area (Table 4 and Appendix B) show that there are no wells that are predicted to experience a drawdown of more than 70% of the starting water column after 10 or 40 years, including the wells listed in hearing Tables 30-A and 30-B.
- Permit condition 6 is satisfied by showing that the 40-year projected water columns for wells identified in Table 30-A “will not go dry due to Applicant’s pumping authorized under this permit.”
- Permit condition 7 is satisfied by showing that the 40-year projected water columns for wells identified in Table 30-B “will not go dry due to Applicant’s pumping authorized under this permit.”
- Ground water model analysis of predicted drawdown due to Buckman Well Field pumping show a similar pattern to the observed drawdown, but in general shows less magnitude in the rate of change from 2003 to 2012 water levels.
- Analysis of USGS database water level data in the area defined by Core (2003) indicates a regional pre-2003 rate of decline of 1.74 ft/yr and a post-2003 rate of decline of 0.72 ft/yr.
- The maximum water level decline (derived from contours of observed data) for area wells of other ownership (Table 4 and Appendix B) is less than the pre-2003 regional decline of 1.74 ft/yr calculated from USGS data.

- The analyses presented in this report indicate that pumping BW-10 – BW13 is not adversely affecting wells in the area surrounding the Buckman well field.
- The City has satisfied all permit conditions, and therefore, should be allowed to continue pumping and increase the diversion amount in BW10-13 to the full permitted 6000 afy.
- This 2012 biennial report satisfies the requirements set forth in the Buckman Monitoring Program. The next biennial report is due in April 2014.

## 7.0 Recommendations

- Analysis of the transducer data from well RG-30777 shows that the daily and hourly data show the same trend in water levels. Since the hourly data does not yield any additional information regarding water level trends in comparison to the daily data, the City requests that the RG-30777 well transducer be programmed to record water level data daily instead of hourly. This reduction in measurement frequency will prolong the life of the instrumentation and facilitate data management efficiency.
- The City requests that the pending agreement with OSE to replace some of the wells as listed below should be accepted by the OSE:
  - RG-81860 will replace well RG-24584, which was never approved for monitoring by the property owner
  - RG-25463 is approved as the required active (pumped) domestic well with a transducer
  - RG-28112 will be added to the BMP. In addition, the City will contact the well owner and request permission to measure RG-14162 (USGS GWSI well 354419105594201) in January-February 2013 so that the historic data from this well can be correlated to data from RG-28112.
  - RG-24855 (USGS GWSI well 354443106011001) will replace RG-29524 due to accessibility issues.
- The City is currently in the procurement process for the required 1200-ft deep monitoring well to be drilled within 4 miles of BW-13. Drilling is expected to start in December 2012 and be completed and available for data collection in 2013.
- The restrictions on diversion from BW10 – BW13 should be removed and allow the full permitted amount of 1500 afy per well for a total diversion from these wells of 6,000 afy.

## 8.0 References

Barroll, Peggy, and Eric Keyes, 2005, November 29, 2005 Technical Memorandum regarding Santa Fe Model: Resolution of Discrepancy between Superposition and Calibrated Versions of the Model, Office of the State Engineer, 4 pp.

Core, 1996, Espanola Basin, Santa Fe Region, modified McAda-Wasiolek model user manual: New Mexico State Engineer Office Technical Division Hydrology Report 96-2.

Core, 2003, May 7, 2003 Memorandum RG-20516-S-10, RG-20516-S-11, RG-20516-S-12, RG-20516-S-13, City of Santa Fe, supplemental wells to the Buckman well field, Office of the State Engineer, 7 pp.

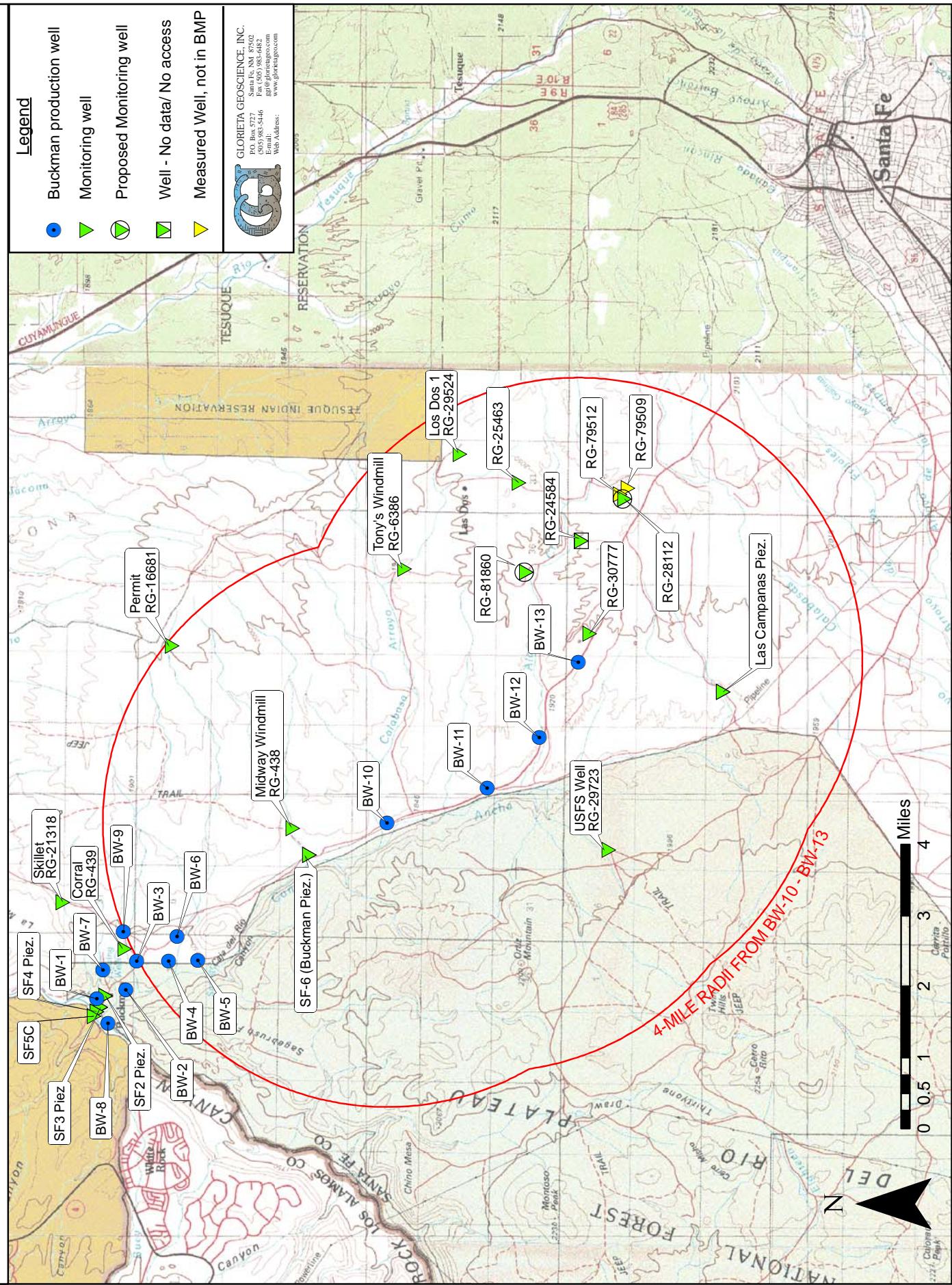
Helsel, D.R. and R. M. Hirsch, 2002, Statistical Methods in Water Resources Techniques of Water Resources Investigations, Book 4, chapter A3, U.S. Geological Survey, 522 pp.

JSAI (John Shomaker and Associates, Inc.), 2003, Buckman Wells 10-13 (RG-20516-S-10 Through S-13) Biennial Report, March 2011, prepared for City of Santa Fe, 17 pp.

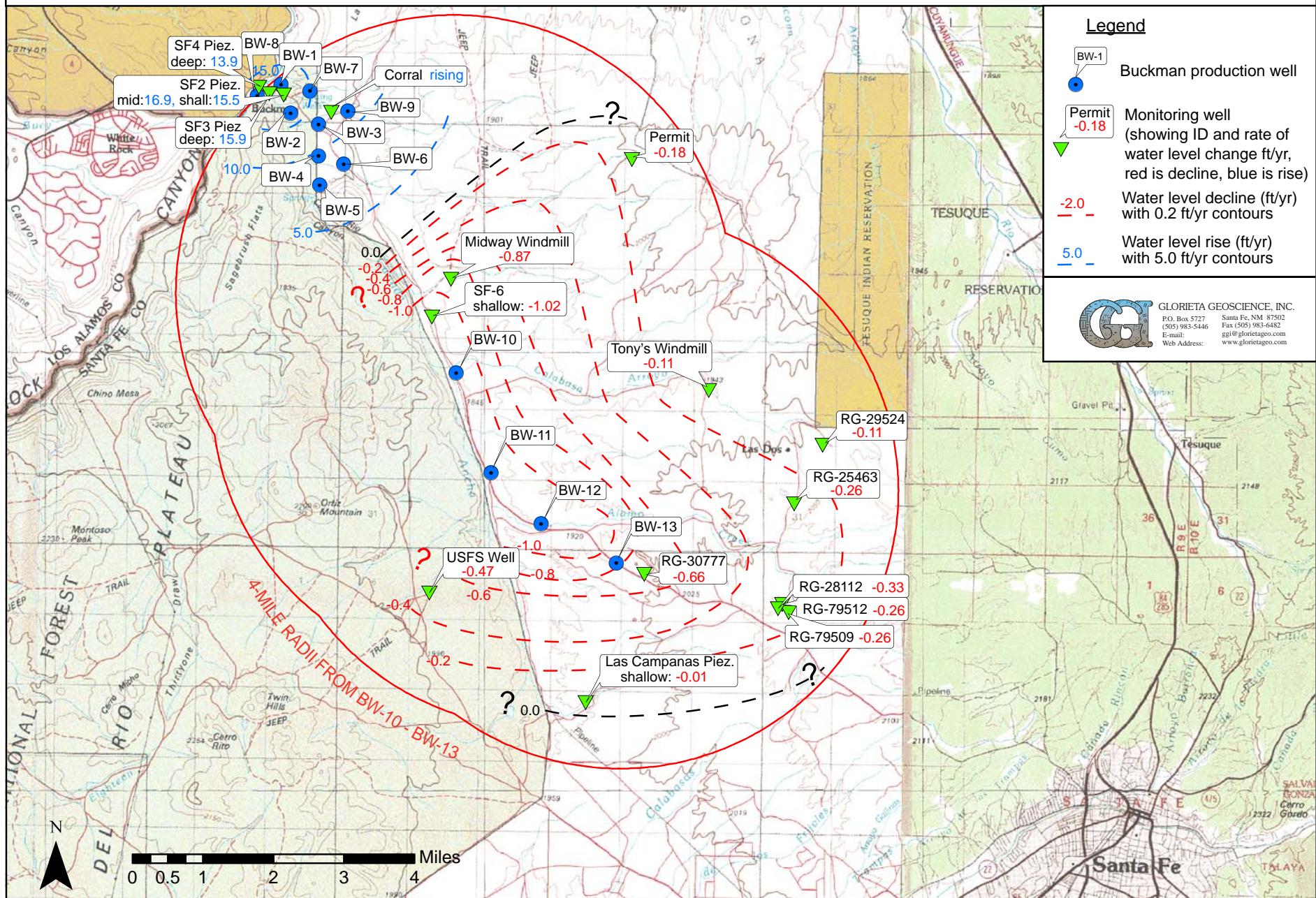
Office of the State Engineer (OSE), 2004, Hearing No. 03-004 Report and Recommendations of the Hearing Examiner, 13 pp.

## Tables and Figures

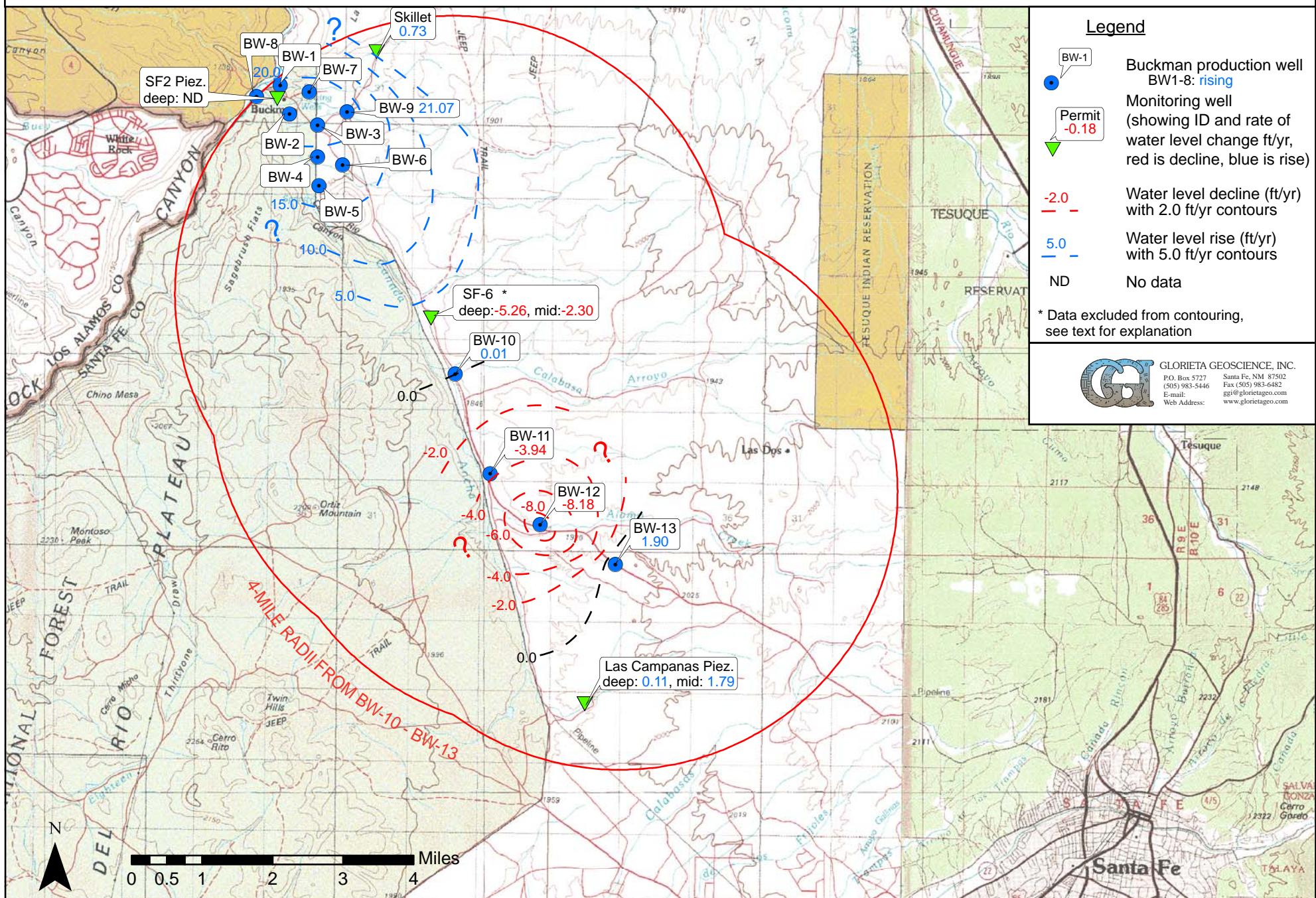
**Figure 1: Pumping and monitoring wells in the Buckman Well Field and surrounding area**



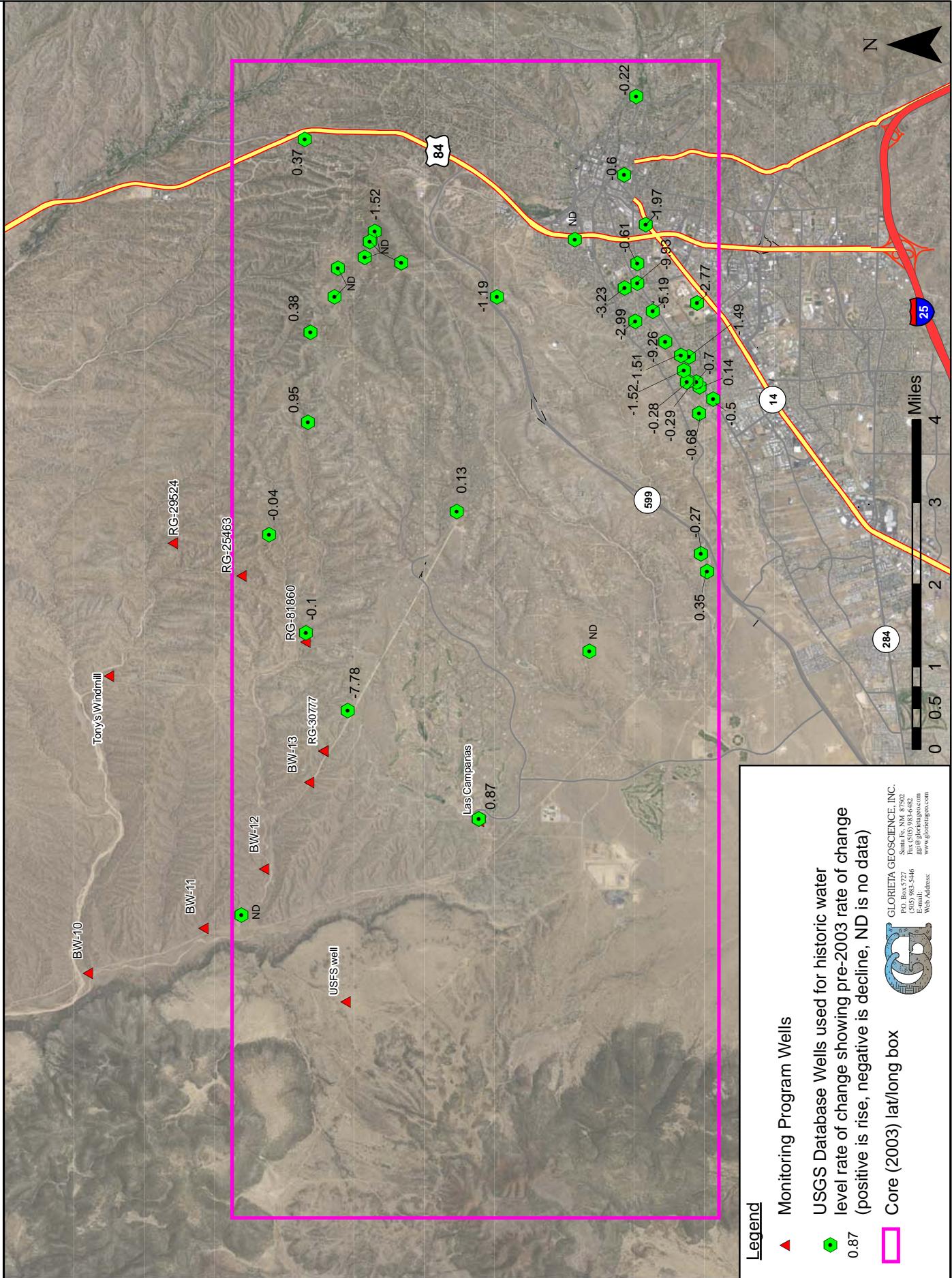
**Figure 2: Annual rate of water level change in the Buckman Well Field and surrounding area since October 2003**  
 Wells with completion depths of 280-841 ft bgs



**Figure 3: Annual Rate of water level change in the Buckman Well Field and surrounding area since October 2003**  
 Wells with completion depths of 910-2440 ft bgs



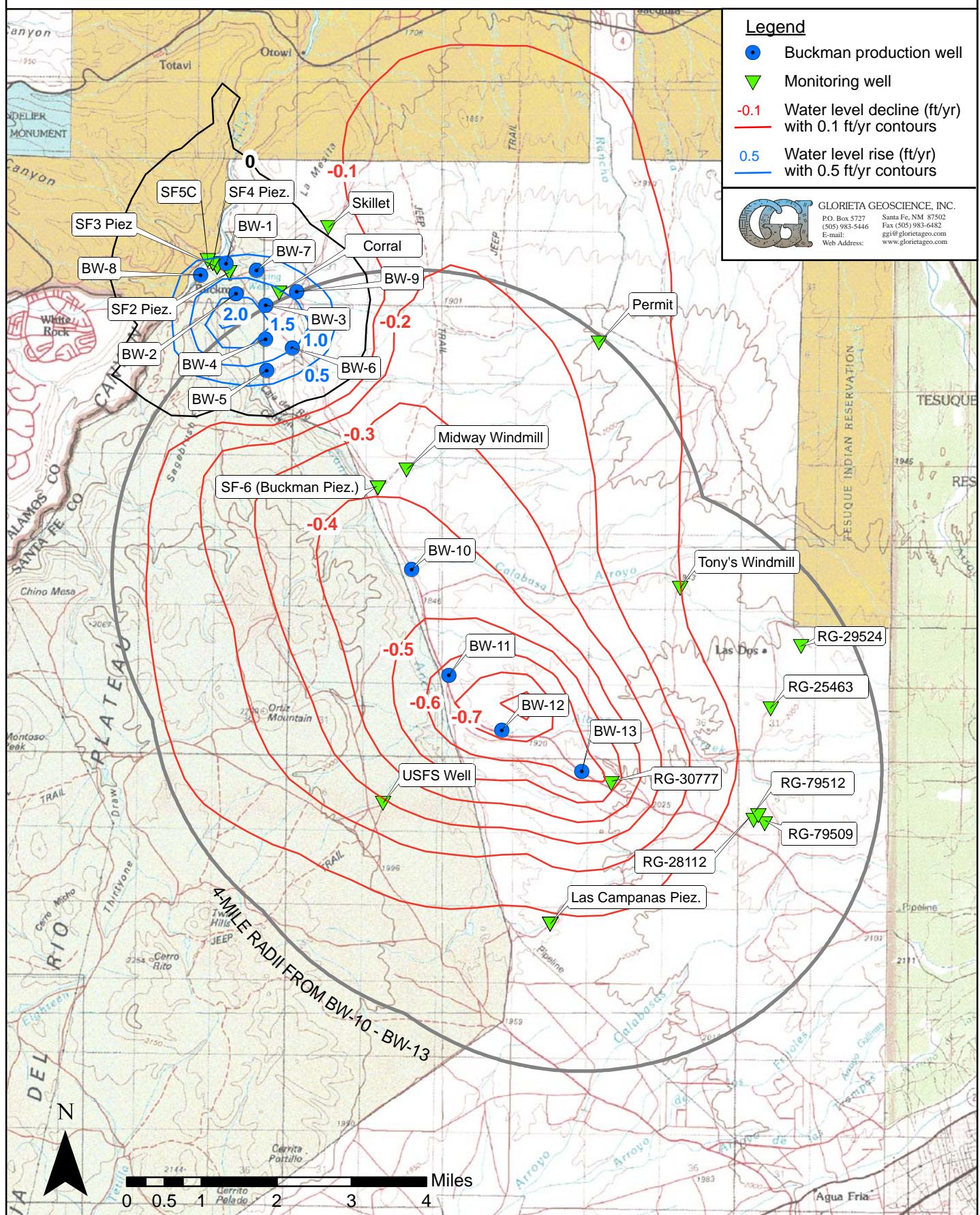
**Figure 4: USGS database wells located within the Lat/Long box designated by Core (2003)**



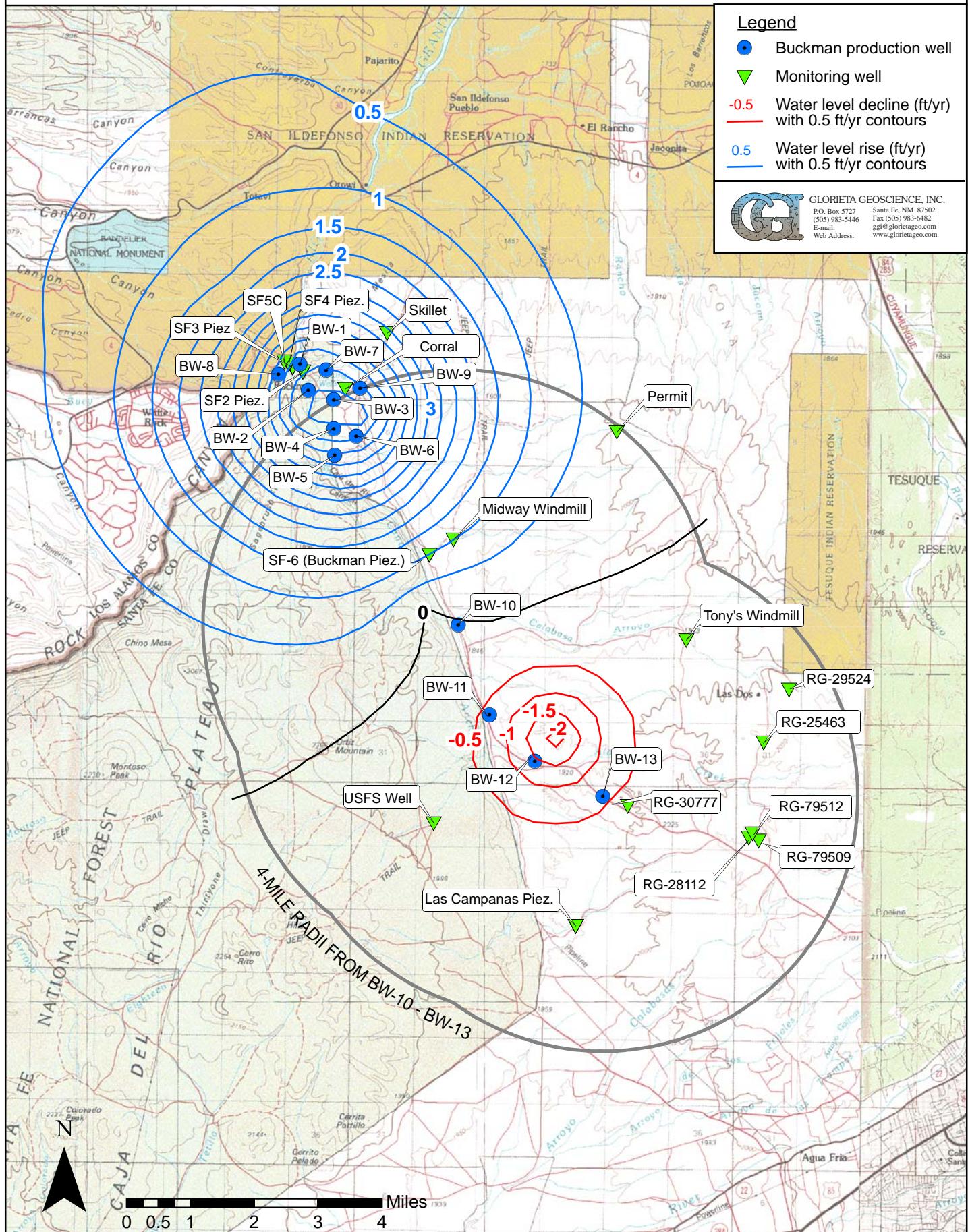
GLORIETTA GEOSCIENCE, INC.  
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Socorro, NM 87824      Fax: (505) 983-6482  
(505) 983-5446      E-mail: gg@gloriettageo.com  
Web Address: www.gloriettageo.com



**Figure 5: Modeled annual rate of water level change in the Buckman Well Field and surrounding area - Layer 1**



**Figure 6: Modeled annual rate of water level change in the Buckman Well Field and surrounding area - Layer 2**



**Table 1: Buckman Monitoring Program Required Well Monitoring**

NMOSE ID	Other ID (NMBGMR/USGS)	Name	Monitoring frequency	Comments and status
	EB269/ 355000106092802	SF-2B	hourly	part of previous MP, USGS
	EB270/ 355000106092803	SF-2C	hourly	part of previous MP, USGS
	EB265/ 355002106093701	SF-3A	monthly	part of previous MP, USGS
	EB266/ 355002106093702	SF-3B	monthly	part of previous MP, USGS
	EB267/ 355002106093703	SF-3C	monthly	part of previous MP, USGS
	EB262/ 355003106094301	SF-4A	monthly	part of previous MP, USGS
	EB263/ 355003106094302	SF-4B	monthly	part of previous MP, USGS
	EB264/ 355003106094303	SF-4C	monthly	part of previous MP, USGS
	EB261/ 355006106094803	SF-5C	monthly	part of previous MP, USGS
	EB298/ 354731106072001	SF-6A deep piez. (Buckman deep)	hourly	BW10-13 MP, download monthly, USGS
	EB299/ 354731106072002	SF-6B middle piez. (Buckman Mid.)	hourly	BW10-13 MP, download monthly, USGS
	EB300/ 354731106072003	SF-6C shallow piez. (Buckman Shallow)	hourly	BW10-13 MP, download monthly, USGS
	EB608/ 354228106044901	Las Campanas deep piez.	hourly	BW10-13 MP, download monthly, USGS
	EB609/ 354228106044902	Las Campanas middle piez.	hourly	BW10-13 MP, download monthly, USGS
	EB610/ 354228106044903	Las Campanas shallow piez.	hourly	BW10-13 MP, download monthly, USGS
RG-20516-S-5	EB478	Buckman 1	monthly	part of previous MP
RG-20516-S-6	EB479	Buckman 2	monthly	part of previous MP
RG-20516-S	EB480	Buckman 3	monthly	part of previous MP
RG-20516-S-2	EB481	Buckman 4	monthly	part of previous MP
RG-20516-S-3	EB482	Buckman 5	monthly	part of previous MP
RG-20516-S-4	EB483	Buckman 6	monthly	part of previous MP
RG-20516-S-7	EB484	Buckman 7	monthly	part of previous MP
RG-20516-S-8	EB485	Buckman 8	monthly	part of previous MP
RG-20516-S-9	EB486	Buckman 9	monthly	part of previous MP
RG-20516-S-10	EB487	Buckman 10	monthly	BW10-13 MP, measure daily production
RG-20516-S-11	EB488	Buckman 11	monthly	BW10-13 MP, measure daily production

<b>NMOSE ID</b>	<b>Other ID (NMBGMR/USGS)</b>	<b>Name</b>	<b>Monitoring frequency</b>	<b>Comments and status</b>
RG-20516-S-12	EB489	Buckman 12	monthly	BW10-13 MP, measure daily production
RG-20516-S-13	EB490	Buckman 13	monthly	BW10-13 MP, measure daily production
RG-21318	EB288	Skillet	monthly	part of previous MP
RG-439	EB157	Weil Corral, Artesian	monthly	part of previous MP
RG-16681	EB163	Permit	monthly	part of previous MP
RG-6386	EB160	Tony's Windmill	semi-annual	BW10-13 MP
RG-29524	EB085	Las Dos 1	semi-annual <sup>b</sup>	confined space
RG-25463	EB287	Pinon-Bogle	semi-annual, proposed hourly <sup>a</sup>	BW10-13 MP a
RG-24584	EB121	Santa Fe Ranch/ Daniels	semi-annual <sup>b</sup>	no access
RG-438	EB251	Midway Windmill	semi-annual	BW10-13 MP
RG-29723	EB645	USFS Well	semi-annual	BW10-13 MP
RG-30777	EB064	Bernstein	hourly	BW10-13 MP
RG-28112		Schmidt 1	proposed semi- annual <sup>b</sup>	pending alternative to RG- 29524 Las Dos 1 <sup>b</sup>
RG-81860		Santa Fe Ranch	proposed semi- annual <sup>b</sup>	pending alternative to RG- 24584
-	-	new 1200-ft monitoring well	hourly	expected completion December 2012

NMOSE - New Mexico Office of the State Engineer

NMBGMR - New Mexico Bureau of Geology and Mineral Resources

USGS - U.S. Geological Survey

MP - monitoring program

BW10-13 MP - Buckman Wells 10-13 monitoring program

piez. - piezometer

<sup>a</sup> City installed transducer for hourly measurement of water levels at active domestic well, pending OSE approval.

<sup>b</sup> Access has not been granted at RG-24584, and City is negotiating OSE agreement to measure water levels at RG-81860 on semiannual basis as an alternative to RG-24584. Measuring RG-29524 requires confined space entry, and RG-28112 is proposed as alternative to RG-29524. The City is measuring water levels at RG-28112 and has pending agreement with OSE.

NMOSE - New Mexico Office of the State Engineer

NMBGMR - New Mexico Bureau of Geology and Mineral Resources

USGS - U.S. Geological Survey

MP - monitoring program

BW10-13 MP - Buckman Wells 10-13 monitoring program

**Table 2: Annual Buckman Well field diversions between 2003 and 2012**

YEAR	BW1, ac-ft	BW2, ac-ft	BW3, ac-ft	BW4, ac-ft	BW5, ac-ft	BW6, ac-ft	BW7, ac-ft	BW8, ac-ft	BW9, ac-ft	BW10, ac-ft	BW11, ac-ft	BW12, ac-ft	BW13, ac-ft	BW1-13 total, ac-ft	BW10-13 subtotal, ac-ft	BW10-13, percent of total	Comments
2003	508	540	338	386	234	<b>1,188</b>	987	780	292	-	251	259	60	5,823	570	10%	BW10-13 on-line between Oct and Dec
2004	27	6	73	355	4	958	278	653	6	454	711	948	<b>1,265</b>	5,738	3,378	59%	
2005	5	6	105	510	1	<b>367</b>	<b>1,223</b>	797	2	23	368	216	160	3,783	767	20%	
2006	20	150	247	612	8	<b>1,077</b>	238	814	54	657	825	88	407	5,197	1,977	38%	
2007	398	9	183	565	-	409	704	704	25	223	137	31	405	3,793	796	21%	
2008	75	-	115	782	60	38	851	<b>866</b>	-	263	556	42	84	3,732	945	25%	
2009	30	-	143	704	157	<b>952</b>	531	368	-	233	331	345	8	3,802	917	24%	
2010	82	-	437	474	129	<b>1,023</b>	249	8	-	97	328	182	44	3,053	651	21%	
2011	78	-	101	220	1	433	-	244	-	194	289	165	0	1,725	648	38%	
Jan-Jul 2012	156	-	31	72	21	136	-	52	-	20	-	77	-	565	98	17%	
2003-2012 total	1,379	711	1,773	4,679	615	<b>6,580</b>	5,061	5,286	379	2,164	3,796	2,354	2,433	37,210	10,747	29%	2012 Diversions through July
AVERAGE ANNUAL DIVERSION	156	81	201	530	70	<b>745</b>	573	599	43	245	430	267	276	4,214	1,217		
AVERAGE AS PERCENT OF PERMITTED														42%	20%		

**Table 3: Water level trends for Buckman Monitoring Program Wells**

NAME	NMOSE ID or Other Name	NMBGMR/USGS ID	Well Depth (ft)	Date Range pre-10/2003	Pre- 10/03 WL rate of change (ft/yr)	Date Range post-10/2003	Post-10/03 WL rate of change (ft/yr)	NOTES
Buckman 1	RG-20516-S-5	EB478	1093	1982 - 2003	declining	2003 - 2012	rising	Due to pumping effects by the well and neighboring wells, a robust analysis is not possible
Buckman 2	RG-20516-S-6	EB479	1473	1982 - 2003	declining	2003 - 2012	rising	
Buckman 3	RG-20516-S	EB480	1490	1982 - 2003	declining	2003 - 2012	rising	
Buckman 4	RG-20516-S-2	EB481	1182	1987 - 2003	declining	2003 - 2012	rising	
Buckman 5	RG-20516-S-3	EB482	1154	1982 - 2003	declining	2003 - 2012	rising	
Buckman 6	RG-20516-S-4	EB483	1410	1982 - 2003	declining	2003 - 2012	rising	
Buckman 7	RG-20516-S-7	EB484	1409	1991 - 2003	declining	2003 - 2012	rising	
Buckman 8	RG-20516-S-8	EB485	910	1991 - 2003	declining	2003 - 2012	rising	
Buckman 9	RG-20516-S-9	EB486	1320		ND	2005 - 2012	21.10	
Buckman 10	RG-20516-S-10	EB487	1980		ND	2003 - 2012	0.01	
Buckman 11	RG-20516-S-11	EB488	1900		ND	2003 - 2012	-3.94	
Buckman 12	RG-20516-S-12	EB489	1900		ND	2003 - 2012	-8.18	
Buckman 13	RG-20516-S-13	EB490	1980		ND	2003 - 2012	1.90	
BUCK DEEP	SF6 Deep	EB298/354731106072001	2440		ND	2005 - 2012	-5.26	
BUCK MID	SF6 Middle	EB299/354731106072002	1340		ND	2004 - 2012	-2.30	
BUCK SHLLW	SF6 Shallow	EB300/354731106072003	480		ND	2004 - 2012	-1.02	
LC DEEP	LC Deep	EB608/354228106044901	1990		ND	2005 - 2012	0.11	
LC MID	LC Middle	EB609/354228106044902	1320		ND	2005 - 2012	1.79	
LC SHLLW	LC Shallow	EB610/354228106044903	450		ND	2005 - 2012	-0.01	
SF2A	SF2 Deep	EB268/355000106092801	1863	1997 - 1999	-1.46		ND	inaccessible after 1999
SF2B	SF2 Middle	EB269/355000106092802	824		variable decline	2004 - 2012	16.9	
SF2C	SF2 Shallow	EB270/355000106092803	380	1986 - 1999	-5.37	2004 - 2012	15.5	
SF3A	SF3 Deep	EB265/355002106093701	294	1997 - 2003	-3.07	2003 - 2012	15.9	
SF3B	SF3 Middle	EB266/355002106093702	169	1988 - 2003	-0.58	2003 - 2012	0.07	
SF3C	SF3 Shallow	EB267/355002106093703	60	1988 - 2003	-0.22	2003 - 2012	1.46	
SF4A	SF4 Deep	EB262/355003106094301	280	1997 - 2003	-2.67	2003 - 2012	13.9	
SF4B	SF4 Middle	EB263/355003106094302	130	1988 - 2003	-0.33	2003 - 2012	0.40	
SF4C	SF4 Shallow	EB264/355003106094303	60	1988 - 2003	-0.18	2003 - 2012	0.07	
SF5C	SF5 Shallow	EB261/355006106094803	69	1988 - 2003	-0.14	2003 - 2012	0.03	
Midway Windmill	RG-438	EB251	310	1962 - 2012	-0.87	1962 - 2012	-0.87	
Tony's Windmill	RG-6386	EB160	350	1967 - 2012	-0.11	1967 - 2012	-0.11	
-	RG-29524	EB085	773	1977 - 2012	-0.11	1977 - 2012	-0.11	
-	RG-25463	EB287	841	1975 - 2012	-0.26	1975 - 2012	-0.26	
-	RG-30777	EB064	644	1978	ND	2004 - 2012*	-0.66	*Transducer data only: 0.29 (2009-2012)
-	RG-28112	-	701		ND	2009 - 2012	-0.33	
-	RG-79509	-	800		ND	2009 - 2012	-0.26	
-	RG-79512	-	800		ND	2009 - 2012	-0.26	
USFS Well	RG-29723	EB645	681		ND	2004 - 2012	-0.47	
Permit	RG-16681	EB163	745	1982 - 1998	-0.04	2003 - 2012	-0.18	
Skillet	RG-21318	EB288	1700	1988 - 2003	-6.43	2003 - 2012	0.73	
Artesian, Corral	RG-439	EB157	325	1970-2003	variable decline	2003 - 2012	variable rise	

**Table 4: 10-year and 40-year Projections of Water Columns for Buckman Monitoring Program Area Wells**

NMOSE ID	other ID (NMBGMR/ USGS)	name	total depth, ft	starting water level date *	starting water level, ft bgl	water-level rate-of-change (+ rise / - decline), ft/yr	starting water column, ft	water column after 10 years, ft	percent water column remaining after 10 yrs	water column after 40 yrs, ft	percent water column remaining after 40 yrs	comments
	EB269/355000106092802	SF-2B middle piez.	824	3/31/2005	172.7	16.9	651.3	820	125.9%	824	126.5%	a
	EB270/355000106092803	SF-2C shallow piez.	346	11/18/2003	233.89	15.5	112.11	267	238.3%	346	308.6%	a
	EB265/355002106093701	SF-3A deep piez.	294	11/18/2003	185.56	15.9	108.44	267	246.6%	294	271.1%	a
	EB266/355002106093702	SF-3B middle piez.	169	11/18/2003	18.68	0.07	150.32	151	100.5%	153	101.9%	
	EB267/355002106093703	SF-3C shallow piez.	60	11/18/2003	17.75	1.46	42.25	57	134.6%	60	142.0%	a
	EB262/355003106094301	SF-4A deep piez.	280	11/18/2003	155.37	13.9	124.63	264	211.5%	280	224.7%	a
	EB263/355003106094302	SF-4B middle piez.	130	11/18/2003	6.48	0.40	123.52	128	103.2%	130	105.2%	a
	EB264/355003106094303	SF-4C shallow piez.	60	11/18/2003	13.06	0.07	46.94	48	101.5%	50	106.0%	
	EB261/355006106094803	SF-5C shallow piez.	69	11/18/2003	6.22	0.03	62.78	63	100.5%	64	101.9%	
	EB298/354731106072001	SF-6A (Buckman) deep piez.	2,440	1/20/2005	124.66	-5.26	2315.34	2263	97.7%	2,105	90.9%	
	EB299/354731106072002	SF-6B (Buckman) middle piez.	1,340	2/9/2004	185.65	-2.30	1154.35	1131	98.0%	1,062	92.0%	
	EB300/354731106072003	SF-6C (Buckman) shallow piez.	480	10/24/2003	186.56	-1.02	293.44	283	96.5%	253	86.1%	
	EB608/354228106044901	Las Campanas deep piez.	1,990	7/6/2005	216.53	0.11	1773.47	1775	100.1%	1,778	100.2%	
	EB609/354228106044902	Las Campanas middle piez.	1,320	7/6/2005	262.92	1.79	1057.08	1075	101.7%	1,129	106.8%	
	EB610/354228106044903	Las Campanas shallow piez.	450	7/6/2005	278.7	-0.01	171.3	171	99.9%	171	99.8%	
RG-20516-S-5	EB478	Buckman 1	1,093	10/31/2003	366.45	15	726.55	877	120.6%	1,093	150.4%	a, contoured rate
RG-20516-S-6	EB479	Buckman 2	1,473	10/31/2003	400.49	15	1072.51	1223	114.0%	1,473	137.3%	a, contoured rate
RG-20516-S	EB480	Buckman 3	1,490	12/31/2003	609.91	12	880.09	1000	113.6%	1,360	154.5%	contoured rate
RG-20516-S-2	EB481	Buckman 4	1,182	10/31/2003	585.99	10	596.01	696	116.8%	996	167.1%	contoured rate
RG-20516-S-3	EB482	Buckman 5	1,154	10/31/2003	454.32	7	699.68	770	110.0%	980	140.0%	contoured rate
RG-20516-S-4	EB483	Buckman 6	1,410	1/31/2004	611.4	7	798.6	869	108.8%	1,079	135.1%	contoured rate
RG-20516-S-7	EB484	Buckman 7	1,409	12/31/2003	719.15	15	689.85	840	121.7%	1,290	187.0%	contoured rate
RG-20516-S-8	EB485	Buckman 8	910	12/31/2003	354.35	15	555.65	706	127.0%	910	163.8%	a, contoured rate
RG-20516-S-9	EB486	Buckman 9	1,320	1/31/2004	528	21.07	792	1003	126.6%	1,320	166.7%	a
RG-20516-S-10	EB487	Buckman 10	1,980	2/28/2004	358.35	0.01	1621.65	1622	100.0%	1,622	100.0%	
RG-20516-S-11	EB488	Buckman 11	1,900	1/31/2004	380	-3.94	1520	1481	97.4%	1,362	89.6%	
RG-20516-S-12	EB489	Buckman 12	1,900	5/31/2005	369.77	-8.18	1530.23	1448	94.7%	1,203	78.6%	
RG-20516-S-13	EB490	Buckman 13	1,980	3/31/2005	337.15	1.90	1642.85	1662	101.2%	1,719	104.6%	
RG-21318	EB288	Skillet	1,706	1/31/2005	205.7	0.73	1500.3	1508	100.5%	1,530	101.9%	contoured rate
RG-439	EB157	Corral, Artesian	325	10/31/2003	294.75	12	30.25	150	496.7%	325	1074.4%	a, contoured rate

NMOSE ID	other ID (NMBGMR/ USGS)	name	total depth, ft	starting water level date *	starting water level, ft bgl	water-level rate-of-change (+ rise / - decline), ft/yr	starting water column, ft	water column after 10 years, ft	percent water column remaining after 10 yrs	water column after 40 yrs, ft	percent water column remaining after 40 yrs	comments
RG-16681	EB163	Permit	745	10/31/2003	695.22	-0.18	49.78	48	96.4%	43	85.5%	
RG-6386	EB160	Tony's Windmill	350	6/6/2005	291.89	-0.11	58.11	57	98.1%	54	92.4%	
RG-29524	EB085	-	773	5/11/2005	396.66	-0.11	376.34	375	99.7%	372	98.8%	contoured rate
RG-25463	EB287	-	841	5/26/2004	468.25	-0.26	372.75	370	99.3%	362	97.2%	
RG-30777	EB064	-	644	3/13/2004	540.02	-0.66	103.98	97	93.7%	78	74.6%	(0.29 ft/yr with transducer data only)
RG-28112	-	-	701	1/21/2009	548.31	-0.33	152.69	149	97.8%	139	91.4%	
RG-438	EB251	Midway Windmill	310	4/7/2005	254.96	-0.87	55.04	46	84.2%	20	36.8%	table 30-A, monitored
RG-29723	EB645	USFS Well	700	3/13/2004	664.1	-0.47	35.9	31	86.9%	17	47.6%	table 30-A, monitored
RG-23806	-	-	216	well record	163	-0.10	53	52	98.1%	49	92.5%	table 30-A, contoured rate
RG-55206	-	-	655	well record	580	-1.10	75	64	85.3%	31	41.3%	table 30-A, contoured rate
RG-437	EB158	Dead Dog Windmill	700	3/17/2006	407.68	-1.00	292.32	282	96.6%	252	86.3%	table 30-B, contoured rate
RG-6128	-	-	700	well record	525	-0.90	175	166	94.9%	139	79.4%	table 30-B, contoured rate
RG-7248	EB161	Boondock	900	well record	434	4.00	466	506	108.6%	626	134.3%	contoured rate
RG-24584	EB121	-	602	7/23/2003	426.45	-0.50	175.55	171	97.2%	156	88.6%	contoured rate
RG-37078	-	-	755	well record	580	-0.40	175	171	97.7%	159	90.9%	table 30-B, contoured rate
RG-37113	-	-	700	well record	527	-0.50	173	168	97.1%	153	88.4%	table 30-B, contoured rate
RG-48491	-	-	730	well record	530	-0.70	200	193	96.5%	172	86.0%	table 30-B, contoured rate
RG-54066	-	-	760	well record	540	-0.60	220	214	97.3%	196	89.1%	table 30-B, contoured rate
RG-54262	-	-	755	well record	535	-0.60	220	214	97.3%	196	89.1%	table 30-B, contoured rate
RG-54395	-	-	740	well record	580	-0.40	160	156	97.5%	144	90.0%	table 30-B, contoured rate
RG-55734	-	-	740	well record	500	-0.70	240	233	97.1%	212	88.3%	table 30-B, contoured rate
RG-56282	-	-	700	well record	520	-0.60	180	174	96.7%	156	86.7%	table 30-B, contoured rate
RG-59973	-	-	750	well record	540	-0.60	210	204	97.1%	186	88.6%	table 30-B, contoured rate
RG-60104	-	-	760	well record	580	-0.60	180	174	96.7%	156	86.7%	table 30-B, contoured rate
RG-60404	-	-	760	well record	580	-0.50	180	175	97.2%	160	88.9%	table 30-B, contoured rate
RG-61944	-	-	710	well record	585	-0.40	125	121	96.8%	109	87.2%	table 30-B, contoured rate
RG-64419	-	-	740	well record	500	-0.60	240	234	97.5%	216	90.0%	table 30-B, contoured rate
RG-65566	-	-	765	well record	542	-0.60	223	217	97.3%	199	89.2%	table 30-B, contoured rate
RG-65584	-	-	755	well record	535	-0.80	220	212	96.4%	188	85.5%	table 30-B, contoured rate
RG-69782	-	-	785	well record	572	-0.70	213	206	96.7%	185	86.9%	table 30-B, contoured rate
RG-71728	-	-	750	well record	485	-0.70	265	258	97.4%	237	89.4%	table 30-B, contoured rate
RG-75069	-	-	735	well record	500	-0.60	235	229	97.4%	211	89.8%	table 30-B, contoured rate
RG-77553	-	Tano	900	well record	505	-0.20	395	393	99.5%	387	98.0%	Tano Road area, contoured rate

\*Starting water level date and data are the first data used in the trend analysis for monitored wells; and obtained from well records for non-monitored wells

| See Appendix B for projections for additional database wells

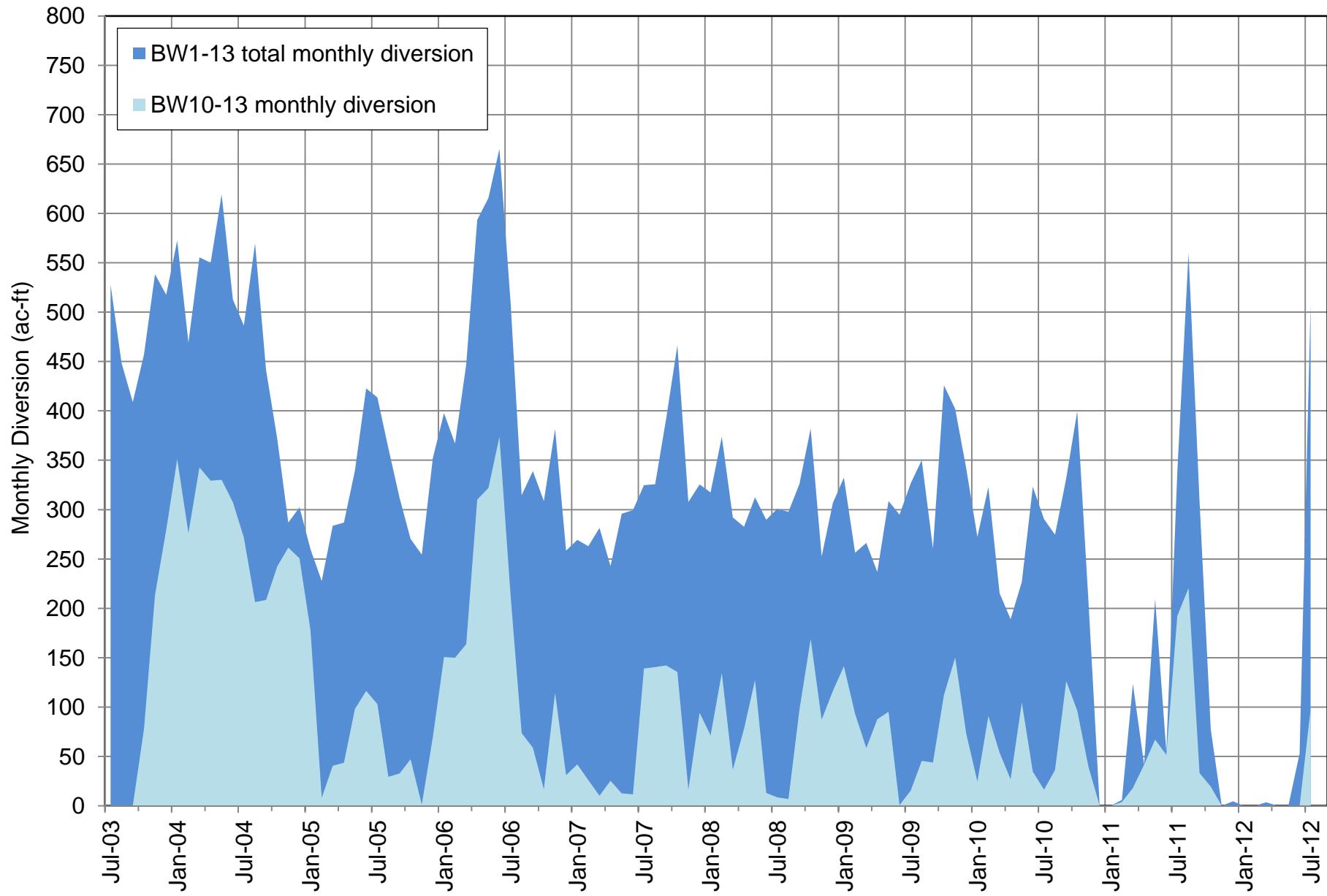
<sup>a</sup> Wells with water level rises limited by total depth of well

*italicized rate of change values were derived from Contour map (Figure 2)*

Table 30-A and 30-B were included in findings of hearing examiner, Hearing No. 03-004 (NMOSE RG-20516-S-10 through RG-20516-S-13

## Appendix A

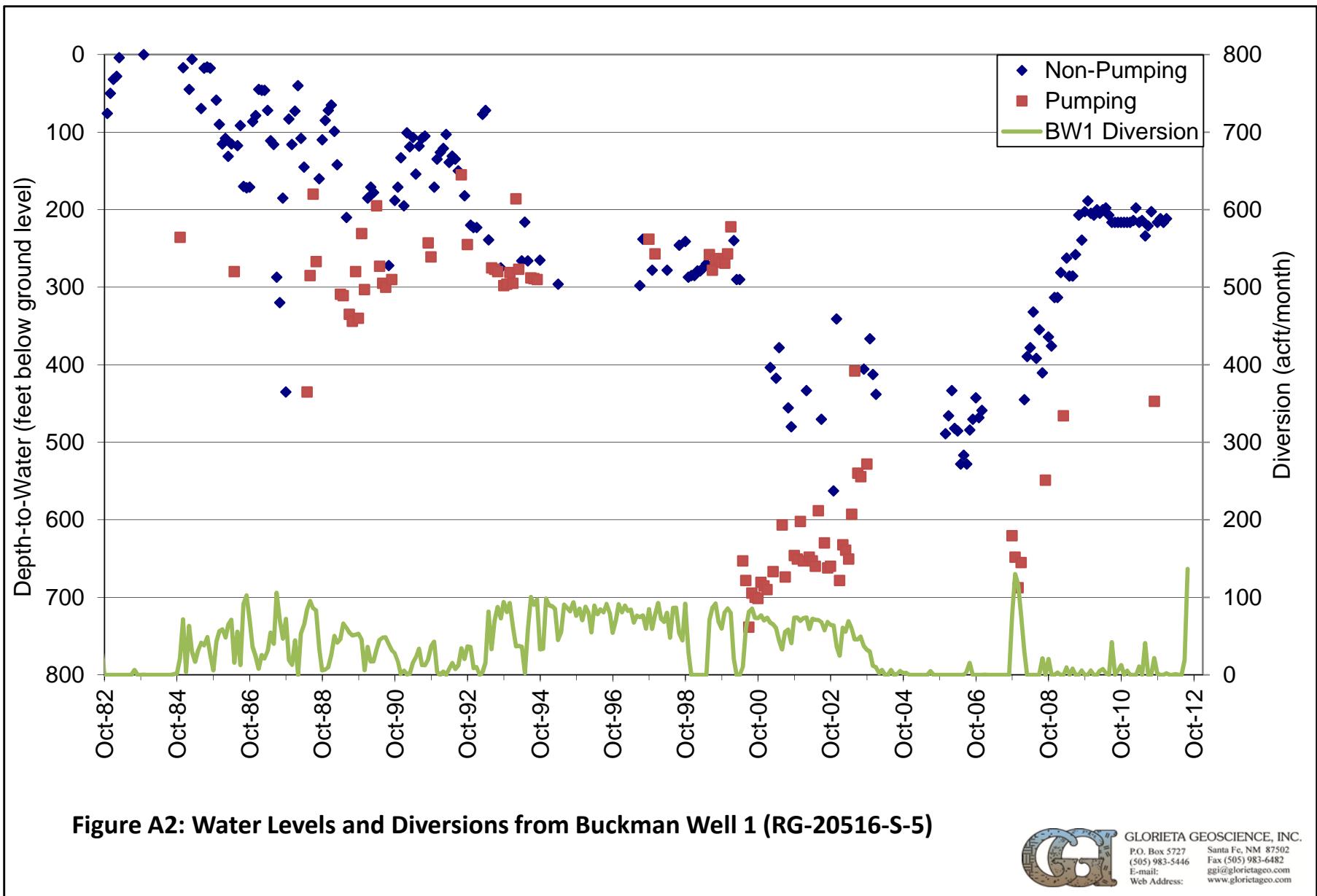
**Graphs of Buckman Well Field diversions and water levels  
in Buckman Monitoring Program area wells (A1 - A32)**



**Figure A1. Diversions from Buckman Wells 1 through 13, October 2003 through August 2012.**



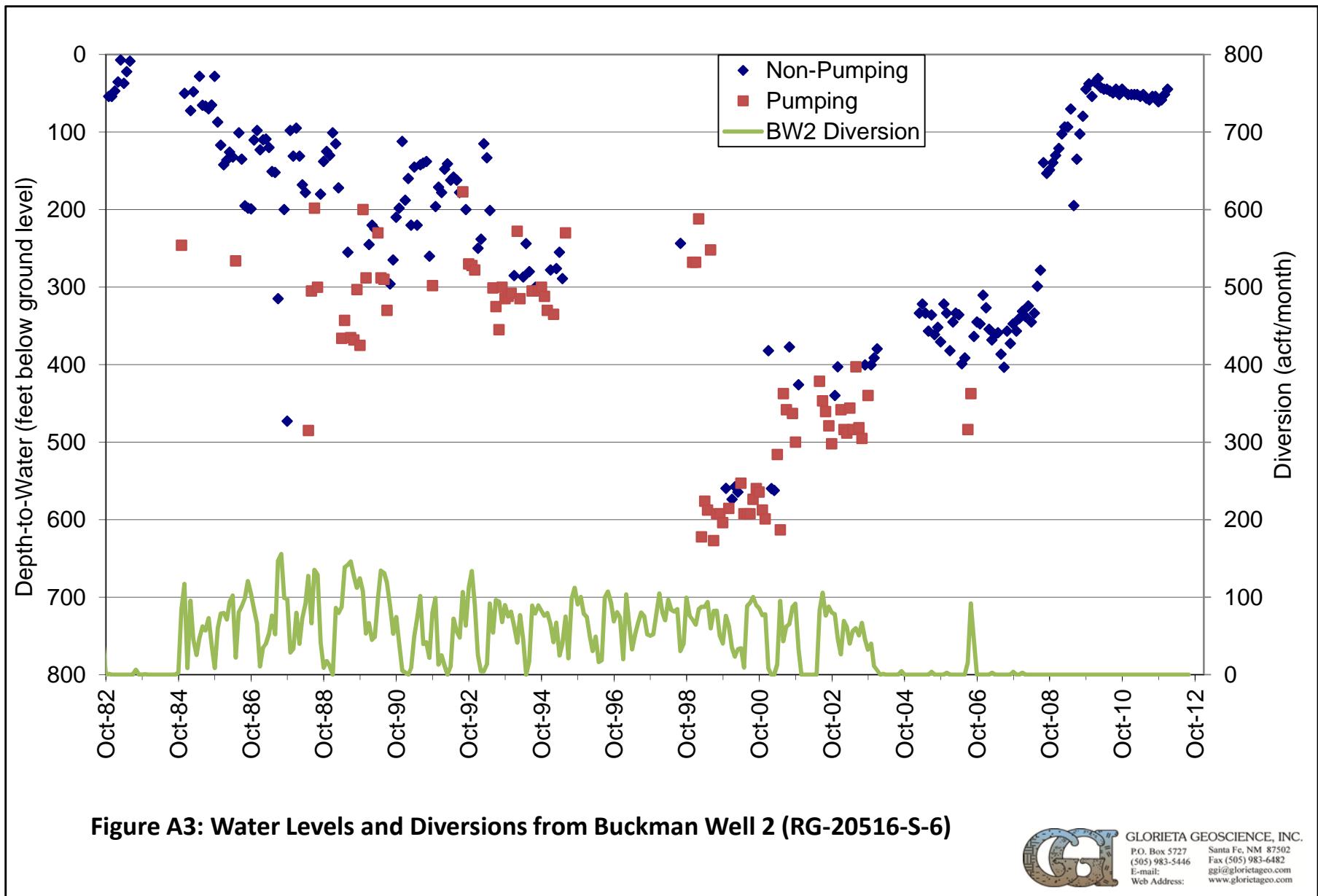
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**Figure A2: Water Levels and Diversions from Buckman Well 1 (RG-20516-S-5)**



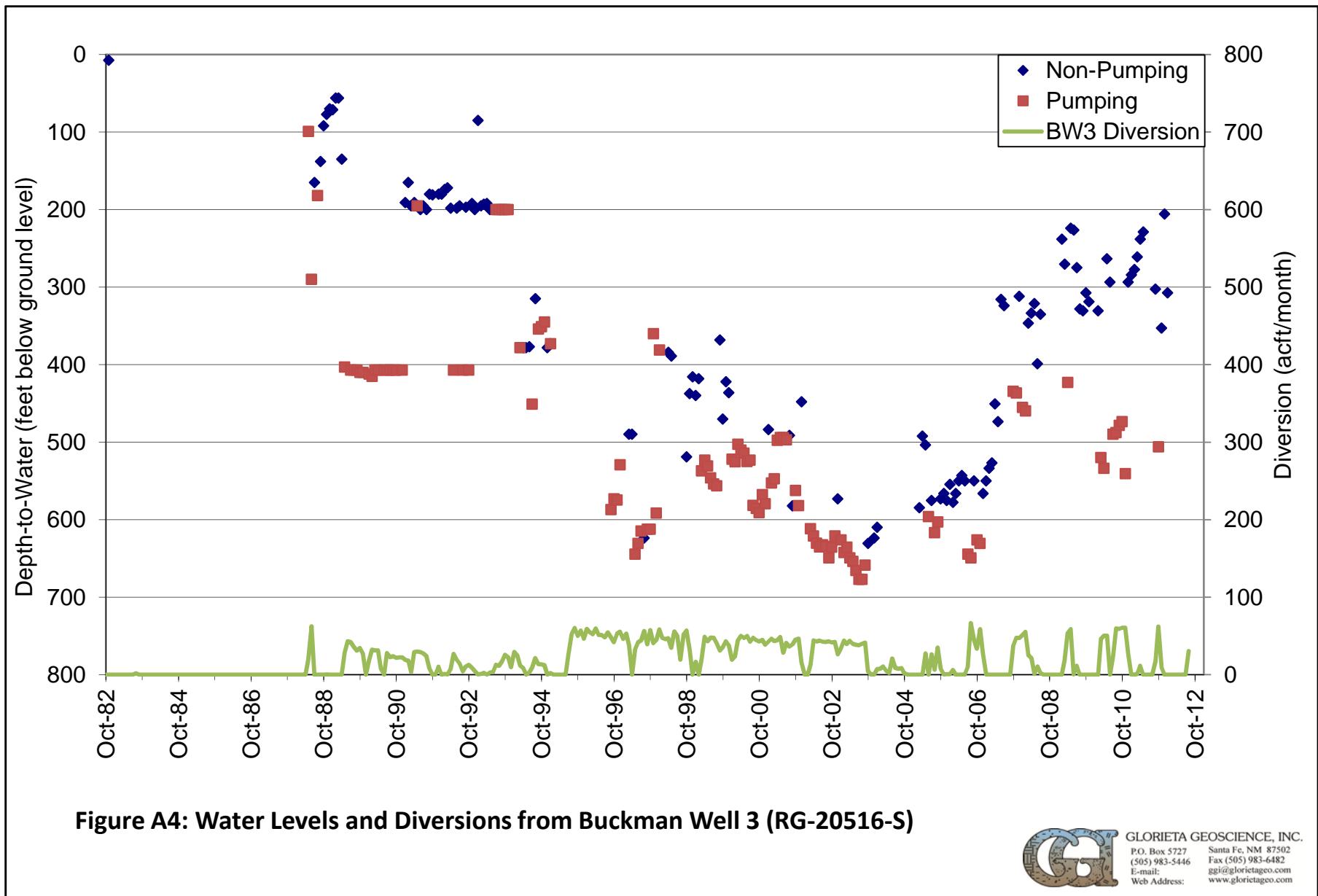
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**Figure A3: Water Levels and Diversions from Buckman Well 2 (RG-20516-S-6)**



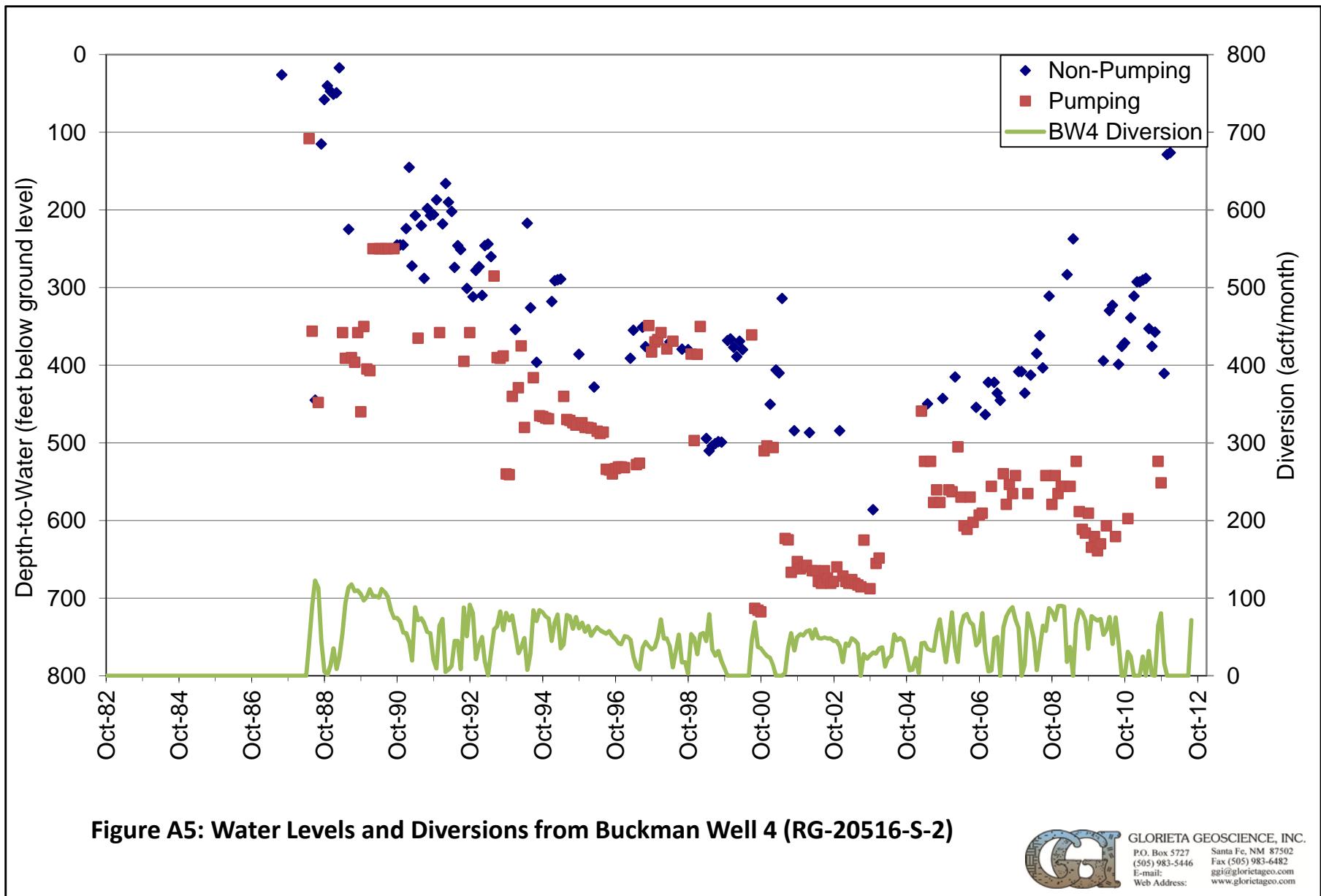
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**Figure A4: Water Levels and Diversions from Buckman Well 3 (RG-20516-S)**



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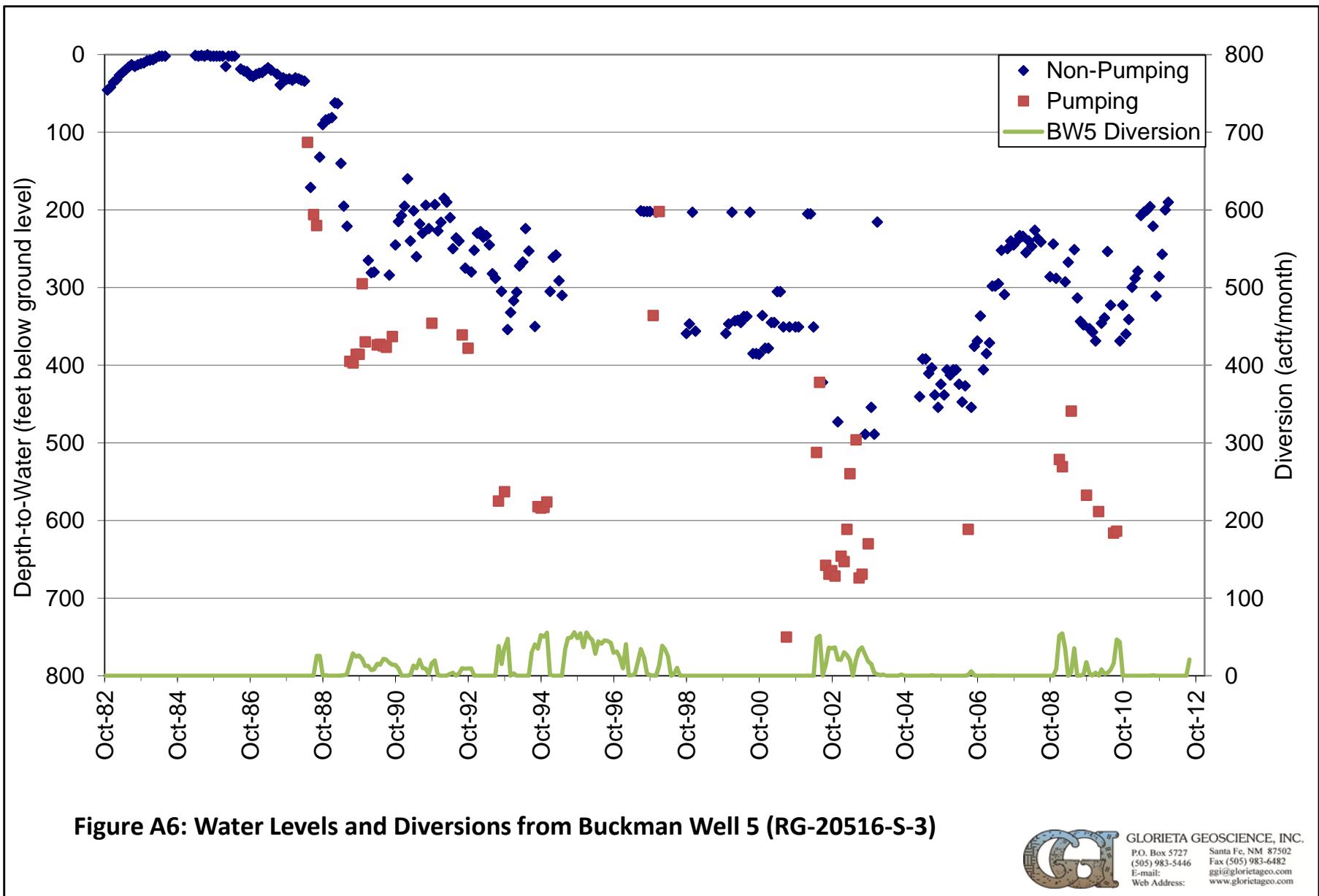


**Figure A5: Water Levels and Diversions from Buckman Well 4 (RG-20516-S-2)**



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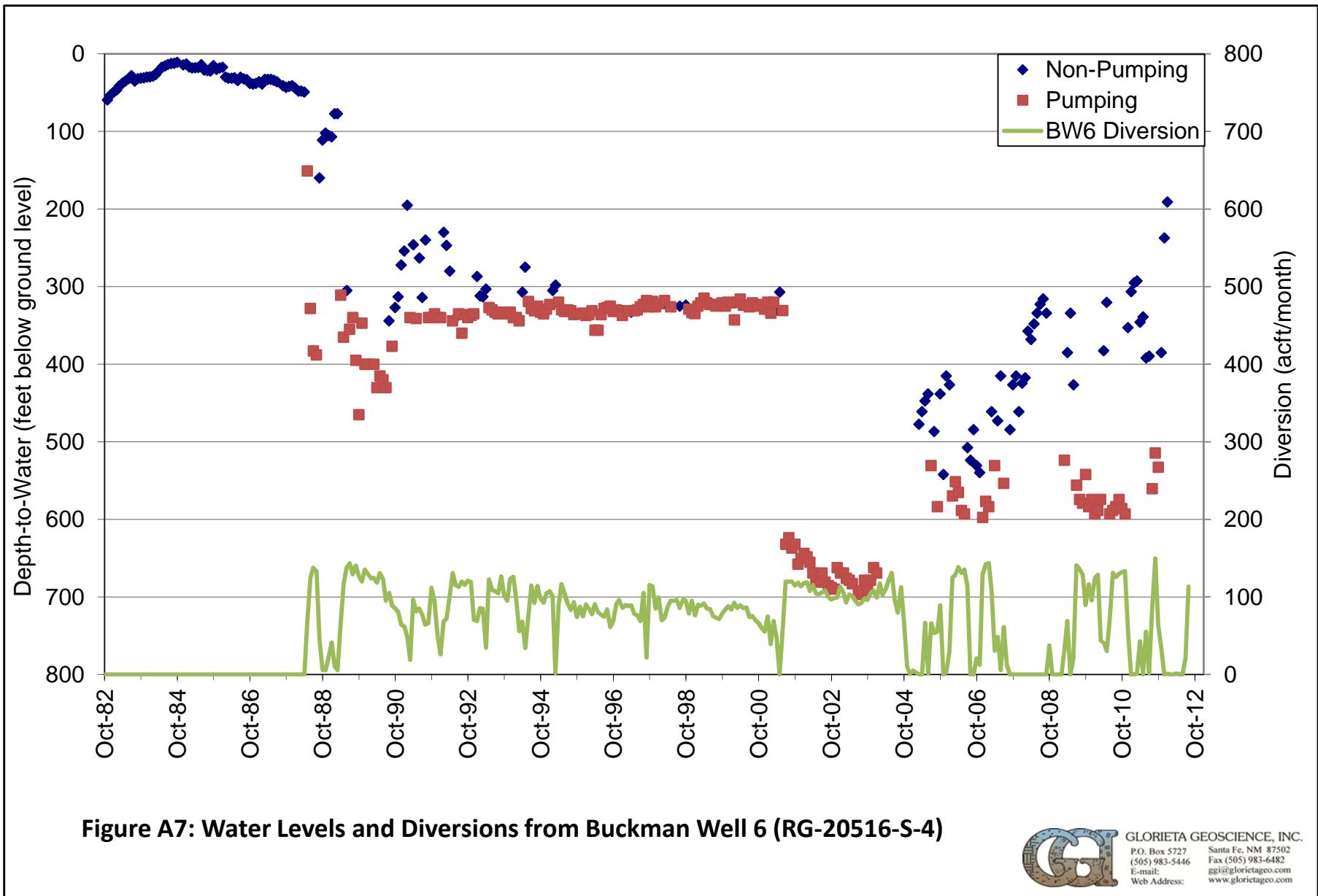
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**Figure A6: Water Levels and Diversions from Buckman Well 5 (RG-20516-S-3)**



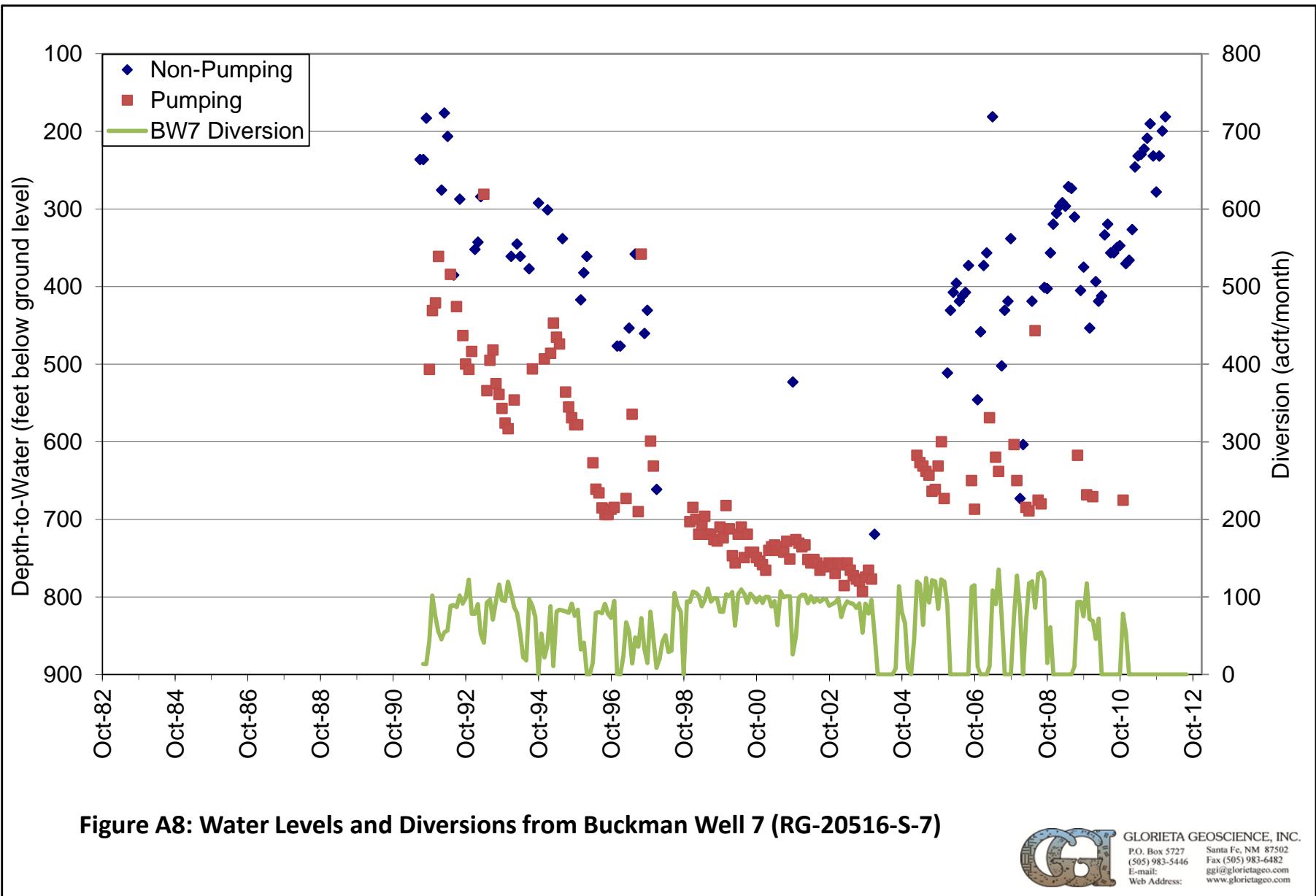
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**Figure A7: Water Levels and Diversions from Buckman Well 6 (RG-20516-S-4)**

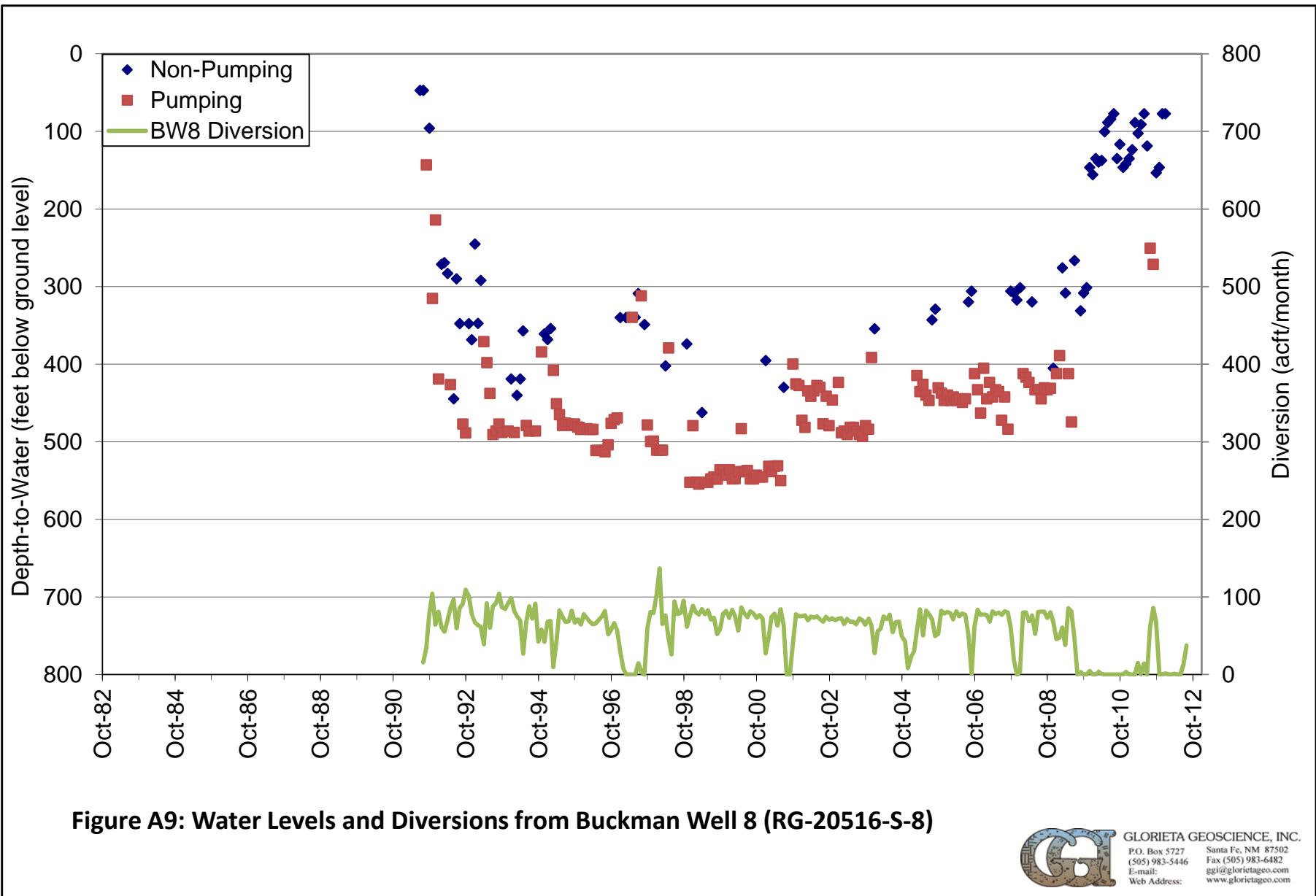


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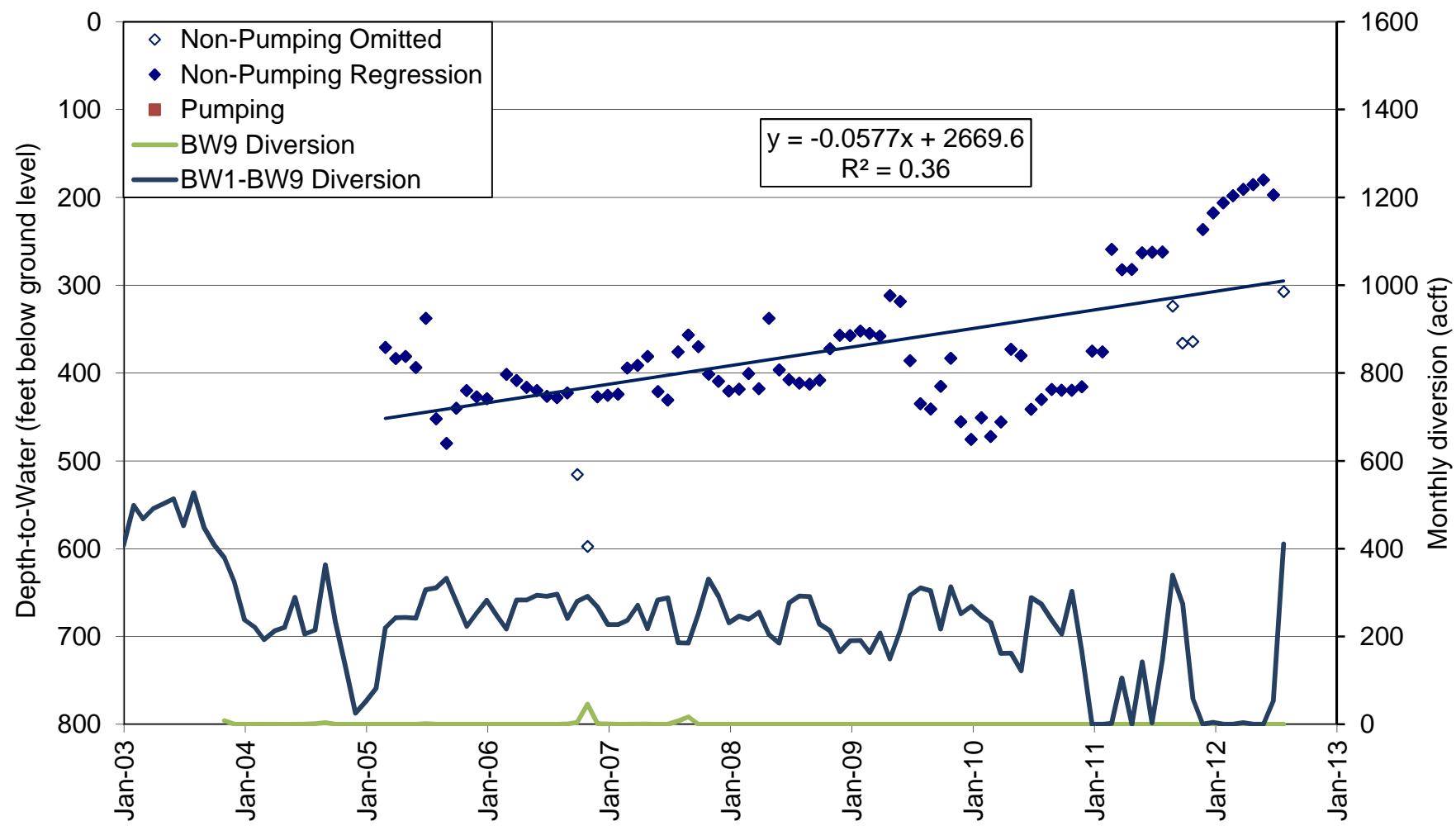
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**Figure A9: Water Levels and Diversions from Buckman Well 8 (RG-20516-S-8)**



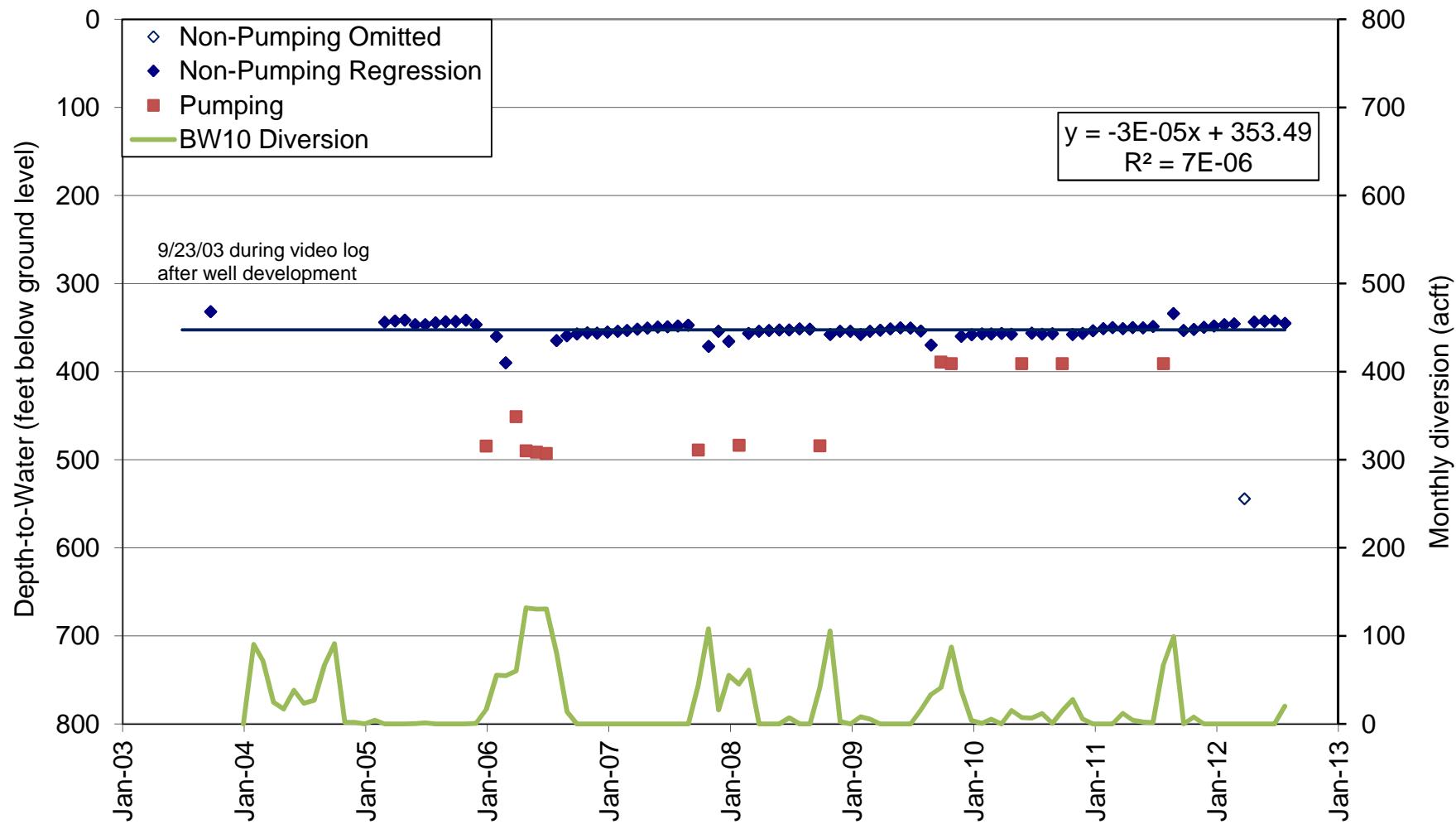
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**Figure A10: Water Levels and Diversions from Buckman Well 9 (RG-20516-S-9)**  
Water level rise of 21.07 ft/yr



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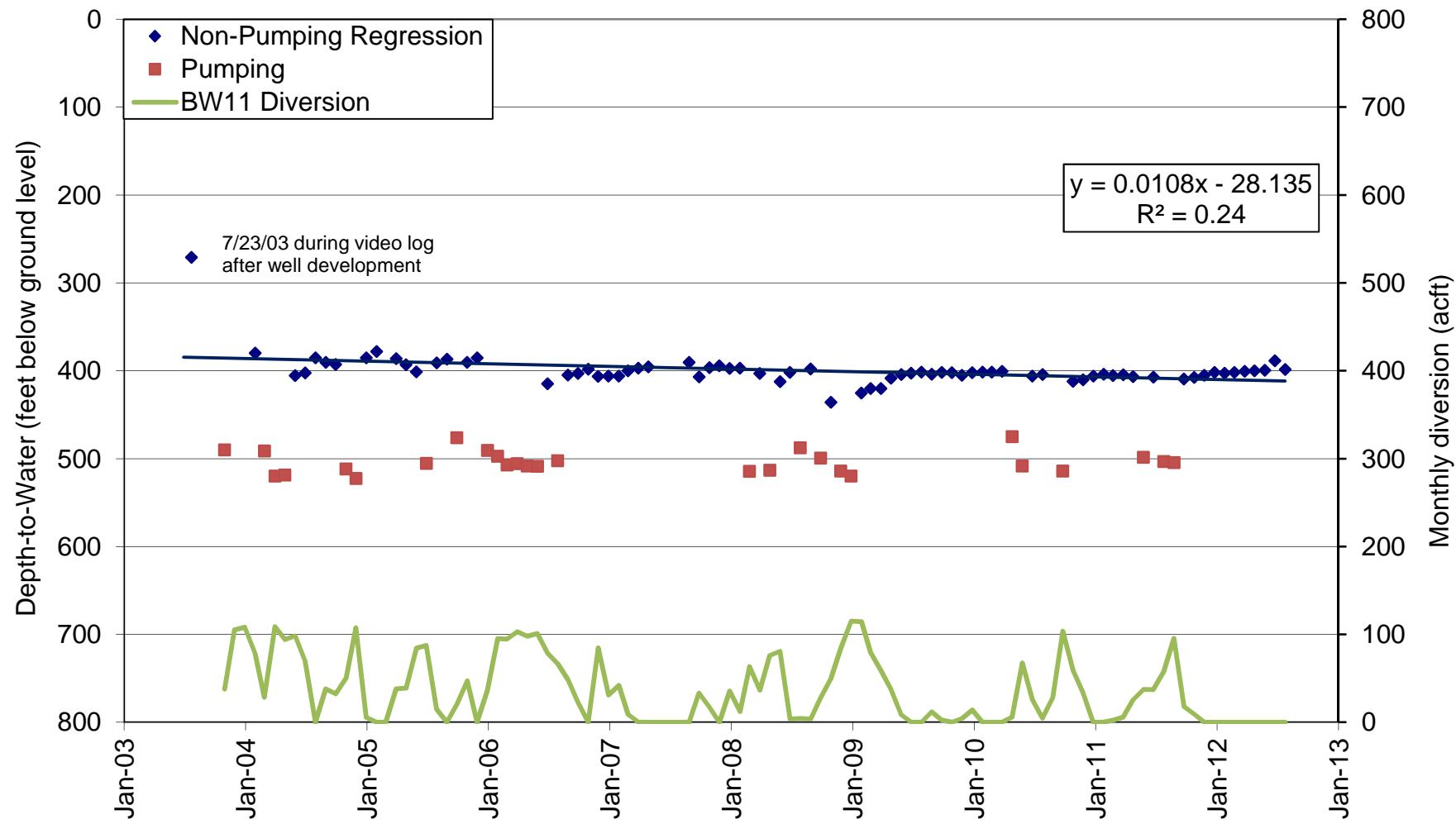


**Figure A11: Water Levels and Diversions from Buckman Well 10 (RG-20516-S-10)**  
Water level rise of 0.01 ft/yr



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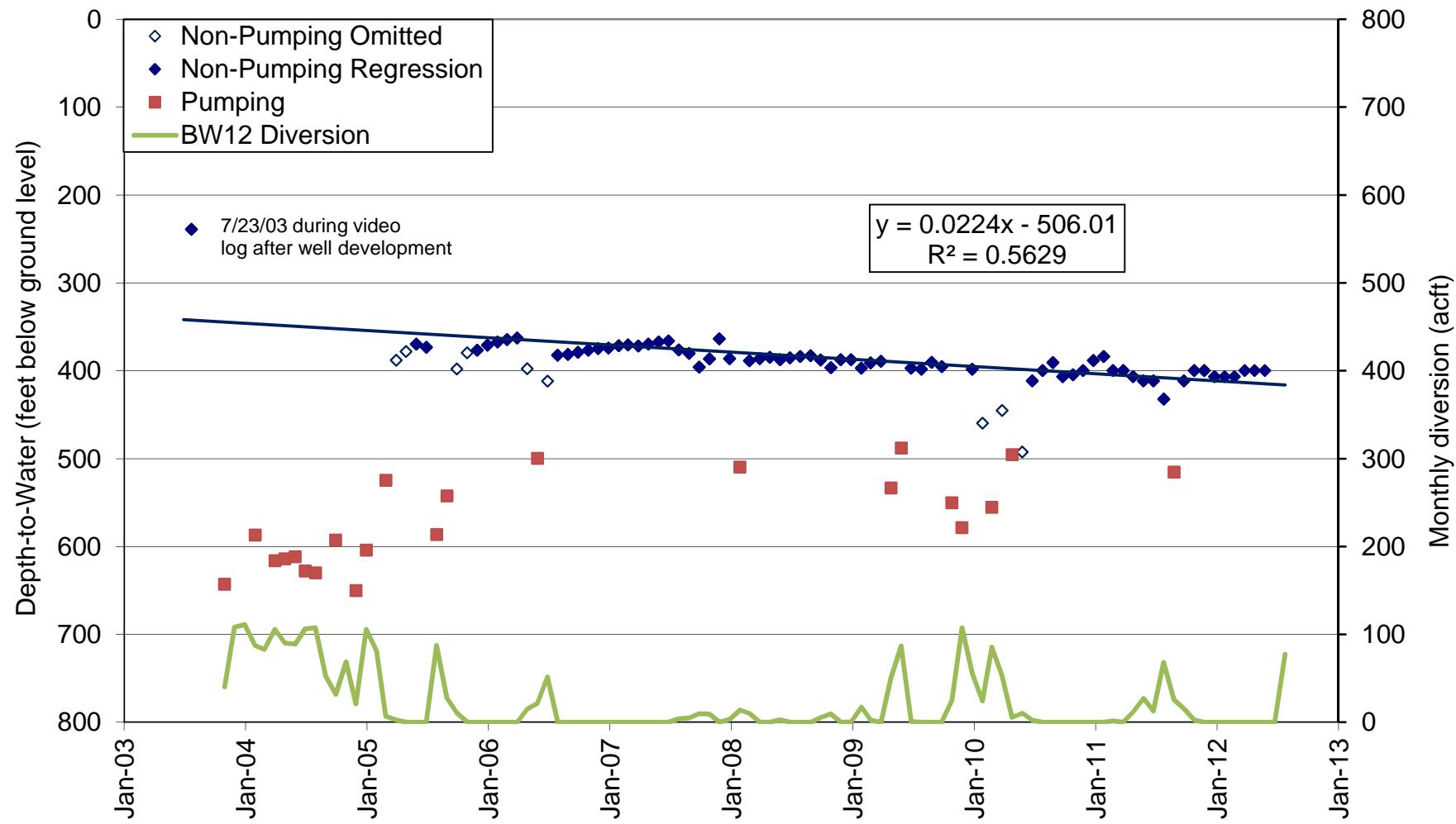


**Figure A12: Water Levels and Diversions from Buckman Well 11 (RG-20516-S-11)**  
Water level decline of 3.94 ft/yr



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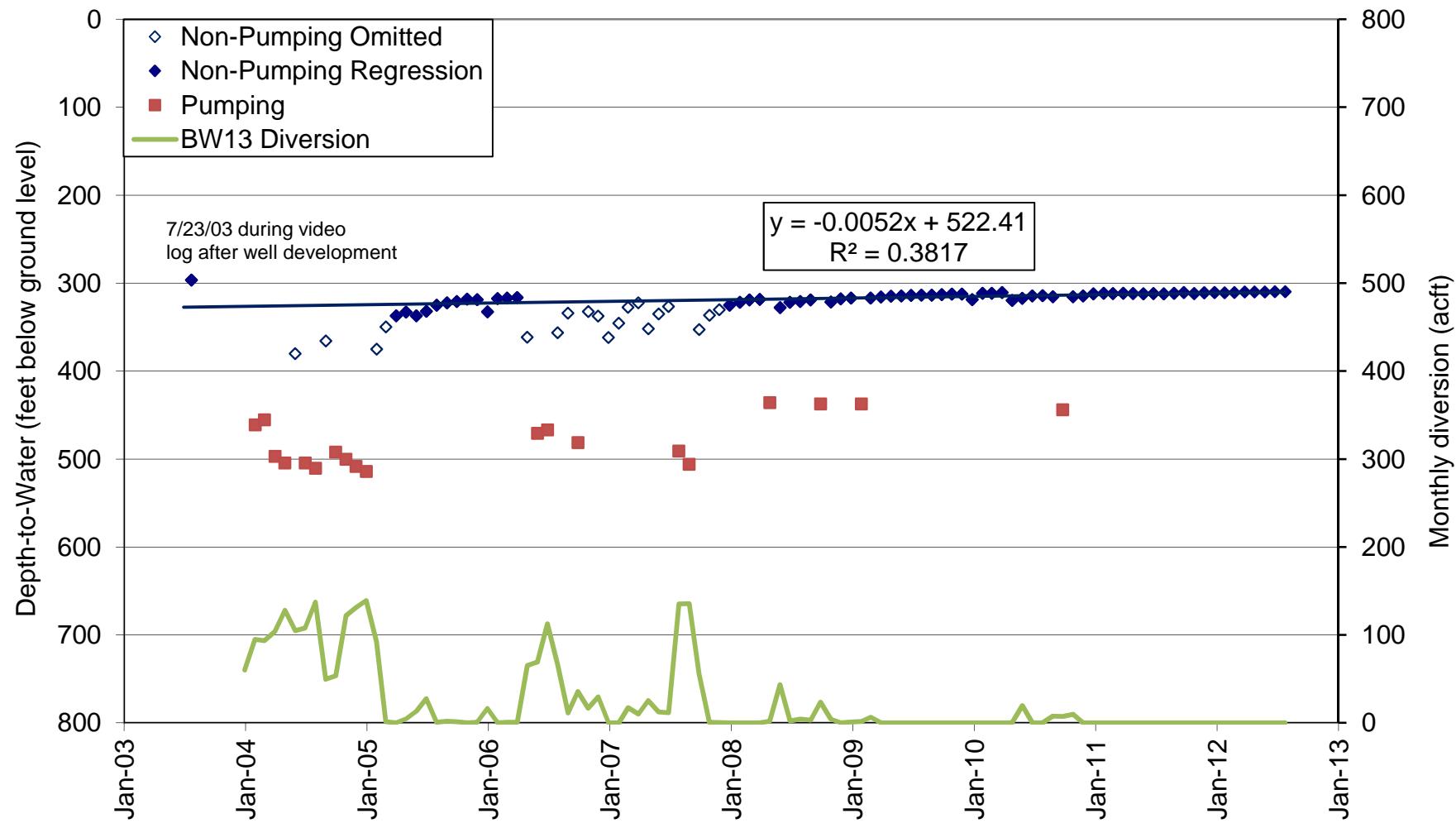


**Figure A13: Water Levels and Diversions from Buckman Well 12 (RG-20516-S-12)**  
 Water level decrease of 8.18 ft/yr



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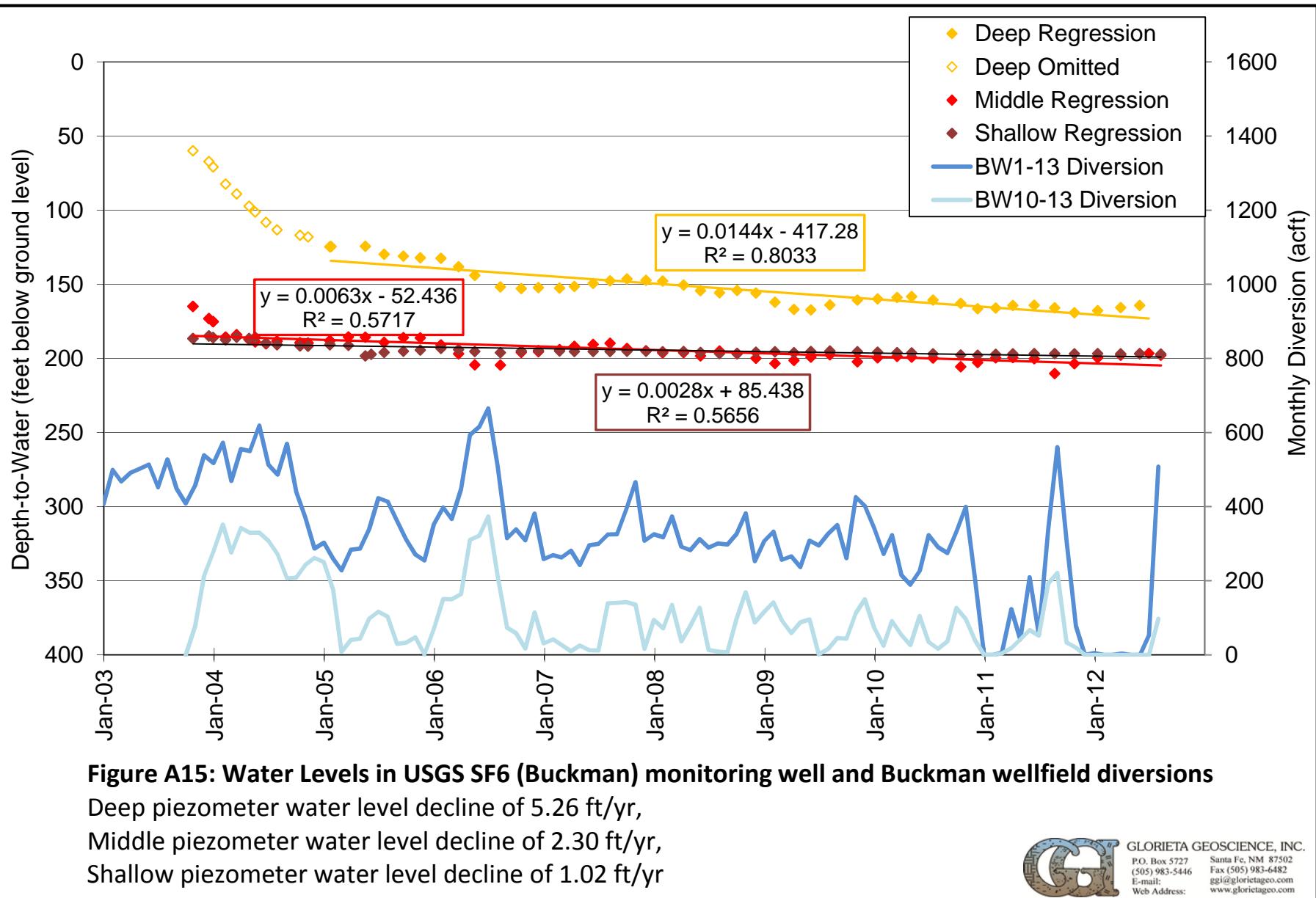


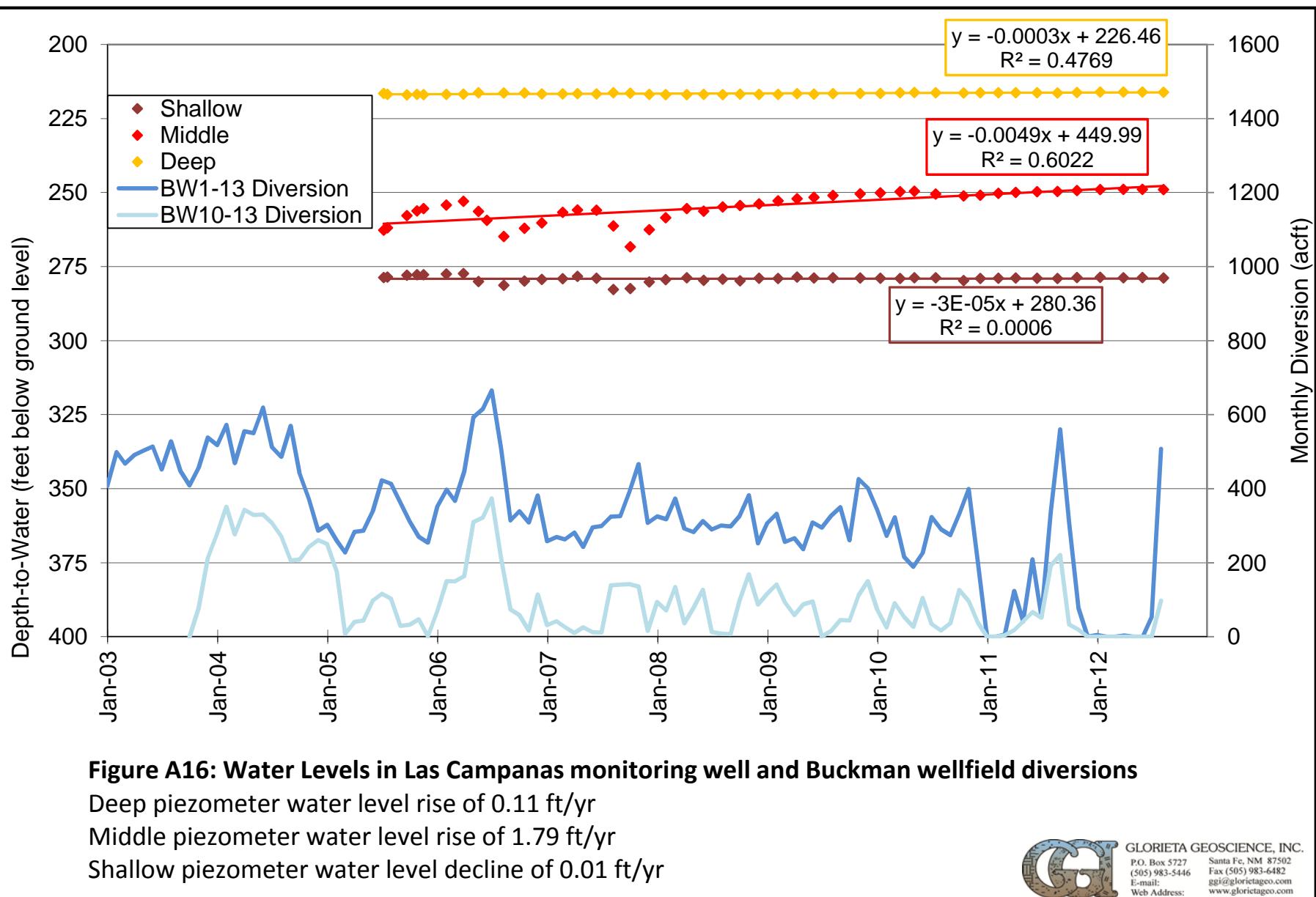
**Figure A14: Water Levels and Diversions from Buckman Well 13 (RG-20516-S-13)**  
Water level rise of 1.90 ft/yr



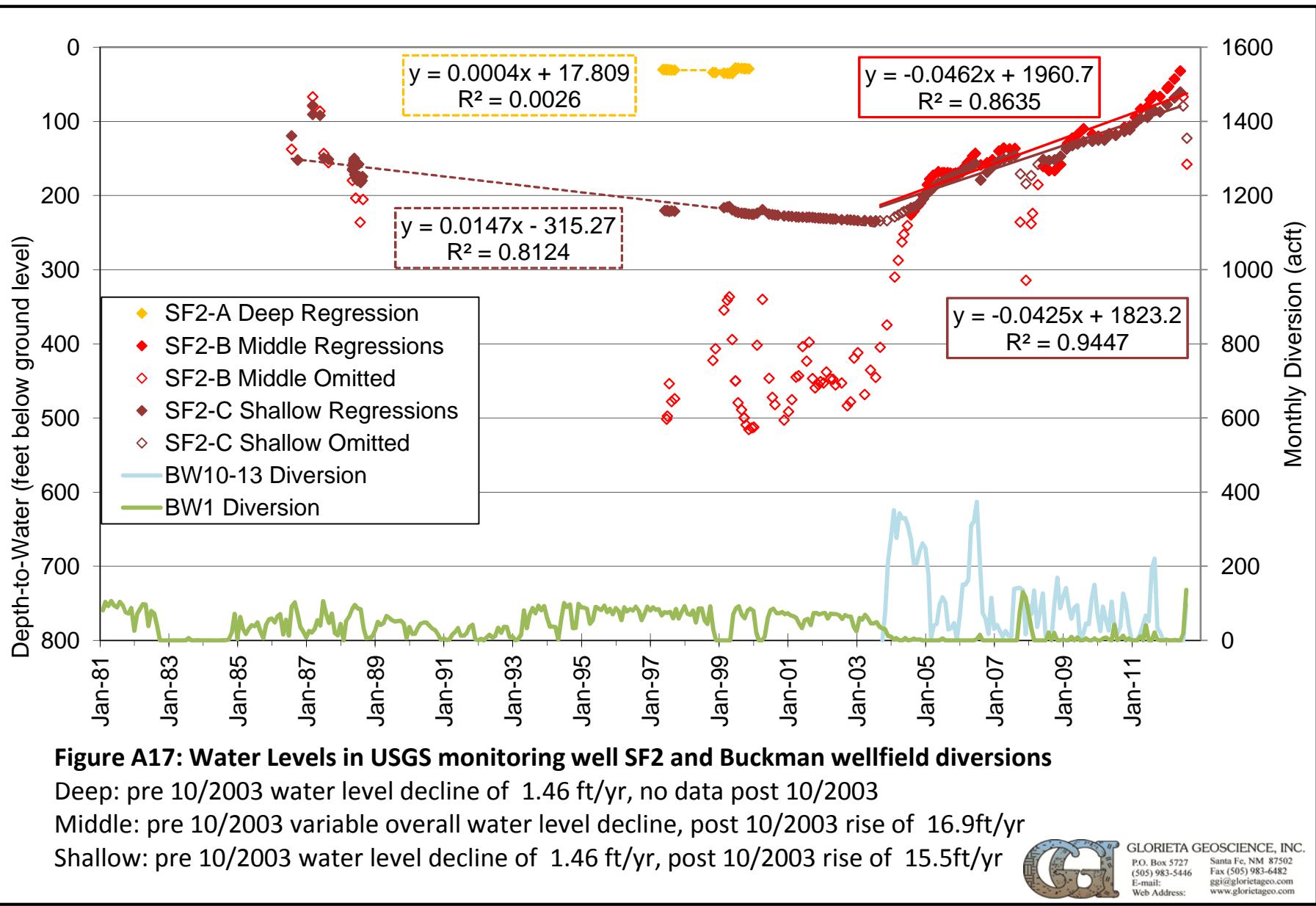
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**Figure A17: Water Levels in USGS monitoring well SF2 and Buckman wellfield diversions**

Deep: pre 10/2003 water level decline of 1.46 ft/yr, no data post 10/2003

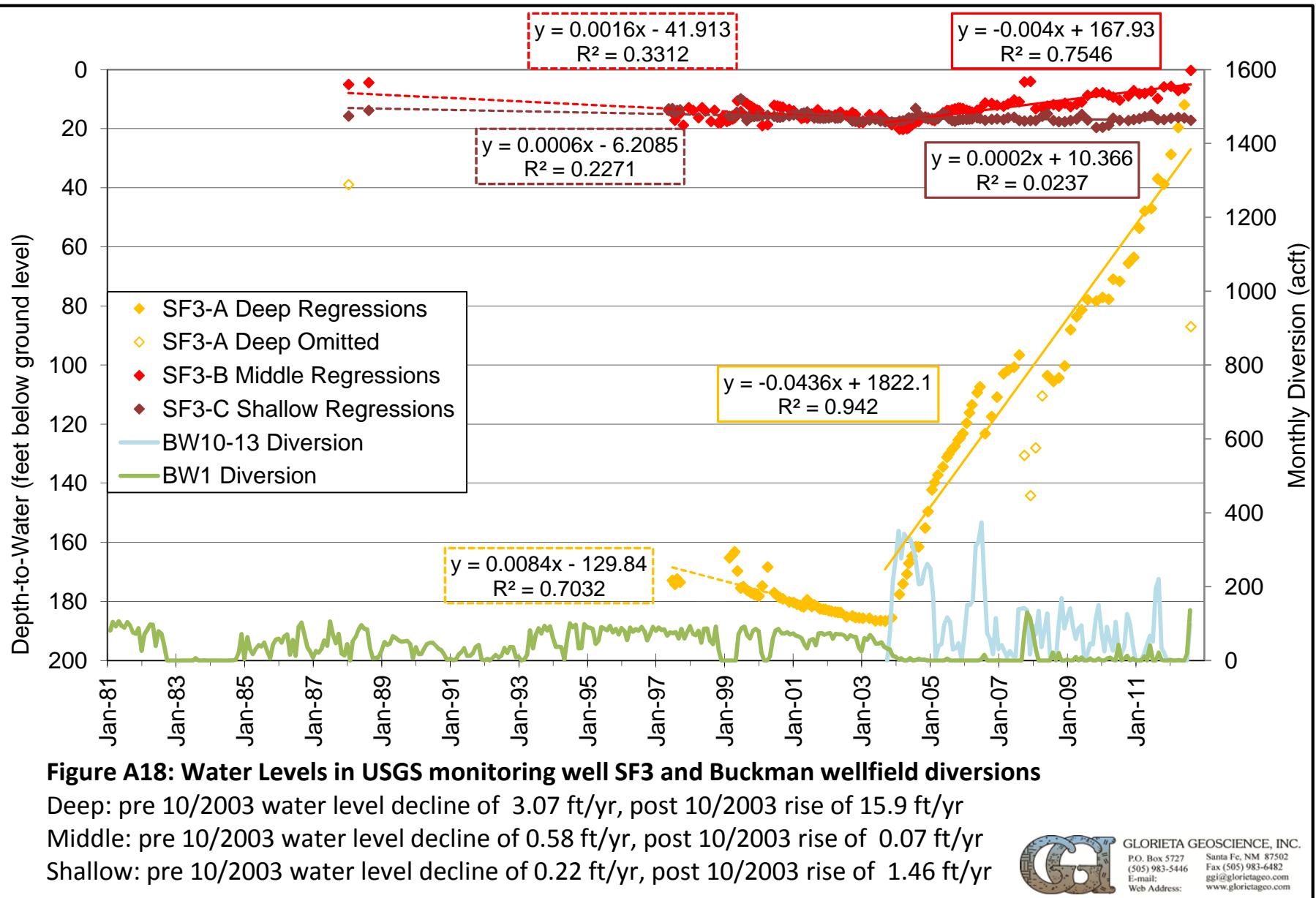
Middle: pre 10/2003 variable overall water level decline, post 10/2003 rise of 16.9ft/yr

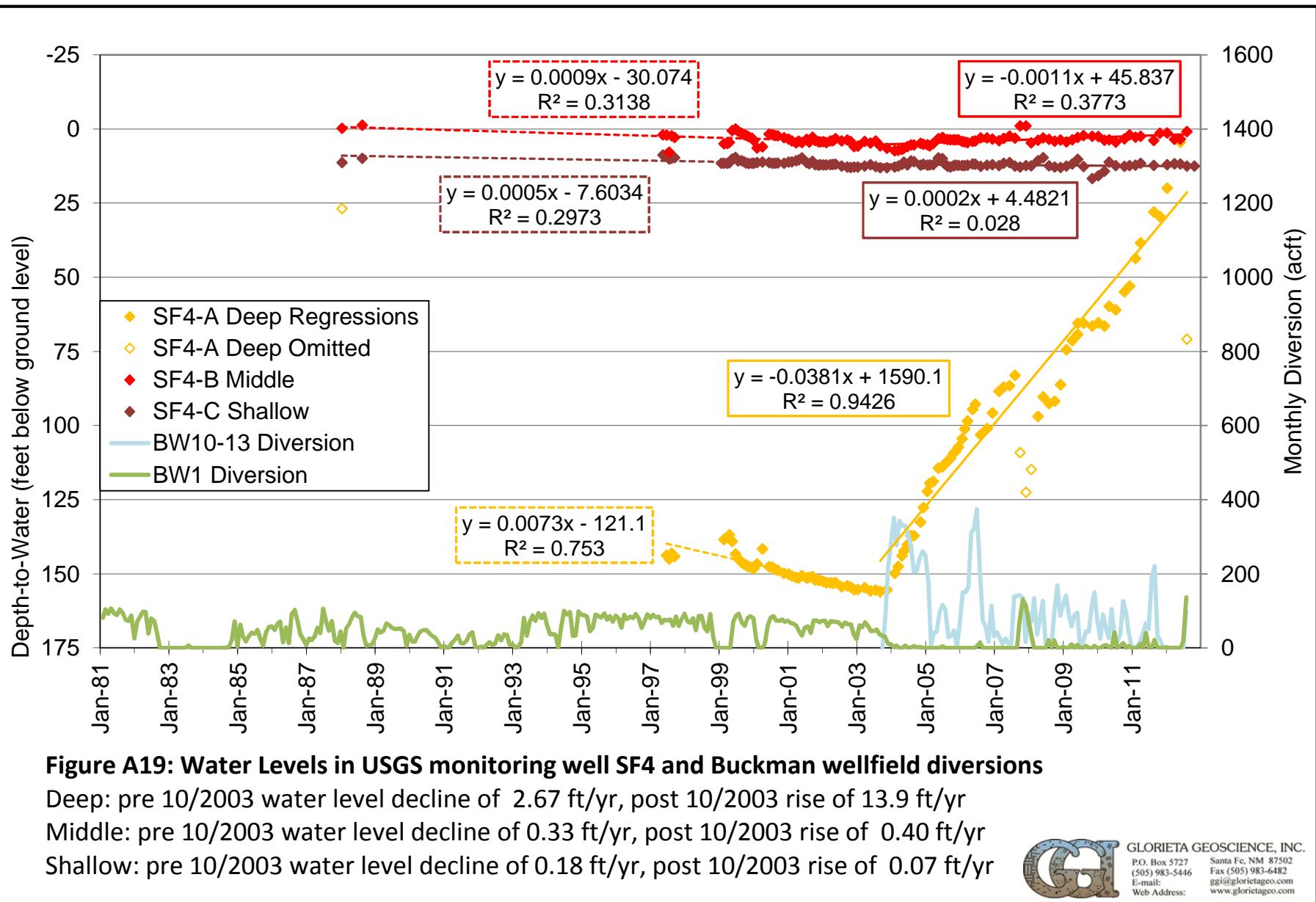
Shallow: pre 10/2003 water level decline of 1.46 ft/yr, post 10/2003 rise of 15.5ft/yr



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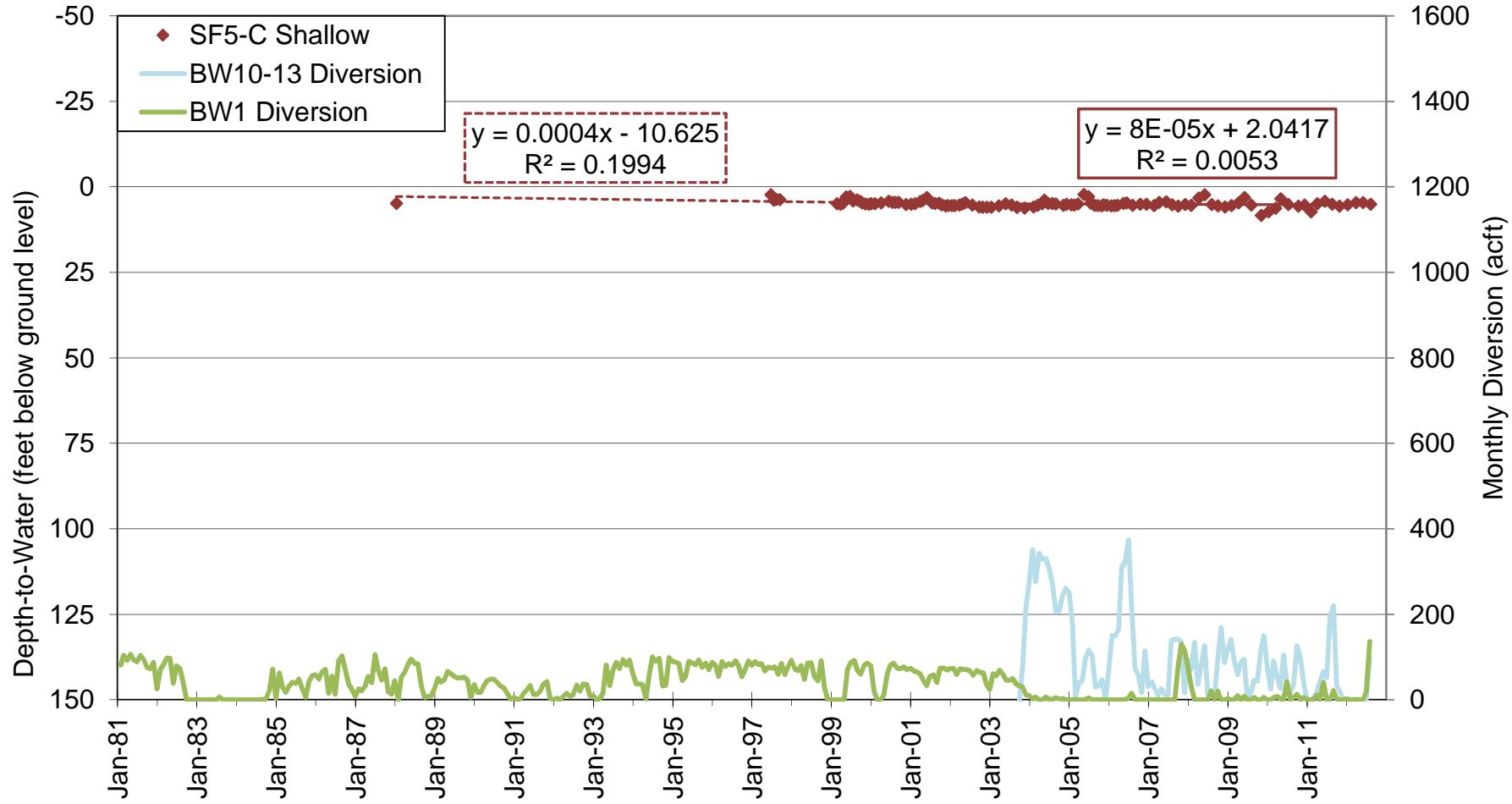
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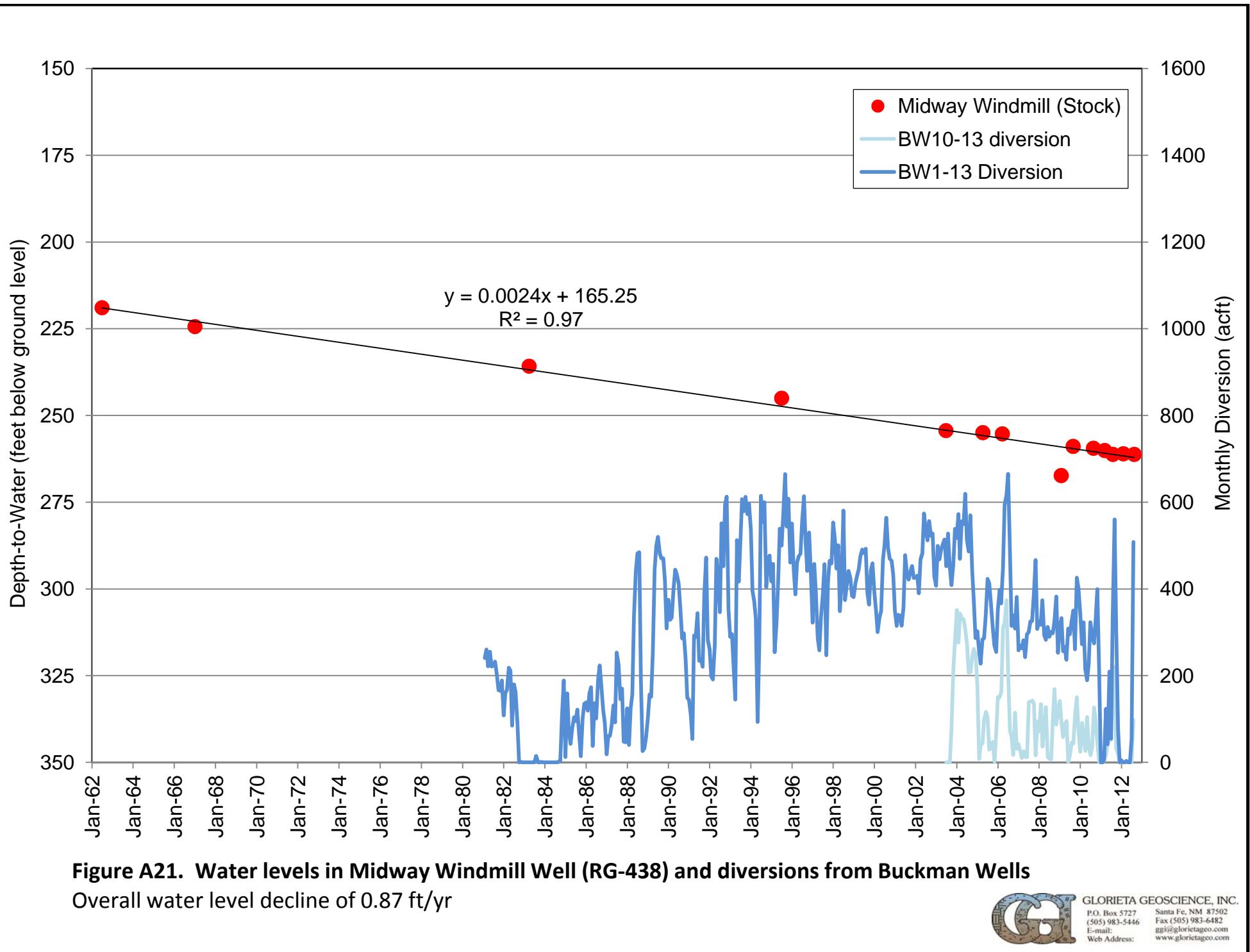
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**Figure A20: Water Levels in USGS monitoring well SF5 and Buckman wellfield diversions**

Shallow: pre 10/2003 water level decline of 0.14 ft/yr, post 10/2003 rise of 0.03 ft/yr



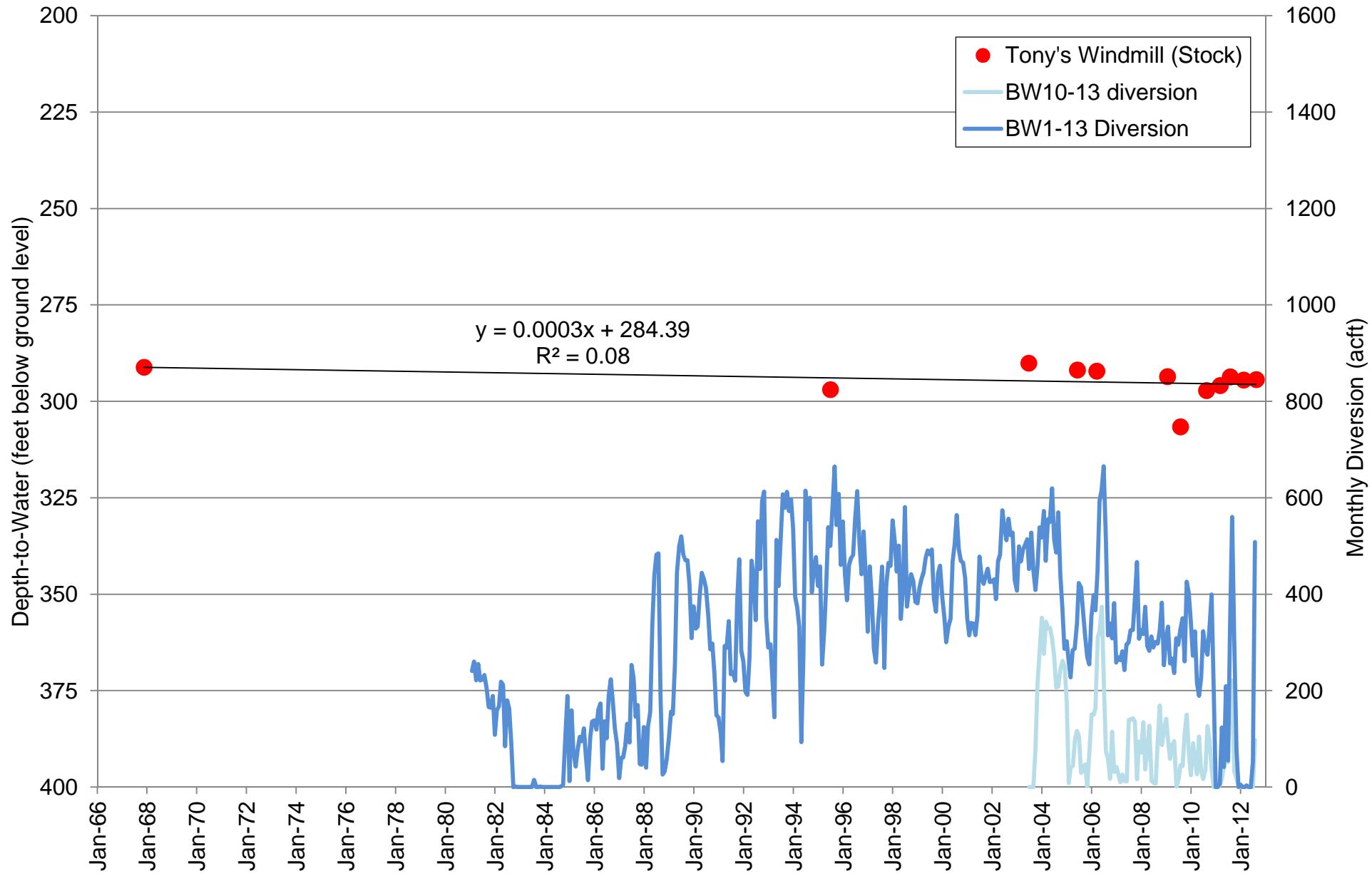
**Figure A21. Water levels in Midway Windmill Well (RG-438) and diversions from Buckman Wells**

Overall water level decline of 0.87 ft/yr



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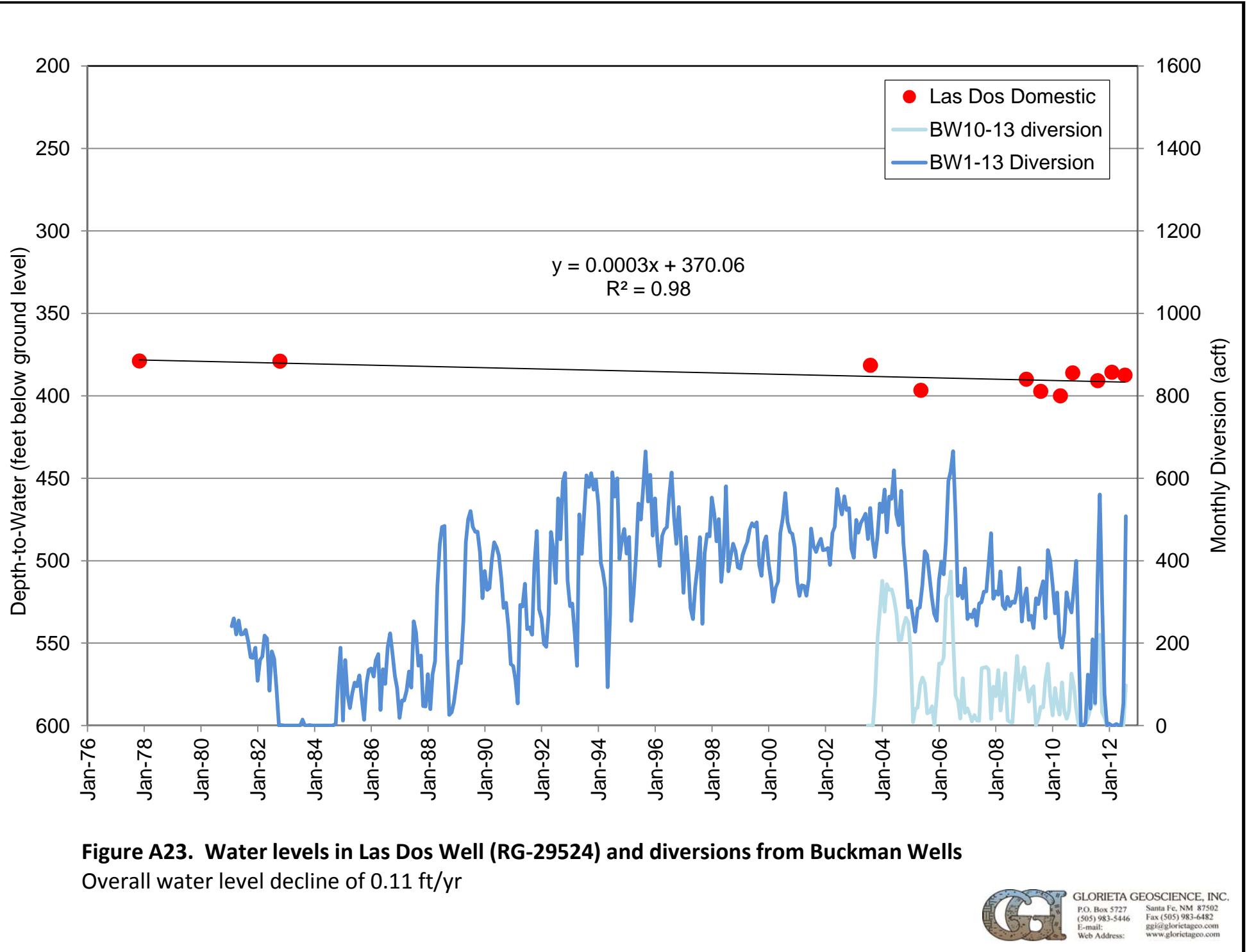
**Figure A22. Water levels in Tony's Windmill Well (RG-6386) and diversions from Buckman Wells**

Overall water level decline of 0.11 ft/yr



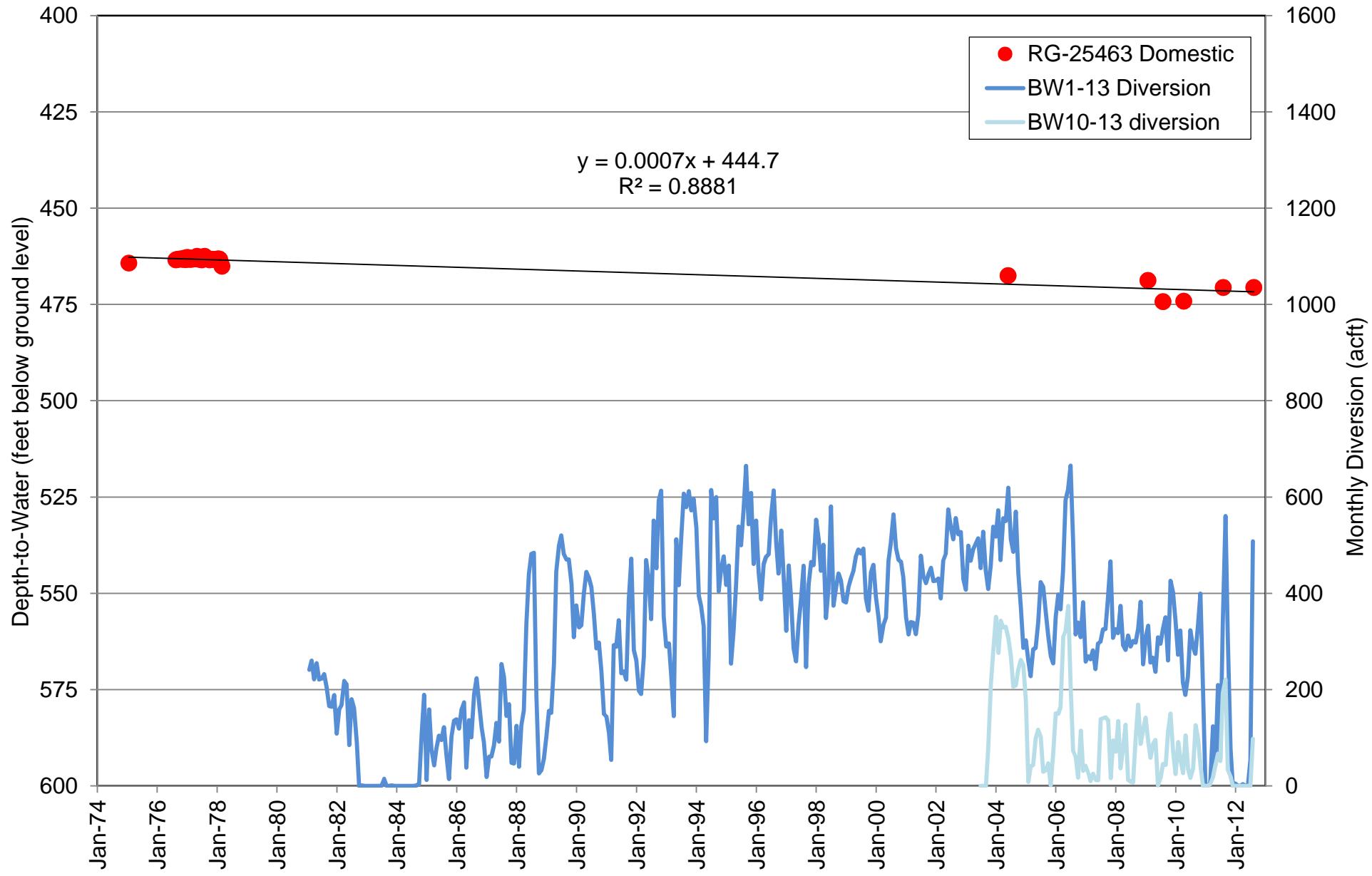
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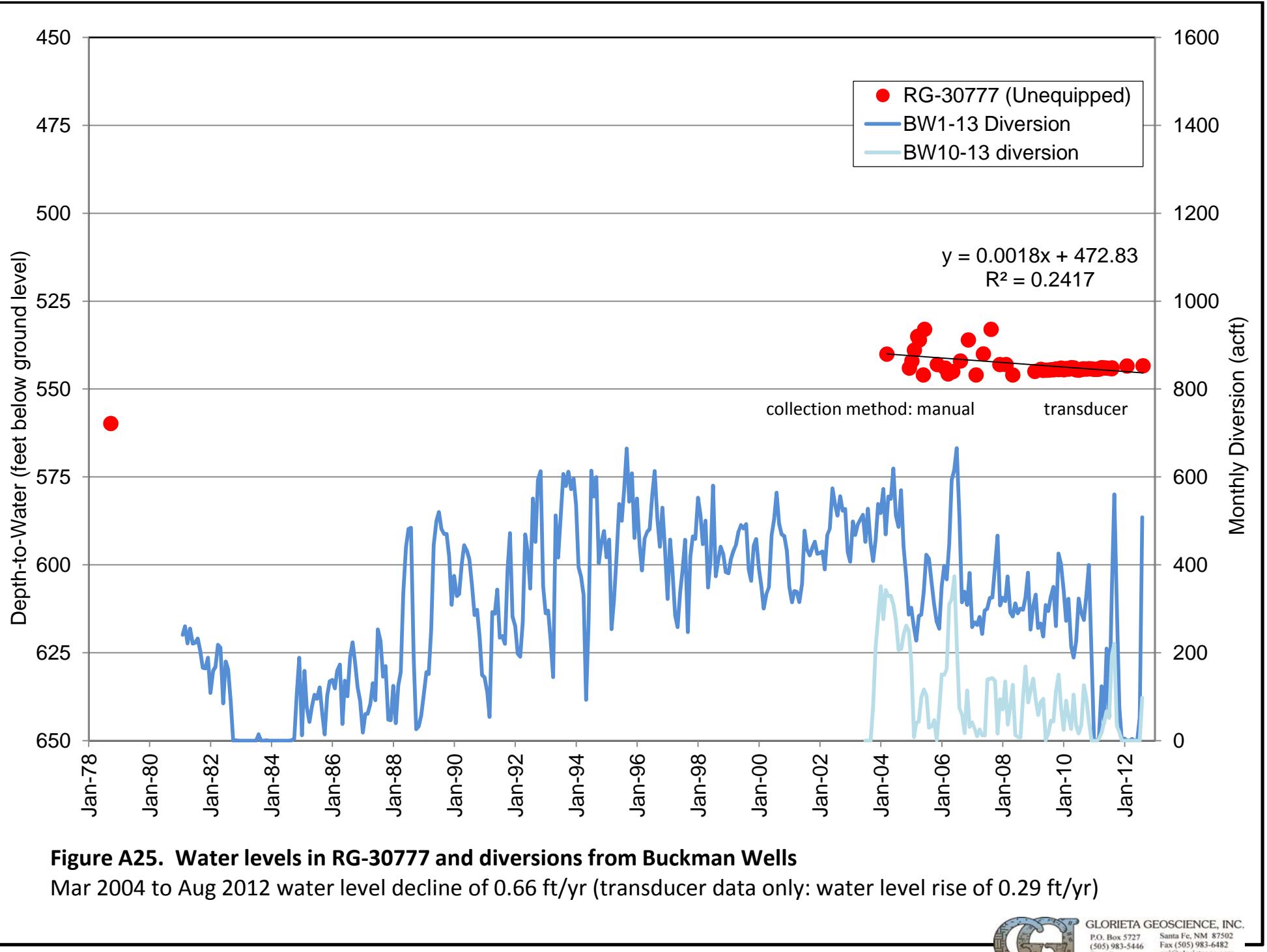


**Figure A24. Water levels in RG-25463 and diversions from Buckman**

Overall water level decline of 0.26 ft/yr



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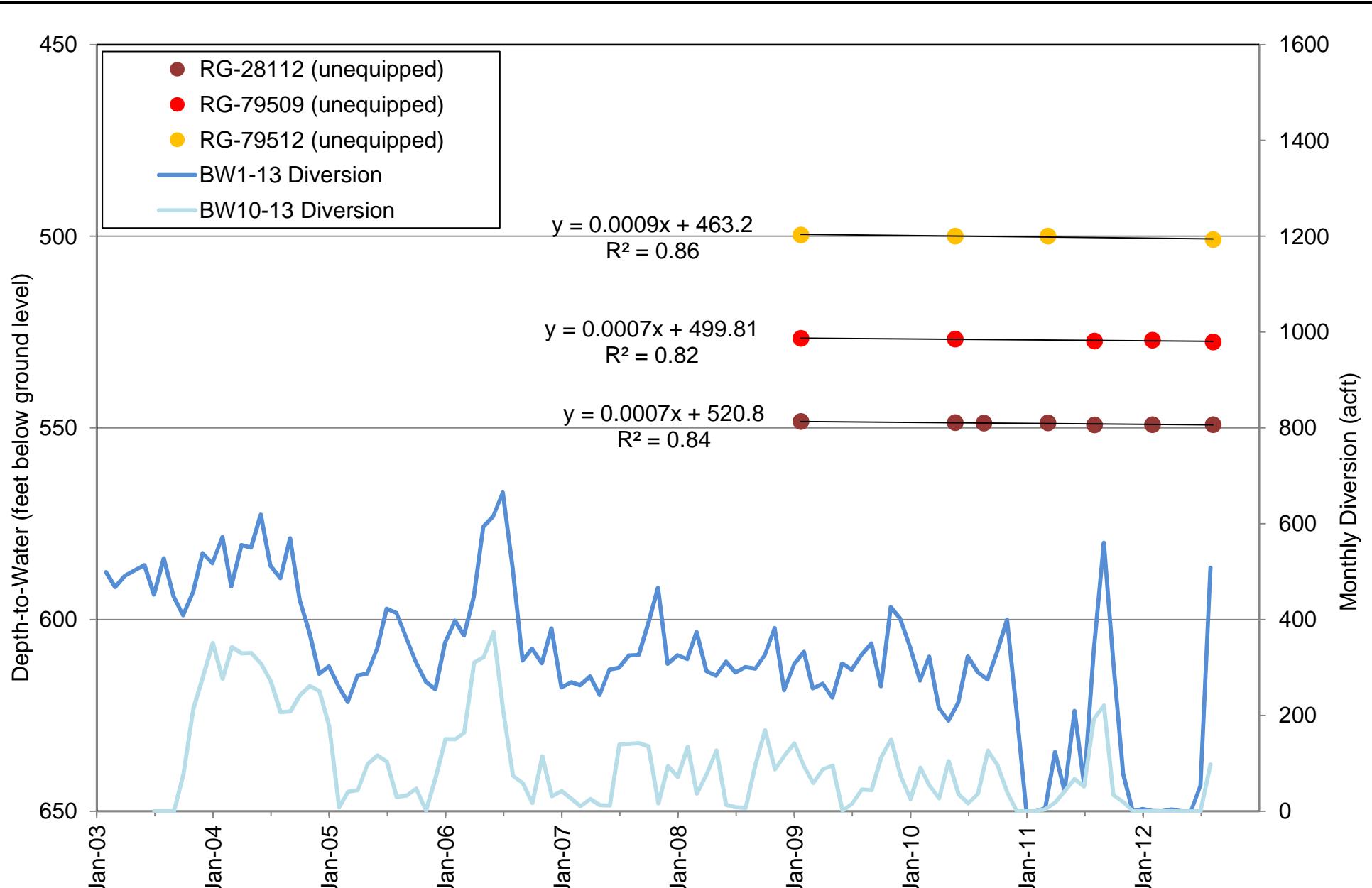
**Figure A25. Water levels in RG-30777 and diversions from Buckman Wells**

Mar 2004 to Aug 2012 water level decline of 0.66 ft/yr (transducer data only: water level rise of 0.29 ft/yr)



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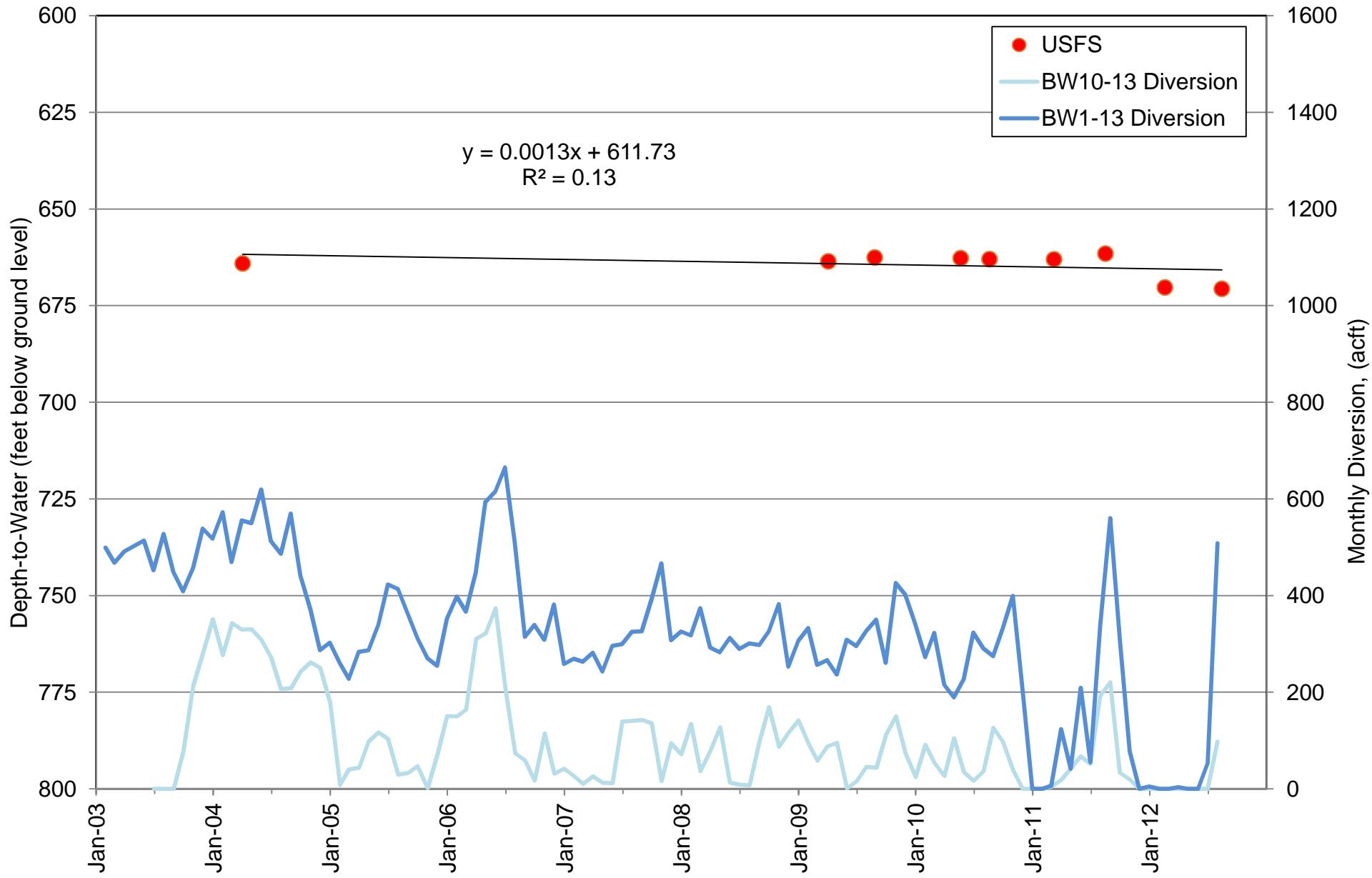
**Figure A26. Water levels in Domestic Wells (RG-28112, RG-79509, RG-79512) and diversions from Buckman Wells**

RG-28112: Post 2009 water level decline of 0.33 ft/yr

RG-79509 & RG-79512: Post 2009 water level decline of 0.26 ft/yr



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**Figure A27. Water levels in US Forest Service (RG-29723) and diversion from Buckman wells**  
Post 2004 water level decline of 0.47 ft/yr



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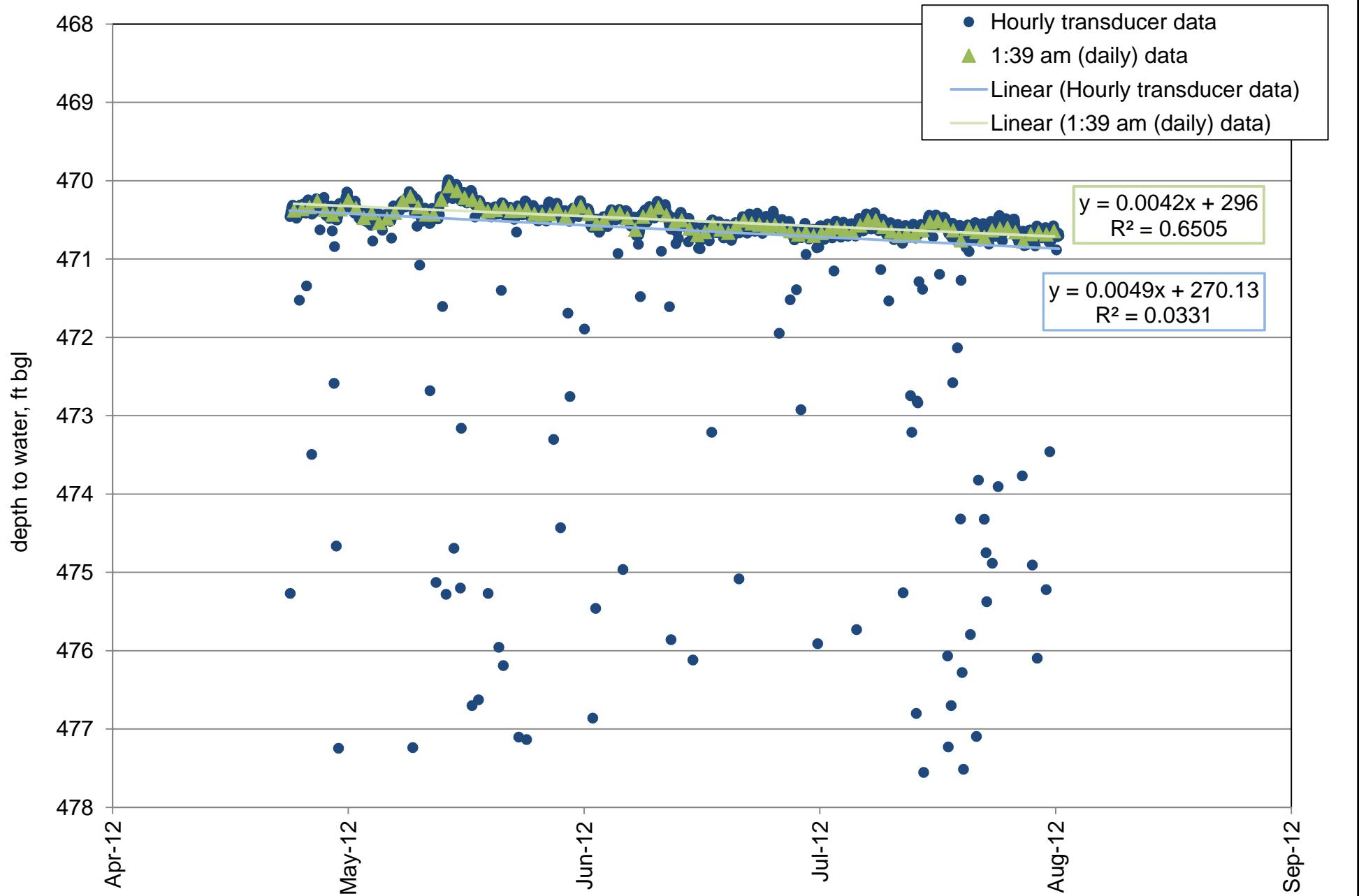


Figure A28: Hourly and daily transducer water levels in well RG-25463



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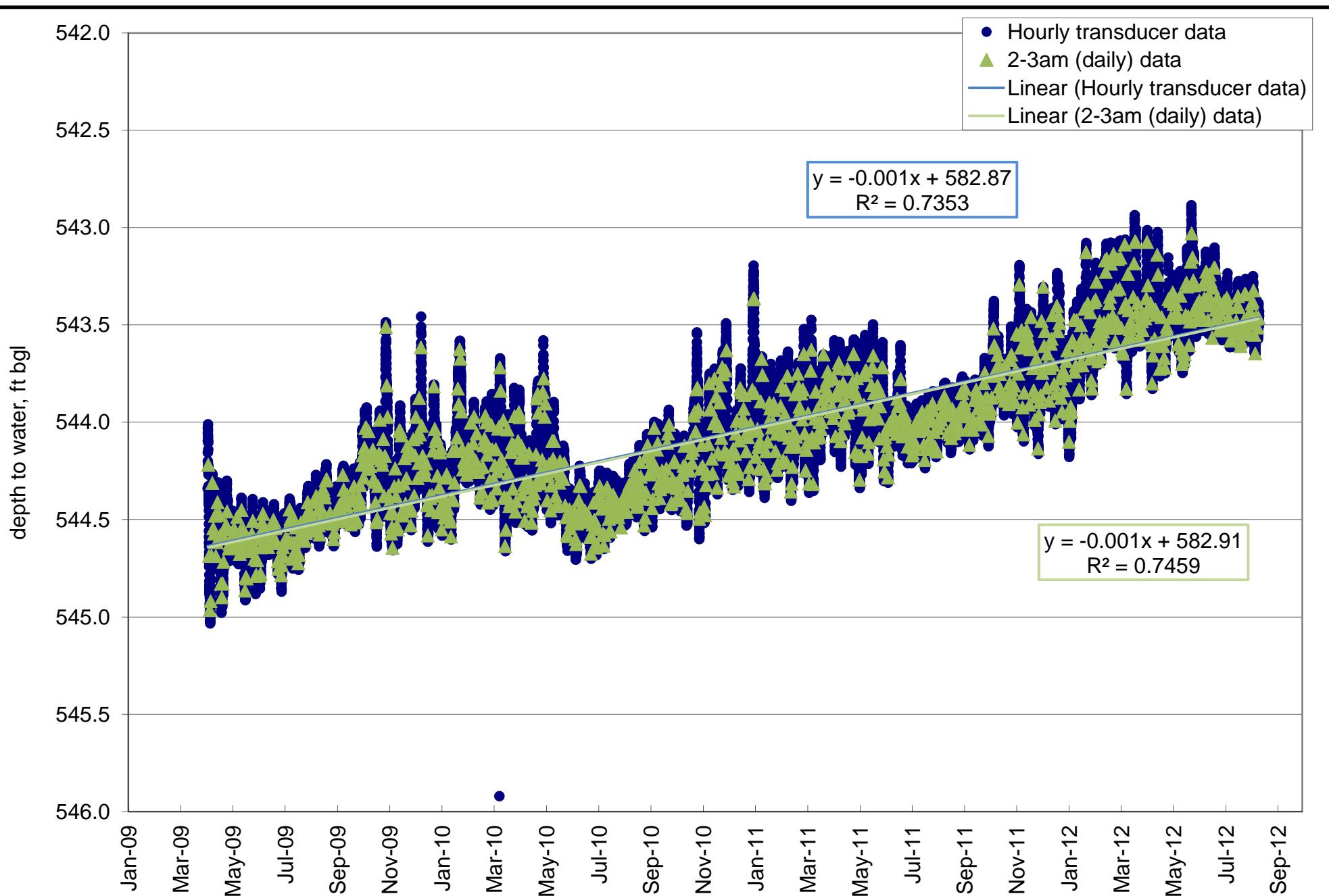
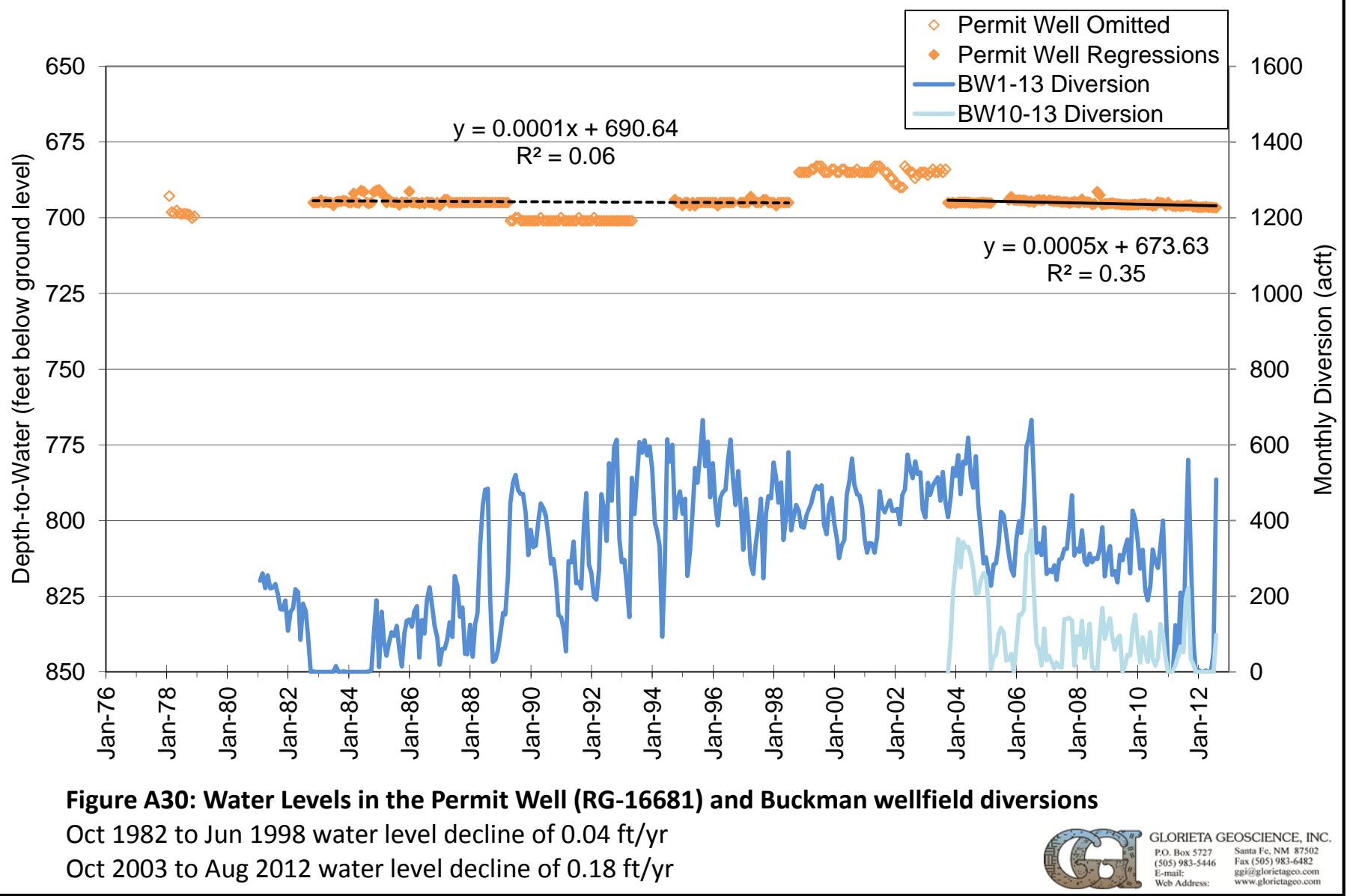


Figure A29: Hourly and daily transducer water levels in RG-30777



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**Figure A30: Water Levels in the Permit Well (RG-16681) and Buckman wellfield diversions**

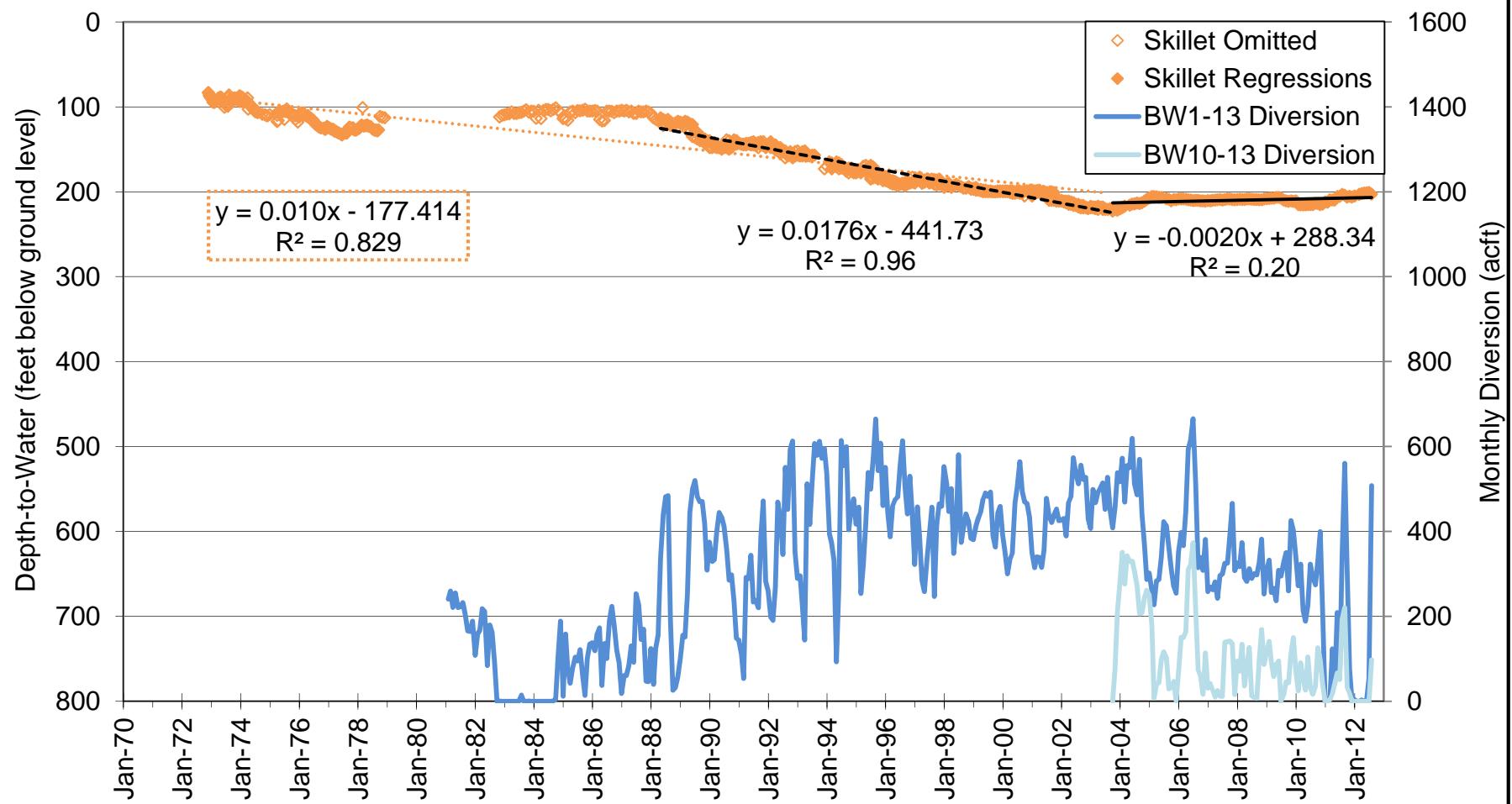
Oct 1982 to Jun 1998 water level decline of 0.04 ft/yr

Oct 2003 to Aug 2012 water level decline of 0.18 ft/yr



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**Figure A31: Water Levels in the Skillet Well (RG-21318) and Buckman wellfield diversions**

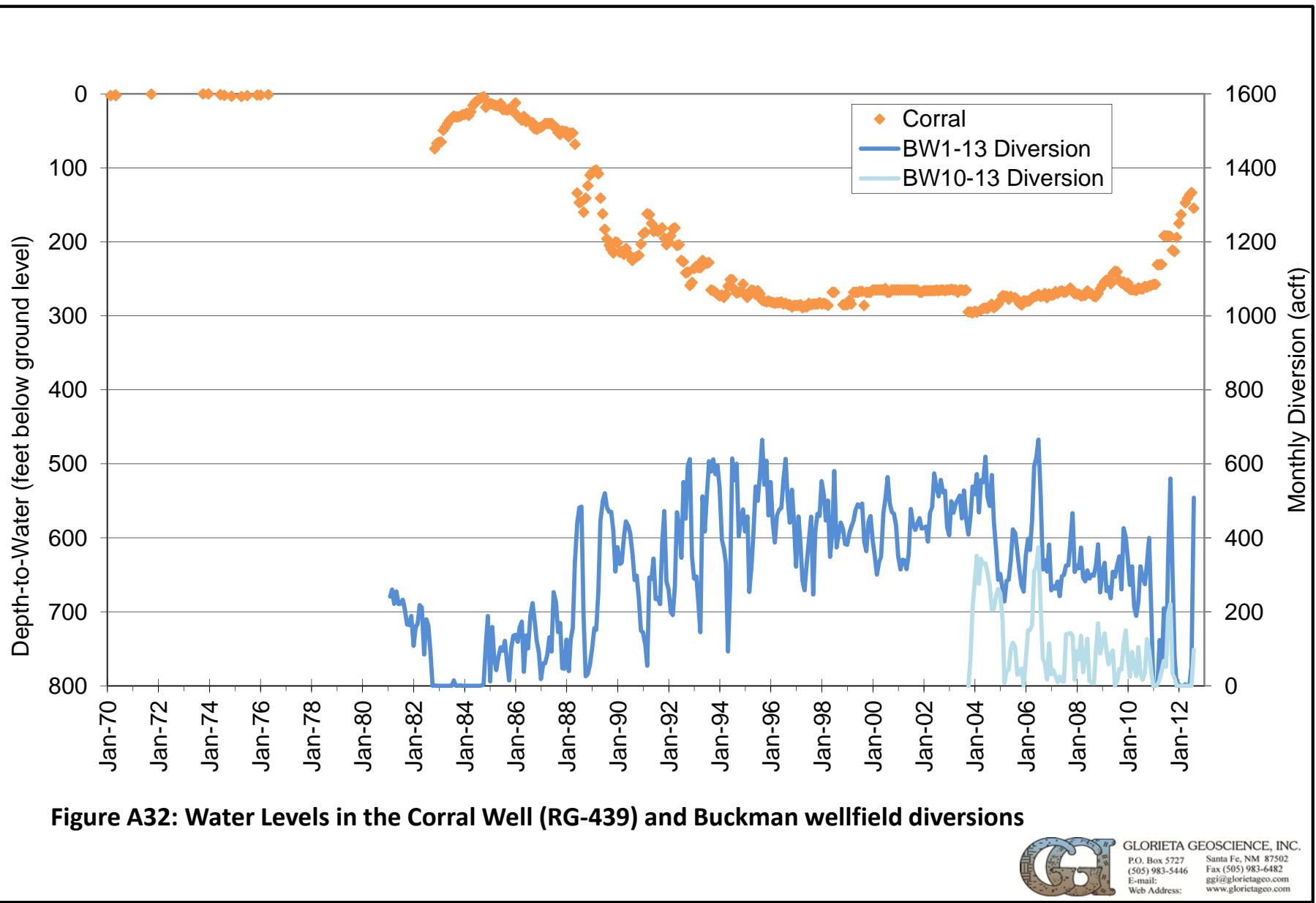
Nov 1972 to Sep 2003 water level decline of 3.65 ft/yr, Apr 1988 to Sep 2003 decline of 6.43 ft/yr

Oct 2003 to Aug 2012 water level rise of 0.73 ft/yr



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## **Appendix B**

### **10- and 40-year water column projections for Buckman Monitoring Program database wells**

### Appendix B. Buckman Monitoring Area Well and Well Permit Survey

(gray highlight = well location verified with site-specific data)

NMOSE Well ID	Well Owner(s) listed in NMOSE Database	Confirmed Well Owner	Other Well Names	Parcel Owner Listed in County Parcel Database	Street Address	Lot Description	Address Source	UTM Easting, m, NAD83	UTM Northing, m, NAD83	NMOSE T.R.Sec.qqq	Use	Diver-sion, ac-ft/yr	Drilling Date	Well Depth, ft	Depth to Water, ft	Con-toured decline rate, ft/yr	Starting Water Column, ft	Water Column After 10 Years, ft	Percent Water Column Remaining After 10 Years	Water Column After 40 Years, ft	Percent Water Column Remaining After 40 Years	Land Surface Elevation, ft amsl	Mon-i-toring Area	Other IDs	Notes
RG-00316	REGINALDO ESPINOZA, III, CHOLENE ESPINOZA, COMMERCIAL RESOURCES INC., JENNIFER JOHNS							401496	3949086		IRR	5.966	3/27/1957	40	20.00	-0.10	20.00	19.00	95	16.00	80	BMP			
RG-00437 CLW	COLLEGE AGRIC. HOME ECON. NEW, Frank Bond		Dead Dog WM					400343	3956715	18N.08E.33.134	STK	3	6/10/1995	700	407.68	-1.00	292.32	282.32	97	252.32	86	6166	BMP	table 30-B	
RG-00438	SUZANNE HOYT GARCIA, TRUSTEE, Robert H. Weil, McKinney		Midway WM					399191	3961850	18N.08E.17.21	STK	3	6/30/1962	310	254.46	-0.87	55.54	46.84	84	20.74	37	6034	BMP		
RG-00439	SUZANNE HOYT GARCIA, TRUSTEE, Robert H. Weil		Artesian, Corral					396449	3965653	19N.07E.36.44	STK	3	8/8/1947	325	265.80	-12.00	59.20	179.20	303	539.20	911	5662	BMP		
RG-04523	RUFINO MRS. GONZALES,		MEAD, WALTER L JR & EMILY C	101 CALLE ADELINA	LOT B-2 44.534 AC, T18N R 9E S30	COUNTY PLAT	406421	3958329	18N.09E.30.131	DOM	3	9/30/1960	170	95.00	-0.30	75.00	72.00	96	63.00	84	BMP				
RG-06128	LILLIAN M. WALKER,							402245	3962216	18N.08E.10.344	DOM	3	4/25/1993	700	525.00	-0.90	175.00	166.00	95	139.00	79	6430	BMP	table 30-A	
RG-06141	SUZANNE HOYT GARCIA, TRUSTEE, Robert H. Weil		LA TIERRA ASSOC INC	RANCH ESTATES RD	T17N R 8E S12 375.855 AC, REMAINDER UNDEVELOPED AREA	COUNTY PLAT	407117	3952667	17N.09E.7.431	STK	3	9/11/1961	560	500.00	-0.30	60.00	57.00	95	48.00	80	6720	BMP			
RG-06275	ROBERT H. WEIL, Western Cattle Co.							403339	3952770	17N.08E.11.332	STK	3	9/5/1961	436	385.00	-0.30	51.00	48.00	94	39.00	76	6480	BMP		
RG-06386	COLLEGE AGRIC. HOME ECON. NEW, Robert H. Weil		Tony's Windmill					405066	3959311	18N.08E.24.33	STK	3	9/13/1961	350	292.99	-0.11	57.01	55.91	98	52.61	92	6397	BMP		
RG-07248	COLLEGE OF AGRIC. & ECON. NEW, Robert H. Weil		Boondock well					399636	3965339	19N.08E.32.44	STK	3	8/3/1975	900	434.00	-4.00	466.00	506.00	109	626.00	134	6150	BMP	table 30-B	
RG-09740	U. S. FOREST SERVICE,		USFS Weir Well					400424	3951041	17N.08E.16.34	SAN	0	9/13/1963	514	461.00	-0.10	53.00	52.00	98	49.00	92	6393	BMP		
RG-14073 -REPAIR	U.S. FOREST SERVICE		1100 Ft Well					394978	3956163	18N.07E.35.4	STK	4.83	7/1/1966	1090	996.00	-2.00	94.00	114.00	121	174.00	185	6641	BMP		
RG-14451	W. J. ROUNSEVILLE,		NOVAKHTIAN, ABDOLREZA, MASOUD	82 PASEO DE LA TIERRA	LOT 5 LA TIERRA S/D PH 1, T17N R9E S 6	COUNTY PLAT	407082	3954847	17N.09E.6.	DOM	3	12/23/1966	614	550.00	-0.40	64.00	60.00	94	48.00	75	6683	BMP			
RG-16681	ROBERT H. WEIL,	Permit	POMEROY, CHARLES W & BARBARA	6 COLUMBINE LN	LOT 22 SALVA TIERRA UNIT 1, 2.038 AC, T17N R 9E S8,	COUNTY PLAT	404578	3964298	18N.08E.2.42	PDM	3	6/20/1969	745	574.00	-0.18	171.00	169.20	99	163.80	96	BMP				
RG-17409	ROBERT H WEIL,		SMITH, STEPHEN R DR	36 PICACHO PEAK	LOT 640 LAS CAMPANAS PH V, 14.07 AC, T18N R 9E S32,	COUNTY PLAT	408234	3952574	17N.09E.8.334	DOL	3	1970	1980	466.00	-0.30	1514.00	1511.00	100	1502.00	99	6800	BMP			
RG-17410	ROBERT H WEIL,		MCDougall, Richard & MARY	17 WILDFLOWER WAY	T17N R 9E S18 2.51 AC LOT B,	COUNTY PLAT	407542	3951276	17N.09E.18.423	DOM	3	7/12/1971	608	565.00	-0.30	43.00	40.00	93	31.00	72	6790	BMP			
RG-19117	LUDEN, FRITZ, Kris Hotvedt		POLANCO, LEE B	T17N R 9E S9 3.380 AC, LOT 1-A	COUNTY PLAT	409481	3953882	17N.09E.5.445	SAN	0	10/3/1972	220	140.00	-0.30	80.00	77.00	96	68.00	85		BMP				
RG-21516	CINCO PARA MANANA, VILLAGE GATE HOLDINGS		MILLER, NEIL Z & SUSANNE B	1 CAMINO DELILAH	LOT 4 5.346 AC, T17N R 9E S18	COUNTY PLAT	406964	3951493	17N.09E.18.322	DOM	3	10/16/1973	216	163.00	-0.10	53.00	52.00	98	49.00	92		BMP	table 30-A		
RG-23806	ELIOT STREEPER		BOMSE, PEARL & MARC &	59 SONRISA TRL	LOT 4 LA TIERRA PHASE 1, T17N R 9E S 6	COUNTY PLAT	406977	3954740	17N.09E.6.322	DOM	3	12/29/1973	400	300.00	-0.30	100.00	97.00	97	88.00	88	6701	BMP			
RG-24364	E. C DE BACA,		NAMINGHA, DANIEL & FRANCES	68 PASEO DE LA TIERRA	COUNTY PLAT, 9/2/04 Charles Harrison submittal to Louis O'Dell, NMOSE	86 Headquarters Trail	405692	3955377	17N.8E.1.2123	DOM	3	4/19/1974	602	426.45	-0.50	175.55	170.55	97	155.55	89	6554	BMP	table 30-B		
RG-24584 POD1	BOB WEIL, Daniels	Jeanne C. Daniels	Headquarters, Daniels	CREED, JEANNE H	LOT 59 LA TIERRA PHASE 2, T18N R9E S31 10.009 AC	COUNTY PLAT	407931	3956170	18N.09E.32.41	DOM	3	5/16/1974	697	496.44	-0.40	200.56	196.56	98	184.56	92	6722	BMP			
RG-24855	ROBET H. WEIL, Kubert		La Tierra	ARENA, DREW C & ELISE PINKOW	T17N R 9E S18 23.982 AC, TRACT B	COUNTY PLAT	407040	3951072	17N.09E.18.324	DOM	3	7/22/1974	697	528.00	-0.30	169.00	166.00	98	157.00	93		BMP			
RG-24968	DREW C. & LYNN D. ARENA,		BOGLE, GLENN G & SUSAN R	218 PASEO DE LA TIERRA	LOT 16 LA TIERRA PHASE 1, T17N R 9E S31	COUNTY PLAT	407017	3956720	18N.09E.31.211	DOM	3	10/22/1974	841	468.25	-0.26	372.75	370.15	99	362.35	97	6664	BMP			
RG-25463	JEANETTE LILIENTHAL,		La Tierra, Pinon	La Tierra, South Well	LOT 4 LA TIERRA PHASE 1, T17N R 9E S 6	COUNTY PLAT	407026	3954795	17N.09E.6.114	DOM	0	1975	735	445.85	-0.30	289.15	286.15	99	277.15	96	6708	BMP			
RG-25637	SUSAN MERWIN, W.P. Saunders		MACCORQUODALE, MICHAEL & PAM	12 HORCADO RANCH	LOT 29 LA TIERRA PHASE 1, T17N R 9E S31	COUNTY PLAT	406010	3957550	18N.09E.25.431	DOM	3	7/5/1975	167	43.00	-0.40	124.00	120.00	97	108.00	87	6600	BMP			
RG-26697	WILLIAM S. ELKINS,		PHINNEY, ROBERT T & MARGARET	12 ESTRADA REDONDA	LOT 33 LA TIERRA PHASE 1 PARK, NEXT TO T17N R 9E S31, PARK NO TAXABLE VALUE,	COUNTY PLAT	401478	3960568	18N.08E.	DOM	3	12/15/1975	650	480.00	-1.40	170.00	156.00	92	114.00	67		BMP?			
RG-27928	PETER DYKE,		ANDERSON, JON R & ANNE-DRUE	12 ESTRADA REDONDA	LOT 33 LA TIERRA PHASE 1 PARK, NEXT TO T17N R 9E S31, PARK NO TAXABLE VALUE,	COUNTY PLAT	406599	3956321	18N.09E.31.312	DOM	3	4/10/2004	900	555.00	-0.50	345.00	340.00	99	325.00	94	6701	BMP			
RG-28007	DON HENRY,		La Tierra 32-T-1	12 ESTRADA REDONDA	LOT 33 LA TIERRA PHASE 1 PARK, NEXT TO T17N R 9E S31, PARK NO TAXABLE VALUE,	COUNTY PLAT	406395	3955740	18N.09E.31.																

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RG-32871	MARK JONES, Paul B. Schmidt and Elise Wheless Schmidt				Lot 40, La Tierra	406879 3954516					DOM	3	7/19/1979	700	580.00	-0.30	120.00	117.00	98	108.00	90		BMP		
RG-33170	JOHN O. ZINN, Elise Wheless			WHELESS, ELISE	37 VUELTA TOMAS	LOT 46 LA TIERRA PHASE 2, T17N R 9E S 6 11.890 AC	COUNTY PLAT	406489 3954272			DOM	3	9/15/1979	680	540.00	-0.40	140.00	136.00	97	124.00	89		BMP		
RG-33382 EXPL1	RICHARD M. HAGER, ANNIE CONSTANT			NORTHWEST RANCHES LLC	28 CAMINO LOS SUENOS	T17N R 9E S19 2.500 AC, LOT 4	COUNTY PLAT	406448 3950465	17N.09E.19.11		DOM	3	9/8/1979	640	520.00	-0.20	120.00	118.00	98	112.00	93		BMP		
RG-33451	LEONARD E. SHULMAN, M.D.			KENNEY, NANCY BERGERE & ELLEN,	A-2, N2, SW4, SW4 SW4,	T18N R 9E S19 62.525 AC, LOT A-2, N2, SW4, SW4 SW4,	COUNTY PLAT	407031 3958929	18N.09E.19.344		DOM	3	10/30/1979	450	200.00	-0.20	250.00	248.00	99	242.00	97		BMP		
RG-33833	BURTON AND PAULA GEYER	Burton L. and Paula Geyer			21 Goodnight Trail West	9/2/04 Charles Harrison submittal to Louis O'Dell, NMOSE	405209 3954630				DOM	3	3/13/1980	700	580.00	-0.50	120.00	115.00	96	100.00	83		BMP		
RG-34804	MARIAM BROWNE,			LEBLANC, STEVEN R & ELLEN A	T16N R10E S21, 30.627 AC	COUNTY PLAT	407399 3951520	17N.09E.18.412		MUL	3	10/3/1980	400	60.00	-0.30	340.00	337.00	99	328.00	96		BMP			
RG-35350	JOACHIM T. WIRTH,			GEORGE, JAMES S & BARBARA	86 PASEO DE LA TIERRA	LOT 6 LA TIERRA PHASE 1, T17N R 9E S 6	COUNTY PLAT	406982 3955141	17N.09E.6.142		PDM	3	12/2/1980	720	375.00	-0.40	345.00	341.00	99	329.00	95		BMP		
RG-35630	JAMES H. WHEELOCK,			HANDELSMAN, STUART	31 VISTA CALABASAS	T17N R 9E S18 5.037 AC TR A, HANSEN & ZILECEA SURVEY	COUNTY PLAT	406749 3952121	17N.09E.18.123		DOM	3	5/12/1986	605	455.00	-0.30	150.00	147.00	98	138.00	92		BMP		
RG-35802	YARKO KOZIY,					395871 3958899	17N.09E.18.233			DOM	3	3/24/1981	720	600.00	2.00	120.00	140.00	117	200.00	167		BMP			
RG-36031	DAVID GARRISON,			GARRISON, DAVID	138 ESTRADA REDONDA	T18N R 9E S32 16.63 AC, LOT 91 LA TIERRA PHASE 3	COUNTY PLAT	408142 3956772	18N.09E.32.		DOM	3	4/27/1981	700	620.00	-0.40	80.00	76.00	95	64.00	80		BMP		
RG-37078 CLW	BOB WEIL, ROLAND BETTS	Roland and Lois Betts			6 Headquarters Trail	9/2/04 Charles Harrison submittal to Louis O'Dell, NMOSE	405591 3954061	17N.08E.1.413		DOM	0	12/15/1993	755	580.00	-0.40	175.00	171.00	98	159.00	91	6693	BMP	table 30-B		
RG-37113	EUGENE E., TRUSTEE BECK,			LINCOLN, CYNTHIA H TRUST	LOT 76 LA TIERRA NUEVA, T17N R 8E S 1	COUNTY PLAT	405476 3954840	17N.08E.1.		DOM	3	11/25/1981	700	527.00	-0.50	173.00	168.00	97	153.00	88	6668	BMP	table 30-B		
RG-37164	ROBERT MARCUS,			82 PASEO DE LA TIERRA	T17N R 9E S5 184.91 AC, TRACT A, LIVESTOCK ON ACCT 970001905,	COUNTY PLAT	408098 3955429	17N.09E.5.11		DOM	3	12/1/1981	950	604.70	-0.40	345.30	341.30	99	329.30	95	6919	BMP			
RG-37582	GLORIA GAUGHAN,			Mountain Vista	ROUNSVILLE, WILLIAM J	86 PASEO DE LA TIERRA	COUNTY PLAT	399421 3950816	17N.09E.18.22		DOM	3	2/12/1982	700	550.00	-0.10	150.00	149.00	99	146.00	97		BMP		
RG-37817	DAVID C NELSON,			GEORGE, JAMES S & BARBARA	T17N R 9E S6 10.89 AC, LOT 97 LA TIERRA PHASE 1, T17N R 9E S 6	COUNTY PLAT	406685 3955076	17N.09E.6.		DOM	3	4/23/1982	720	600.00	-0.40	120.00	116.00	97	104.00	87	6683	BMP			
RG-37879	MARCIA J. WILSON,			RIMBEAUX, B C	44 VALLECITO RD	LOT 17 VALLECITO DE LA TIERRA, T17N R 9E S18 2.97 AC	COUNTY PLAT	407450 3951838	17N.08E.17.443		DOM	3	6/1/1982	600	460.00	-0.30	140.00	137.00	98	128.00	91		BMP		
RG-40491	FRANCIS MURPHY	Francis Michael Murphy and Joan-Ann Ryan-Murphy		MURPHY, FRANCIS M & JOAN ANN	34 CHISHOLM TRL	LOT 26 LA TIERRA NUEVA, T17N R 8E S 1 10.869 AC	COUNTY PLAT	404883 3954138			DOM	3	9/16/1983	730	590.00	-0.50	140.00	135.00	96	120.00	86		BMP		
RG-40722	KATHLEEN MLOTOK,					403884 3956473	18N.08E.35.			DOM	3	9/9/1983	756	603.00	-0.80	153.00	145.00	95	121.00	79		BMP			
RG-40978	COURTLANDT & KATRINA BARNES,			BARNES, COURTLANDT D & KATRINA	2 WILDFLOWER WAY	T17N R 9E S18 10 AC SE4 PORT, T18N R 9E S32 10.89 AC, LOT 97 LA TIERRA PHASE 3	COUNTY PLAT	407745 3951291	17N.09E.18.424		DOM	3	1/26/1984	720	600.00	-0.30	120.00	117.00	98	108.00	90		BMP		
RG-41872	EDWARD E. JR. CROCKER,			NAVA, GREGORY	29 ESTRADA MAYA	COUNTY PLAT	408842 3957099	18N.09E.32.211		DOM	3	2/19/1984	730	550.00	-0.20	180.00	178.00	99	172.00	96	6783	BMP			
RG-42335	RANDLOW SMITH,			RIMBEAUX, B C	44 VALLECITO RD	LOT 17 VALLECITO DE LA TIERRA, T17N R 9E S18 2.97 AC	COUNTY PLAT	407450 3951838	17N.09E.1.332		DOM	3	8/7/1984	740	550.00	-0.30	190.00	187.00	98	178.00	94		BMP		
RG-42618	CHARLES S. VON STADE	Eleanor T. and Charles S. von Stade			42 Chisholm Trail	9/2/04 Charles Harrison submittal to Louis O'Dell, NMOSE	404814 3954123			DOM	3	10/18/1984	605	520.00	-0.50	85.00	80.00	94	65.00	76		BMP			
RG-46386	DANIEL FORMAN,			CITY OF SANTA FE	CITY PROPERTY	CITY PROPERTY, MAPPING PURPOSE ONLY	COUNTY PLAT	411114 3953865	17N.09E.18.414		DOM	3	10/16/1986	605	380.00	-0.10	225.00	224.00	100	221.00	98		BMP		
RG-48491	DARLENE STREIT,	Michael and Tami Lang		LANG, MICHAEL S & TAMI	173 CHISHOLM TRL	LOT 49 LA TIERRA NUEVA, T17N R 8E S 2 15.245 AC	COUNTY PLAT	403827 3955337	17N.08E.2.121		DOM	3	11/24/1987	730	530.00	-0.70	200.00	193.00	97	172.00	86	6564	BMP	table 30-B	
RG-48897	WLATER L. & EMILY C. MEAD,			MEAD, WALTER L JR & EMILY C	29 CALLE ADELINA	T18N R 9E S30 40 AC SE4-SW4, UND INTEREST	COUNTY PLAT	406915 3957423	18N.09E.30.34		DOM	3	4/11/1988	800	580.00	-0.40	220.00	216.00	98	204.00	93	6638	BMP		
RG-48897 X2	WLATER L. & EMILY C. MEAD,			MEAD, WALTER L JR & EMILY C	29 CALLE ADELINA	T18N R 9E S30 40 AC SE4-SW4, UND INTEREST	COUNTY PLAT	407014 3957522	18N.09E.30.342		DOM	3	11/14/1996	760	422.00	-0.30	338.00	335.00	99	326.00	96	6617	BMP		
RG-49717	GLORIA GAUGHAM,			CHRIST, RONALD TRUSTEE OF	40 CAMINO CIELO	T17N R 9E S18 2.907 AC, LOT 4 A CIELO AZUL	COUNTY PLAT	406273 3952251	17N.09E.18.		DOM	3	9/6/1988	700	600.00	-0.30	100.00	97.00	97	88.00	88		BMP		
RG-49952	JOSEPH MORSE	Florence and Joseph Morse</td																							

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RG-53999	ROBERT & CAROL CARUTHERS,			LOVE RANCH PARTNERS LLC	T17N R 9E S18, TR D, 20.00 AC,	COUNTY PLAT	407467	3951068	17N.09E.18.423	MUL	3	6/30/1991	700	500.00	-0.30	200.00	197.00	99	188.00	94		BMP			
RG-54000	CANDIS NELSON,			LOVE RANCH PARTNERS LLC	T17N R 9E S18, TR D, 20.00 AC,	COUNTY PLAT	407467	3951068	17N.09E.18.423	MUL	3	7/9/1991	730	500.00	-0.30	230.00	227.00	99	218.00	95		BMP			
RG-54001	B. C. RIMBEAUX,			LOVE RANCH PARTNERS LLC	T17N R 9E S18, TR D, 20.00 AC,	COUNTY PLAT	407467	3951068	17N.09E.18.423	MUL	3	9/5/1991	718	500.00	-0.30	218.00	215.00	99	206.00	94		BMP			
RG-54066	JAMES KARP,	James and Arlene Karp		BERNSTEIN, TOM A & ANDREA E	11 Longhorn Lane	Lot 42 La Tierra Nueva	9/2/04 Charles Harrison submittal to Louis O'Dell, NMOSE	403672	3954737	17N.08E.2.142	DOM	3	7/31/1991	760	540.00	-0.60	220.00	214.00	97	196.00	89	6549	BMP	table 30-B	
RG-54262	WELLS W. WHITNEY,	Philip Grasso		KENNEY GRANDCHILDRENS	50 CALLE ADELINA	T18N R 9E S30 21.056 AC, TR D	COUNTY PLAT	406823	3958125	18N.09E.30.143	DOM	3	9/19/1991	715	560.00	-0.30	155.00	152.00	98	143.00	92	6575	BMP	table 30-B	
RG-54319	JEROME MARSHAK,						9/2/04 Charles Harrison submittal to Louis O'Dell, NMOSE	403699	3954577	17N.08E.2.223	DOM	3	11/8/1991	755	535.00	-0.60	220.00	214.00	97	196.00	89	6531	BMP		
RG-54395	CLAY BERGER,	John L. Babbitt			38 Goodnight Trail	Lot 9 La Tierra Nueva	9/2/04 Charles Harrison submittal to Louis O'Dell, NMOSE	406245	3954574	17N.08E.1.421	DOM	3	9/25/1991	740	580.00	-0.40	160.00	156.00	98	144.00	90	6646	BMP	table 30-B	
RG-54655	WILLIAM C. III HARKER,			ELTON, DEBBIE		T17N R 9E S18 5 AC LOT 4A, AS PER DEATH CERTIFICATE, #091019,	COUNTY PLAT	406979	3951747		MUL	3	12/23/1991	700	580.00	-0.30	120.00	117.00	98	108.00	90	6681	BMP		
RG-54919	PING & DEBORAH LEE,			MURATA, HIROSHI & NANCY	22 VUELTA CHAMISA R 9E S 6	LOT 8 LA TIERRA PHASE 1, T17N R 9E S 6	COUNTY PLAT	406788	3955542	17N.09E.6.121	DOM	3	3/8/1992	660	500.00	-0.40	160.00	156.00	98	144.00	90	6622	BMP		
RG-54938	WILLIAM & JOANNA SEITZ,			MEAD, WALTER L JR & EMILY C	57 CALLE ADELINA 9E S30	LOT B-3 45.458 AC, T18N R 9E S30	COUNTY PLAT	406616	3957928	18N.09E.30.312	DOM	3	3/7/1992	700	550.00	-0.30	150.00	147.00	98	138.00	92	6555	BMP		
RG-55206	LA LUZ GROUP, LLC,			MCCURDY, RICHARD B TRUSTEE	60 E ESTRADA CALABASA	LOT 57 LA TIERRA S/D PH 2, T18N R 9E S31 10.992 AC	COUNTY PLAT	402036	3961412	18N.08E.15.143	DOM	0	9/28/1992	655	580.00	-1.10	75.00	64.00	85	31.00	41	6394	BMP	table 30-B	
RG-55696 CLW	R. L. BURKE,																								
RG-55734	JILL & MITCHEL, PAUL NORTON,	Jill A. Norton			138 Chisholm Trail	Lot 44 La Tierra Nueva	9/2/04 Charles Harrison submittal to Louis O'Dell, NMOSE	403477	3954854	17N.08E.2.124	DOM	3	8/19/1992	740	500.00	-0.70	240.00	233.00	97	212.00	88	6558	BMP	table 30-B	
RG-55885	CUSTOM PROPERTIES OF SANTA FE, JAMES D. WARREN	William L. Oliver, Jr., and Mary Lynn Oliver			54 Headquarters Trail	Lot 78 La Tierra Nueva	9/2/04 Charles Harrison submittal to Louis O'Dell, NMOSE	405763	3954711	17N.08E.1.233	DOM	3	8/25/1992	750	530.00	-0.50	220.00	215.00	98	200.00	91	6622	BMP		
RG-56282	CLIFF WALBRIDGE,	Donald and Karen Berlanti Revocable Trust		BERLANTI, DONALD V & KAREN L	171 HEADQUARTERS TRL	LOT 69 LA TIERRA NUEVA, T17N R 8E S 1 27.273 AC	COUNTY PLAT	405170	3955316	17N.08E.1.123	DOM	3	12/18/1992	700	520.00	-0.60	180.00	174.00	97	156.00	87	6620	BMP	table 30-B	
RG-56667	DON & DEBBIE WOODIN,			LOVE RANCH PARTNERS LLC	T17N R 9E S18, TR C, 20.20 AC,	COUNTY PLAT	407065	3951041	17N.09E.18.431	MUL	3	4/3/1993	725	630.00	-0.30	95.00	92.00	97	83.00	87		BMP			
RG-56804	MYRON G. RIGHTMAN,			UNFRID, CHARLES O JR & NANCY	17 VUELTA YUCCA	T18N R 9E S32 13.30 AC, LOT 79 LA TIERRA PHASE 3	COUNTY PLAT	408252	3958516	18N.09E.29.114	DOM	3	3/3/1993	705	420.00	-0.20	285.00	283.00	99	277.00	97		BMP		
RG-56880	PRICILLA TEMPLE,																								
RG-57586	JAIME TRUJILLO,																								
RG-57619	ERIC A. SAMLER,			WAGNER, LINDA J	34 RABBITBRUSH	T17N R 9E S19	COUNTY PLAT	407031	3950240	17N.09E.19.124	MUL	3	2/18/1994	643	481.00	-0.20	162.00	160.00	99	154.00	95		BMP		
RG-57851	SUSAN GARDNER, Trujillo	Guesthouse		TRUJILLO, RICARDO B	16 CAMINO LADERA	T17N R 9E S 5 LOT 1-D 5.060 AC,	COUNTY PLAT	409294	3955311	17N.09E.5.412	DOM	3	9/29/1993	864	520.00	-0.30	344.00	341.00	99	332.00	97	6863	BMP		
RG-57909 EXPL	PETER ORWDAY,																								
RG-57968	SARA VACHA,				16 CAMINO CALABASAS	T17N R 9E S18 LOT 1 2.50 AC,	COUNTY PLAT	407856	3952235	17N.09E.18.222	DOM	3	8/21/1993	700	540.00	-0.30	160.00	157.00	98	148.00	93		BMP		
RG-58366	HACIENDA DEL CEREZO LTD..	HDC1				T18N R 9E S 1 NW4-SW4-S2, SW4-, N2-NW4 & LOT 6, T18N R 9E S18 217.113 AC.	COUNTY PLAT	406473	3960061	18N.09E.19.113	SAN	3	1/6/1994	945	396.00	-0.20	549.00	547.00	100	541.00	99	6551	BMP		
RG-58534	CARRIE LEE KAYE,			ROSENZWOG, JANET		LOT 16 VALLECITO DE LA TIERRA, T17N R 9E S18	COUNTY PLAT	407475	3951869	17N.09E.18.223	DOM	0		800	500.00	-0.30	300.00	297.00	99	288.00	96		BMP		
RG-59101	DAVID C. ZERBST,			GRANT, PETER A & JOAN C		T17N R 9E S18 5.0765 AC, LOT A-4	COUNTY PLAT	407454	3952239	17N.09E.18.212	MUL	3	3/16/1994	750	445.00	-0.30	305.00	302.00	99	293.00	96		BMP		
RG-59195	MICHAEL HURLOCKER,	Los Suenos Expl	JANS, NEILA A & IRENE L		10 E CLOUD MARCH	SUENOS S/D LOT 8	COUNTY PLAT	406047	3951057	17N.08E.13.441	MUL	3	3/25/1994	845	448.70	-0.20	396.30	394.30	99	388.30	98	6661	BMP		
RG-59213	MICHAEL & BARBARA OGG,	Barbara and Michael J. Ogg		OGG, MICHAEL J & BARBARA DOROB	209 HEADQUARTERS TRL	LOT 66 LA TIERRA NUEVA, T17N R 8E S 2 17.704 AC	COUNTY PLAT	404678	3955430	17N.08E.2.222	DOM	3	4/6/1994	750	500.00	-0.60	250.00	244.00	98	226.00	90	6508	BMP		
RG-59386	GABRIELLE BURKE,							405044</td																	

### Appendix B. Buckman Monitoring Area Well and Well Permit Survey

		(gray highlight = well location verified with site-specific data)																							
NMOSE Well ID	Well Owner(s) listed in NMOSE Database	Confirmed Well Owner	Other Well Names	Parcel Owner Listed in County Parcel Database	Street Address	Lot Description	Address Source	UTM Easting, m, NAD83	UTM Northing, m, NAD83	NMOSE T.R.Sec.ddd	Use	Diver-sion, ac-ft/yr	Drilling Date	Well Depth, ft	Depth to Water, ft	Con-toured decline rate, ft/yr	Starting Water Column, ft	Water Column After 10 Years, ft	Percent Water Column Remaining After 10 Years	Water Column After 40 Years, ft	Percent Water Column Remaining After 40 Years	Land Surface Elevation, ft amsl	Mon-itoring Area	Other IDs	Notes
RG-61551	TOM BLOG,			MEAD, WALTER L JR & EMILY C	29 CALLE ADELINA	T18N R 9E S30 40 AC SE4-SW4, UND INTEREST	COUNTY PLAT	406814	3957522	18N.09E.30.341	DOM	3	2/11/1995	810	580.00	-0.40	230.00	226.00	98	214.00	93	6617	BMP		
RG-61944	ROBERT T RITTER,	Robert and Connie Ritter			10 SHORTHORN LN	Lot 6 La Tierra Nueva	9/2/04 Charles Harrison submittal to Louis O'Dell, NMOSE	406049	3953948	17N.08E.12.121	DOM	3	3/25/1995	710	585.00	-0.40	125.00	121.00	97	109.00	87	6625	BMP	table 30-B	
RG-62974	RICHARD S PODMORE,			MORO, RAYMOND & IRIS D	12 DEER CIR	LOT 269 LAS CAMPANAS ESTATES II	COUNTY PLAT	407852	3951865	17N.09E.18.224	DOM	3	1/11/1996	800	460.00	-0.30	340.00	337.00	99	328.00	96		BMP		
RG-63280	LAURA BETH CLAYTON,			COST, RICHARD & STACEY	19 VUELTA CHAMISA	LOT 10 LA TIERRA PHASE 1, T17N R 9E S 6	COUNTY PLAT	406988	3955542	17N.09E.6.122	DOM	3	10/4/1995	760	490.00	-0.40	270.00	266.00	99	254.00	94	6691	BMP		
RG-64419	SYLVIA SWANSON,	E. Gifford Stack and Sylvia E. Swanson		SWANSON, SYLVIA E & E GIFFORD	97 CHISHOLM TRL	LOT 36 LA TIERRA NUEVA 1, T17N R 8E S 2, 10.030 AC.	COUNTY PLAT	404293	3954920	17N.08E.2.421	DOM	3	5/31/1996	740	500.00	-0.60	240.00	234.00	98	216.00	90	6620	BMP	table 30-B	
RG-65175	GREGORY COLE,			MEAD, WALTER L JR & EMILY C	57 CALLE ADELINA	LOT B-3 45.458 AC, T18N R 9E S30	COUNTY PLAT	407019	3957723	18N.09E.30.324	MUL	3	8/22/1996	800	560.00	-0.30	240.00	237.00	99	228.00	95	6602	BMP		
RG-65180	SUKI GROSECLOSE,	Everett and Susan Groseclose		GROSECLOSE, EVERETT H & SUSAN	57 E GOODNIGHT TRL	LOT 14 LA TIERRA NUEVA, T17N R 8E S 1, 13.942 AC.	COUNTY PLAT	406081	3954653	17N.08E.1.423	SAN	3	5/10/1996	756	530.00	-0.40	226.00	222.00	98	210.00	93	6695	BMP		
RG-65244	MICHAEL LAWRENCE,			TARN, NATHANIEL R TRUSTEE	77 VUELTA MARIA	LOT 27 LAS DOS PHASE 1, T18N R 9E S29 10.856 AC	COUNTY PLAT	408245	3957711	18N.09E.29.314	DOM	3	10/22/1996	800	560.00	-0.20	240.00	238.00	99	232.00	97	6709	BMP		
RG-65566	PHYLLIS L. NEWCOMER,	Dr. Phyllis L. Newcomer		NEWCOMER, PHYLLIS L	79 CHISHOLM TRL	LOT 33 LA TIERRA NUEVA S/D, T17N R 8E S 2, 10.794 AC.	COUNTY PLAT	404331	3955009	17N.08E.2.421	DOM	3	5/5/1998	765	542.00	-0.60	223.00	217.00	97	199.00	89	6620	BMP	table 30-B	
RG-65584	CHARLES HARRISON,	Charles Harrison		HARRISON, CHARLES & RAWSON,	181 CHISHOLM TRL	LOT 51 LA TIERRA NUEVA, T17N R 8E S 2 14.399 AC	COUNTY PLAT	403243	3955504	17N.08E.2.112	DOM	3	8/17/1997	755	535.00	-0.80	220.00	212.00	96	188.00	85	6499	BMP	table 30-B	
RG-66147	ELISE WHELESS,			WHELESS, ELISE	22 VUELTA SABIO	LOT 49 LA TIERRA PHASE 2, T17N R 9E S 6 12.814 AC	COUNTY PLAT	406478	3954618	17N.09E.6.314	DOM	3	1/22/1997	750	500.00	-0.40	250.00	246.00	98	234.00	94	6702	BMP		
RG-66978	CITY OF SANTA FE/CIP,							403104	3949122	17N.08E.26.111	SAN	3	5/1/1997	890	240.00	-0.10	650.00	649.00	100	646.00	99	6460	BMP		
RG-67134	DAVID KENNEY,			KENNEY, DAVID	146 CALLE JOSEPHINA	T18N R 9E S19 62.502 AC, TR C	COUNTY PLAT	407241	3959929	18N.09E.19.231	DOM	3	5/26/1999	270	60.00	-0.20	210.00	208.00	99	202.00	96	6543	BMP		
RG-67485	LAWRENCE BURKE,			Mariah Ranch				405067	3962076	18N.08E.13.141	DOM	3	11/25/1997	880	420.00	-0.50	460.00	455.00	99	440.00	96	6522	BMP		
RG-68309	DAN MCCOY,			LOGAN, STANLEY & MARJORIE	150 ESTRADA REDONDA	T18N R 9E S32 11.65 AC, LOT 89 LA TIERRA PHASE 3	COUNTY PLAT	408034	3956504	18N.09E.32.133	DOM	3	9/10/1997	700	550.00	-0.40	150.00	146.00	97	134.00	89	6785	BMP		
RG-68712	DENNIS & MARLYS WHITE,			WHITE, MARLYS RUTH	48 E ESTRADA CALABASA	LOT 54 LA TIERRA PHASE 2, T18N R 9E S31 10.134 AC	COUNTY PLAT	407365	3955733	18N.09E.31.434	DOM	3	4/10/1998	740	520.00	-0.40	220.00	216.00	98	204.00	93	6674	BMP		
RG-69121	GREGORY SWENDSEN,			BELL, SUSAN H	185 CALLE JOSEPHINA	T18N R 9E S19 12.50 AC, TR A-1	COUNTY PLAT	406438	3959936	18N.09E.19.131	DOM	3	6/8/1998	760	404.00	-0.20	356.00	354.00	99	348.00	98	6551	BMP		
RG-69782	RICHARD & HELEN WOLFORD,	Richard and Helen Wolford			103 Chisholm Trail	Lot 37 La Tierra Nueva	9/2/04 Charles Harrison submittal to Louis O'Dell, NMOSE	404106	3955085	17N.08E.2.233	MUL	3	6/13/1998	785	572.00	-0.70	213.00	206.00	97	185.00	87	6569	BMP	table 30-B	
RG-70634	STEPHEN KIRSCHENBAUM,			Hacienda del Cerezo HDC2		T18N R 9E S 1 NW4-SW4-S2, SW4-N2-NW4 & LOT 6, T18N R 9E S18 217.113 AC,	COUNTY PLAT	406851	3960801	18N.09E.18.341	DOM	3	2/24/1999	800	426.00	-0.20	374.00	372.00	99	366.00	98	6587	BMP		
RG-71056	SUSAN B. HADLEY,			VELTMANN, JOSEPH R JR	TANO RD	T17N R 9E S 5 5.02 AC LOT 1A,	COUNTY PLAT	409408	3954304	17N.09E.5.442	MUL	3	12/15/1998	923	660.00	-0.30	263.00	260.00	99	251.00	95		BMP		
RG-71298	FRANK P.L. AND LYNNE S. MINAR,	Frank and Lynne Minard		MINARD, FRANK P L & LYNNE S	161 HEADQUARTERS TRL	LOT 70 LA TIERRA NUEVA, T17N R 8E S36 24.159 AC	COUNTY PLAT	405074	3955773	18N.08E.36.334	DOM	3	11/22/1993	700	580.00	-0.60	120.00	114.00	95	96.00	80	6558	BMP		
RG-71558	GAIL & PATRICK CASEY,			FARLEY, TERRANCE C & JOAN C	23 VUELTA YUCCA	T18N R 9E S32 12.75 AC, LOT 81 LA TIERRA PHASE 3	COUNTY PLAT	408429	3955921	18N.09E.32.341	DOM	3	6/11/1999	800	515.00	-0.40	285.00	281.00	99	269.00	94	6781	BMP		
RG-71583	JOYCE LIBUTTI,			HARRIS, JOHN G & M CHRISTINE	13 PASEO DEL PAJARO	T17N R 9E S 5 8.510 AC, TRACT B-3-D	COUNTY PLAT	408803	3954513	17N.09E.5.413	MUL	3	3/17/1999	853	440.00	-0.30	413.00	410.00	99	401.00	97	6857	BMP		
RG-71688	STEPHEN A. GIBSON,			GARCIA, ANGEL E	71 BLUESTEM DR	T17N R 9E S8 2.052 AC, LOT 7 COLINAS VERDES	COUNTY PLAT	408702	3953859	17N.09E.8.21	DOM	3	3/28/1999	851	645.00	-0.30	206.00	203.00	99	194.00	94		BMP		
RG-71728	WILLIAM BUCHANAN,	William Buchanan and Ellen Walton			135 Chisholm Trail	Lot 43 La Tierra Nueva	9/2/04 Charles Harrison submittal to Louis O'Dell, NMOSE	403821	395459	17N.08E.2.141	DOM	3	4/21/1999	750	485.00	-0.70	265.00	258.00	97						

### Appendix B. Buckman Monitoring Area Well and Well Permit Survey

(gray highlight = well location verified with site-specific data)

NMOSE Well ID	Well Owner(s) listed in NMOSE Database	Confirmed Well Owner	Other Well Names	Parcel Owner Listed in County Parcel Database	Street Address	Lot Description	Address Source	UTM Easting, m, NAD83	UTM Northing, m, NAD83	NMOSE T.R.Sec.qqq	Use	Diver-sion, ac-ft/yr	Drilling Date	Well Depth, ft	Depth to Water, ft	Con-toured decline rate, ft/yr	Starting Water Column, ft	Water Column After 10 Years, ft	Percent Water Column Remaining After 10 Years	Water Column After 40 Years, ft	Percent Water Column Remaining After 40 Years	Land Surface Elevation, ft amsl	Mon-i-toring Area	Other IDs	Notes
RG-74926	DEBORAH K. ROMERO, Borrego		Borrego	GONZALES, PATRICIO M &	5 CALLE QUERIDO	LOT 19 RANCHO DE LOS NIÑOS SD, T17N R 8E S23 2,500 AC	COUNTY PLAT	403984	3950389	17N.08E.23.232	MUL	3	12/8/2000	700	387.00	-0.10	313.00	312.00	100	309.00	99	6566	BMP		
RG-75059	RONALD SCHNEIDER,			BOYD, BRIAN	7 CAMINO MONTUOSO	LOT 18 LA TIERRA PHASE 1, T17N R 9E S31	COUNTY PLAT	407233	3957115	18N.09E.31.211	DOM	3	5/3/2001	820	572.00	-0.40	248.00	244.00	98	232.00	94	6627	BMP		
RG-75069	KENDERDINE CONSTRUCTION	Seymour Grufferman and Sue Kimm			14 Brahma Lane	Lot 57 La Tierra Nueva	9/2/04 Charles Harrison submittal to Louis O'Dell, NMOSE	404659	3954875			0	10/4/2001	735	500.00	-0.60	235.00	229.00	97	211.00	90		BMP	table 30-B	
RG-75084	RICHARD A. GALAZ,			GALAZ, RICHARD A & MICHELLE Y	83 PASEO DE ESTRELLAS	LOT 7 RANCHO DE LOS NIÑOS SD, T17N R 8E S23 2,500 AC	COUNTY PLAT	404179	3950298	17N.08E.23.232	MUL	3	12/4/2000	700	390.00	-0.10	310.00	309.00	100	306.00	99	6536	BMP		
RG-75096	TERRANCE C FARLEY,			FARLEY, TERRANCE C & JOAN C	23 VUELTA YUCCA	T18N R 9E S32 12.75 AC, LOT 81 LA TIERRA PHASE 3	COUNTY PLAT	408429	3955721	18N.09E.32.343	DOM	3	3/23/2001	780	520.00	-0.40	260.00	256.00	98	244.00	94	6808	BMP		
RG-75172	RICHARD C STERTZ,			HUNTER, MICHAEL L & LORI A	22 PASEO DEL VENADO	T17N R 9E S 9 5.010 AC, LOT 4 TR A	COUNTY PLAT	409100	3953485	17N.09E.8.223	MUL	3	2/2/2001	820	609.00	-0.30	211.00	208.00	99	199.00	94		BMP		
RG-75191	GILDA GLASSCOCK WILSON,							406586	3955145	17N.09E.6.132	MUL	3	2/13/2001	760	492.00	-0.40	268.00	264.00	99	252.00	94	6620	BMP		
RG-75232 POD1	SUSAN SEIFERT,			SKY LIMIT LLC		T17N R 8E S23 4.780 AC, PARCEL B	COUNTY PLAT	403565	3950078	17N.08E.23.143	MUL	3	9/30/2002	700	364.00	-0.10	336.00	335.00	100	332.00	99		BMP		
RG-75233 POD1	MICHAEL G MELLOS, APPR			MELLOS, MICHAEL G & CAROLYN O	10 HACIENDA CT	LOT 22 LA VILLA ESCONDIDA, T17N R 8E S23 3.140 AC	COUNTY PLAT	403798	3950154	17N.08E.23.144	MUL	3	5/8/2001	700	375.00	-0.10	325.00	324.00	100	321.00	99		BMP		
RG-75234 POD1	MELISSA PESELLA, APPR			STANFORD, ANTHONY & LORRAINE	6 HACIENDA CT	LOT 23 LA VILLA ESCONDIDA, T17N R 8E S23 3.090 AC	COUNTY PLAT	403701	3950128	17N.08E.23.143	MUL	3	11/11/2001	700	381.00	-0.10	319.00	318.00	100	315.00	99		BMP		
RG-75236	CAJA DEL RIO, LLC,			BORREGO, ROBERT R & DEBORAH K	2 CALLE CURIOSO	LOT 17 RANCHO DE LOS NIÑOS SD, T17N R 8E S23 2,500 AC	COUNTY PLAT	404120	3950320	17N.08E.23.232	0	3/10/2001	700	387.00	-0.10	313.00	312.00	100	309.00	99	6536	BMP			
RG-75454 POD1	ALFRED LOPEZ, VALERIE LOPEZ			STANFORD, ANTHONY & LORRAINE	6 HACIENDA CT	LOT 23 LA VILLA ESCONDIDA, T17N R 8E S23 3.090 AC	COUNTY PLAT	403650	3950173	17N.09E.17.113	MUL	3	3/6/2001	700	378.00	-0.10	322.00	321.00	100	318.00	99		BMP		
RG-75455 POD1	GEORGE M COHEN,			BOB DIJANNI CUSTOM HOMES, INC.	11 CALLE HACIENDA R.8E S23 3.370 AC	LOT 3 LA VILLA ESCONDIDA, T17N R 8E S23 3.370 AC	COUNTY PLAT	403523	3950282	17N.09E.17.112	MUL	3	11/16/2001	700	391.00	-0.10	309.00	308.00	100	305.00	99		BMP		
RG-75456	SKYLIMIT LLC,			COHEN, GEORGE M & Ninos LINDA S	38 CALLE HACIENDA	LOT 12 LA VILLA ESCONDIDA, T17N R 8E S23 2,750 AC	COUNTY PLAT	403696	3950710	17N.09E.17.114	0	7/18/2001	700	294.70	-0.10	405.30	404.30	100	401.30	99	6564	BMP			
RG-75553	CHAD SNOW,			SNOW, CHAD & RENAE	19 SVUELTA HERRADURA	LOT 22 LA VILLA ESCONDIDA, T18N R 9E S32 14.49 AC, LOT 113 LA TIERRA PHASE 3	COUNTY PLAT	409031	3955722	18N.09E.32.434	DOM	3	4/25/2001	820	584.00	-0.30	236.00	233.00	99	224.00	95	6907	BMP		
RG-75566	JAMES G. BATTERMANN, APPR			MONToya, MELISSA J		T17N R 9E S 5 5.05 AC, TR B-4-C	COUNTY PLAT	409003	3954713	17N.09E.5.412	MUL	3	3/8/2002	800	650.00	-0.30	150.00	147.00	98	138.00	92	6863	BMP		
RG-75570	GLENN CONROY,			HACIENDA DEL CEREZO LTD		T18N R 9E S19 & 18 23.086 AC, 90T3	COUNTY PLAT	407044	3960134	18N.09E.19.124	DOM	3	3/12/2001	760	422.00	-0.20	338.00	336.00	99	330.00	98	6531	BMP		
RG-75956	MICHAEL W. & MARCIA YOUNG,			MEAD, WALTER L JR & EMILY C	57 CALLE ADELINA 9E S30	LOT B-3 45.458 AC, T18N R	COUNTY PLAT	406616	3957728	18N.09E.30.314	DOM	3	7/17/2001	800	419.00	-0.30	381.00	378.00	99	369.00	97	6572	BMP		
RG-76065	GREG STRATTON,			CRYSTAL INC		T17N R 9E S 5 113.52 AC, LOT 4	COUNTY PLAT	407992	3954926	17N.09E.5.133	MUL	3	8/3/2001	800	522.00	-0.40	278.00	274.00	99	262.00	94	6761	BMP		
RG-76305	JOHN G HARRIS,			COIMBRA, CLIF & CHARAINE	3 LAS KATRINAS RD	T17N R 9E S 5 2.510 AC, TRACT 1D LOT 1	COUNTY PLAT	409408	3954915	17N.09E.5.244	DOM	3	10/18/2001	880	352.00	-0.30	528.00	525.00	99	516.00	98		BMP		
RG-76696	DONALD L & BARBARA E SHIRES,			GALLEGOs, FRANK & ELIZABETH	16 VIA DE ESTRELLAS	T17N R 8E S23 & 26 5.993 AC, TRACT 4B-4B2	COUNTY PLAT	403313	3949727	17N.08E.23.314	MUL	3	11/20/2001	560	395.00	-0.10	165.00	164.00	99	161.00	98	6519	BMP		
RG-77195	GERALD A. BECKER,			DIBACHI, FARZAD TRUSTEE	33 CAMINO MONTUOSO	LOT 75 LA TIERRA PHASE 2, T18N R 9E S31 50.169 AC	COUNTY PLAT	407630	3956911	18N.09E.31.223	DOM	3	7/12/2002	805	465.00	-0.40	340.00	336.00	99	324.00	95	6756	BMP		
RG-77258	THERESA MARTINEZ,			MCCURDY, RICHARD B TRUSTEE	60 E ESTRADA CALABASA	LOT 57 LA TIERRA S/D PH 2, T18N R 9E S31 10.992 AC	COUNTY PLAT	408250	3951460	17N.09E.17.134	DOM	3	5/15/2004	700	600.00	-0.30	100.00	97.00	97	88.00	88		BMP		
RG-77426	RICHARD B MCCURDY,							407825	3955729	18N.09E.31.444	3	4/24/2002	800	508.00	-0.40	292.00	288.00	99	276.00	95	6727	BMP			
RG-77553	CAROL METCHICK,	Robert Metchick	Tano, Shared Well 2		11 Sundance Drive	Block 1/Lot 12, Sundance Estates 6/19/08 email	John Miles Smith, 6/19/08 email	410418	3955100	17N.09E.4.231	MUL	3	5/10/2002	900	505.00	-0.20	395.00	393.00	99	387.00	98	6972	TR	table 30-B	
RG-77563	MANANA LLC,			BRILLIANT, B KAY	41 CAMINO HASTA MANANA B, TRACT A,		COUNTY PLAT	409408	3955115	17N.09E.5.242	0	8/30/2002	800	380.00	-0.30	420.00	417.00	99	408.00	97	6881	BMP			
RG-77758	LETITIA A KRA																								

### Appendix B. Buckman Monitoring Area Well and Well Permit Survey

NMOSE Well ID	Well Owner(s) listed in NMOSE Database	Confirmed Well Owner	Other Well Names	Parcel Owner Listed in County Parcel Database	Street Address	Lot Description	Address Source	UTM Easting, m, NAD83	UTM Northing, m, NAD83	NMOSE T.R.Sec.ddd	Use	Diver-sion, ac-ft/yr	Drilling Date	Well Depth, ft	Depth to Water, ft	Con-toured decline rate, ft/yr	Starting Water Column, ft	Water Column After 10 Years, ft	Percent Water Column Remaining After 10 Years	Water Column After 40 Years, ft	Percent Water Column Remaining After 40 Years	Land Surface Elevation, ft amsl	Mon-i-toring Area		
RG-79460	WALLACE WHITE JR,			CLIFTON, PERLA	16 PASEO DEL VENADO	T17N R 8E S 8 5.040 AC, LOT 4 TR B	COUNTY PLAT	409269	3953509		MUL	3	3/20/2003	800	486.00	-0.30	314.00	311.00	99	302.00	96	BMP			
RG-79509	PAUL SCHMIDT,				Lot 41, La Tierra			406889	3954249	17N.09E.6.342		0	4/8/2003	800	456.00	-0.30	344.00	341.00	99	332.00	97	6745	BMP		
RG-79511	ELISE W SCHMIDT,			WHELESS, ELISE	37 VUELTA TOMAS	LOT 46 LA TIERRA PHASE 2, T17N R 9E S 6 11.890 AC	COUNTY PLAT	406517	3954287	17N.09E.6.331		0	4/21/2003	800	442.00	-0.40	358.00	354.00	99	342.00	96	6687	BMP		
RG-79512	ELISE W SCHMIDT,			SCHMIDT, ELISE	LOT 48 LA TIERRA PHASE 2, T17N R 9E S 6 14.815 AC	COUNTY PLAT	406749	3954427	17N.09E.6.312		0	4/14/2003	800	462.00	-0.30	338.00	335.00	99	326.00	96	6718	BMP			
RG-79548	CAROL A JOHNSON,			BALANCE POINT ENTERPRISES	16 PASEO DEL CONEJO	T17N R 9E S 5, TR B-1-A2, 2.67 AC,	COUNTY PLAT	408802	3954107	17N.09E.5.433		3	2/21/2003	840	466.00	-0.30	374.00	371.00	99	362.00	97	6888	BMP		
RG-79574	JAMES NICKELL,			STEWART TITLE GUARANTY CO	2 ESCOPETA CT H-2	T17N R 9E S 19 2.511 AC, LOT	COUNTY PLAT	407437	3950606	17N.09E.19.212	MUL	3	5/19/2003	660	474.00	-0.20	186.00	184.00	99	178.00	96		BMP		
RG-79603	CLINTON HORN,			WEATHERFORD, JANICE L &	60 TIERRA GRANDE	15 TIERRA GRANDE S/D	COUNTY PLAT	406897	3949478	17N.09E.19.321	MUL	3	3/14/2003	665	460.00	-0.10	205.00	204.00	100	201.00	98		BMP		
RG-80255	JONATHAN BEAMER,			BEAMER, JONATHAN & FRAN SALKIN		T17N R 9E S 18 LOT 3-A 5.0 AC,	COUNTY PLAT	406983	3951951	17N.09E.18.142	DOM	3	11/15/2004	800	455.00	-0.30	345.00	342.00	99	333.00	97	6670	BMP		
RG-80390	ABBIE BEN CORRIZ,			CORRIZ, ABBIE BEN	4654 SAN YSIDRO PL A2	T17N R 9E S 32 2.50 AC, TR B-	COUNTY PLAT	408153	3947295	17N.08E.23.144	MUL	3	7/14/2003	560	382.00	-0.10	178.00	177.00	99	174.00	98	6539	BMP		
RG-80431	RON SMITH,			SUERTE DEL SUR, LLC	160 LOS SUENOS TRL	T17N R 9E S 19 35.00 AC, LOT 2	COUNTY PLAT	406629	3950214	17N.09E.19.132	MUL	3	7/17/2003	560	385.00	-0.20	175.00	173.00	99	167.00	95		BMP		
RG-80940	CYNTHIA FOWLER,			HOYT, SUZANNE & LINDA WEIL	127 W ESTRADA CALABASA	T18N R 8E S 36 1074.650 AC N2 &, PORT S2 RANCH & HEADQTRS, LIVESTOCK ON ACCT 970001777,	COUNTY PLAT	405718	3956026		DOM	3	10/30/2005	692	352.00	-0.50	340.00	335.00	99	320.00	94	6581	BMP		
RG-81036	GRANT HOLLAND,			BALANCE POINT ENTERPRISES	22 PASEO DEL CONEJO	T17N R 9E S 5, 2.50 AC, TR B-1-A1,	COUNTY PLAT	408763	3954148	17N.09E.5.433	MUL	3	4/2/2004	905	575.00	-0.30	330.00	327.00	99	318.00	96	6888	BMP		
RG-81127	CALLE ALEGRE,				25 SENDERO DE LA VIDA	LOT 14 TIERRA DE LA VIDA, T17N R 9E S 19 2.27 AC	COUNTY PLAT	401299	3950384		MUL	3	8/13/2004	700	245.00	-0.10	455.00	454.00	100	451.00	99	6417	BMP		
RG-81323	TIERRA DE LA VIDA LLC,			WAGGONER, ALAN S & KAREN	11 PASEO DEL HALCON	T17N R 9E S 5 5.01 AC LOT 1C,	COUNTY PLAT	406990	3949876	17N.09E.19.322	MUL	3	6/12/2004	760	435.00	-0.10	325.00	324.00	100	321.00	99		BMP		
RG-81771	DEAN PRESTON,				T17N R 9E S 5 5.01 AC LOT 1C,	COUNTY PLAT	409208	3954304	17N.09E.5.441	DOM	3	4/16/2004	800	465.00	-0.30	335.00	332.00	99	323.00	96	6926	BMP			
RG-81838	SUZANNE HOYT GARCIA REVOCABLE,			HOYT, SUZANNE & LINDA WEIL	127 W ESTRADA CALABASA	T18N R 8E S 36 1074.650 AC N2 &, PORT S2 RANCH & HEADQTRS, LIVESTOCK ON ACCT 970001777,	COUNTY PLAT	405595	3956349	18N.08E.36.411	STK	3	10/8/2004	1100	550.00	-0.60	550.00	544.00	99	526.00	96	6516	BMP		
RG-81854	SUZANNE H GARCIA IRREVOCABLE T,					T18N R 8E S 36 1074.650 AC N2 &, PORT S2 RANCH & HEADQTRS, LIVESTOCK ON ACCT 970001777,	COUNTY PLAT	401428	3961018	18N.08E.16.424	STK	3	4/17/2004	910	724.00	-1.30	186.00	173.00	93	134.00	72	6305	BMP		
RG-81860	SUZANNE HOYT GARCIA REVOCABLE,			HOYT, SUZANNE & LINDA WEIL	127 W ESTRADA CALABASA	T18N R 8E S 36 1074.650 AC N2 &, PORT S2 RANCH & HEADQTRS, LIVESTOCK ON ACCT 970001777,	COUNTY PLAT	404995	3956557	18N.08E.36.134	STK	3	7/31/2004	695	452.00	-0.60	243.00	237.00	98	219.00	90	6462	BMP		
RG-81861	SUZANNE HOYT GARCIA REVOCABLE,			HOYT, SUZANNE & LINDA WEIL	127 W ESTRADA CALABASA	T18N R 8E S 36 1074.650 AC N2 &, PORT S2 RANCH & HEADQTRS, LIVESTOCK ON ACCT 970001777,	COUNTY PLAT	405388	3955950	18N.08E.36.342	STK	3	9/29/2004	850	460.00	-0.60	390.00	384.00	98	366.00	94	6517	BMP		
RG-82184	JACQUES CONSTANT,	New		EBERSOLE, GARY E & KATHY F	25 PASEO DEL CONEJO D LOT 1	T17N R 9E S 5 2.880 AC, TR B-2 D LOT 1	COUNTY PLAT	406339	3950675	17N.09E.19.321	MUL	3	5/14/2004	900	485.00	-0.20	415.00	413.00	100	407.00	98	6690	BMP		
RG-82337	JIM MCELROY,			STERTZ, RICHARD C	LA VIDA DEVELOPMENT CORP	T17N R 9E S 19 3.573 AC, OPEN SPACE LA VIDA S/D	COUNTY PLAT	408740	3954194		DOM	3	5/26/2004	840	432.00	-0.30	408.00	405.00	99	396.00	97	6903	BMP		
RG-82398	HYDE PARK ASSOCIATES LLC,			MARK, ANTHONY	8 CAMINO LADERA	T17N R 9E S 5 5.056 AC, LOT 2-D	COUNTY PLAT	409457	3955356	17N.09E.5.224	DOM	3	10/8/2004	840	465.00	-0.30	375.00	372.00	99	363.00	97	6846	BMP		
RG-82635	FRANK YARDMAN,			STERTZ, RICHARD & GINNIE	17 PASEO DEL VENADO TR C	T17N R 9E S 8 5.00 AC, LOT 1	COUNTY PLAT	409208	3953726		DOM	3	6/29/2004	800	558.00	-0.30	242.00	239.00	99	230.00	95		BMP		
RG-83025	KALOKO LAND CORPORATION,			STERTZ, RICHARD C & MARTHA V	10 VISTA DEL CIELO	LOT 11 LAS CORDILLERAS S/D, PHASE II 5.373 AC, T17N R 9E S 4 & 5,	COUNTY PLAT	409408	3954509	17N.09E.5.424		3	9/23/2005	860	569.00	-0.30	291.00	288.00	99	279.00	96	6938	TR/BMP		
RG-83026	ERIC FREEMAN,	</td																							

**Appendix B. Buckman Monitoring Area Well and Well Permit Survey**

(gray highlight = well location verified with site-specific data)

NMOSE Well ID	Well Owner(s) listed in NMOSE Database	Confirmed Well Owner	Other Well Names	Parcel Owner Listed in County Parcel Database	Street Address	Lot Description	Address Source	UTM Easting, m, NAD83	UTM Northing, m, NAD83	NMOSE T.R.Sec.qqq	Use	Diver-sion, ac-ft/yr	Drilling Date	Well Depth, ft	Depth to Water, ft	Con-toured decline rate, ft/yr	Starting Water Column, ft	Water Column After 10 Years, ft	Percent Water Column Remaining After 10 Years	Water Column After 40 Years, ft	Percent Water Column Remaining After 40 Years	Land Surface Elevation, ft amsl	Mon-itoring Area	Other IDs	Notes		
RG-88666	RAMON L ROMERO,			KING BROTHERS RANCH	T17N R8E S23 77.187 AC, TRACT 3	COUNTY PLAT	403114	3950177	17N.08E.23.	DOM	1	4/9/2007	800	362.00	-0.10	438.00	437.00	100	434.00	99		BMP					
RG-88950 POD1	JOSEPH D ALBILLAR,			BRANCH, DENNIS R	T17N R 9E S18 17.400 AC TR D4, NW4	COUNTY PLAT	406850	3952374	17N.09E.18.	DOM	1	4/11/2007	700	375.00	-0.30	325.00	322.00	99	313.00	96		BMP					
RG-89138 POD1	MARK SPAULDING,			SPAUULDING, MARK R	40 CALLE JOSEPHINA 2-B	COUNTY PLAT	407121	3958483	18N.09E.30.124	DOM	1	5/25/2007	800	368.00	-0.20	432.00	430.00	100	424.00	98		BMP					
RG-89212 POD1	DAVID ROBB,	William H. Moore		MOORE, WILLIAM H & DOROTHY B	LOT 52 LA TIERRA NUEVA S/D, T17N R08E S2 17.936 AC	COUNTY PLAT	403225	3955515	17N.08E.2.113	DOM	1	9/5/1983	700	580.00	-0.80	120.00	112.00	93	88.00	73		BMP					
RG-89456	MARK GAYER,			WERNER, JOHN C	178 CHISHOLM TRL 4 PASEO DEL HALCON	COUNTY PLAT	409164	3954110	17N.09E.5.	DOM	1	9/6/2007	800	569.00	-0.30	231.00	228.00	99	219.00	95		BMP					
	J.A. Ortiz,						401971	3962996	18N.08E.10.143				1961	560	524.00	-0.40	36.00	32.00	89	20.00	56	6370	BMP	M-18			
	Eric Sloane,						406835	3956782	18N.09E.31.141				1976	634	491.00	-0.50	143.00	138.00	97	123.00	86	6680	BMP	M-24			
	David A. Ater,			PROTHRO, CHARLES V	24 VUELTA SUSANA R 9E S31, 13.634 AC,	COUNTY PLAT	406515	3956726	18N.09E.31.131				1976	727	557.00	-0.50	170.00	165.00	97	150.00	88	6725	BMP	M-23			
	Milo Earhard,			BOGLE, GLENN G & SUSAN R	218 PASEO DE LA TIERRA R 9E S31	COUNTY PLAT	406931	3956586	18N.09E.31.143				1976	673	497.00	-0.50	176.00	171.00	97	156.00	89	6680	BMP	M-26			
	Norman L. Ringhand,			BOGLE, GLENN G & SUSAN R	218 PASEO DE LA TIERRA R 9E S31	COUNTY PLAT	407046	3956731	18N.09E.31.142				1975	804	460.00	-0.50	344.00	339.00	99	324.00	94	6660	BMP	M-25			
	Western Cattle Co.,			NEWCOMER, PHYLLIS L	79 CHISHOLM TRL	COUNTY PLAT	404379	3954619	17N.08E.2.423				1970	1000	574.00	-0.60	426.00	420.00	99	402.00	94	6640	BMP	M-2			
	Nuclear Dynamics, Inc.,						399180	3960054	18N.08E.20.231				1970	990	193.00	-1.20	797.00	785.00	98	749.00	94	6065	BMP	M-19			
	Nuclear Dynamics, Inc.,						397818	3962287	18N.08E.7.434				1970	1000	65.00	2.00	935.00	955.00	102	1015.00	109	5875	BMP	M-17			
	Nuclear Dynamics, Inc.,						401791	3956065	18N.08E.34.332				1970	1985	380.00	-1.00	1605.00	1595.00	99	1565.00	98	6320	BMP	M-21			
	Western Cattle Co.,	Edward L. and Donna W. Klopfer		KLOPFER, EDWARD L & DONNAL L	40 W ESTRADA CALABASA 60.04 AC	COUNTY PLAT	405847	3955481	17N.08E.1.212				-	1500	395.00	-0.50	1105.00	1100.00	100	1085.00	98	6543	BMP	M-1			
	Nuclear Dynamics, Inc.,						403103	3952509	17N.08E.11.333				1970	1000	130.00	-0.20	870.00	868.00	100	862.00	99	6445	BMP	M-3			
	Summer A. Weld,			CRAWFORD, JOHN F & BETTY	28 ARROYO CALABASAS RD	COUNTY PLAT	407591	3952262	17N.09E.18.221				1975	588	543.00	-0.30	45.00	42.00	93	33.00	73	6785	BMP	M-15			
	Nuclear Dynamics, Inc.,						401541	3949586	17N.08E.22.331				1970	1000	212.00	-0.10	788.00	787.00	100	784.00	99	6440	BMP	M-4			
	Nuclear Dynamics, Inc.,						396671	3964509	18N.07E.1.422				1970	1000	0.00	9.00	1000.00	1090.00	109	1360.00	136	5680	BMP	M-16			
	unknown						395610	3965942						1939	191	0.00	15.00	191.00	341.00	179	791.00	414	5555	BMP	M-27		

## Appendix C

**USGS database wells used to calculate regional water level rate of change**

USGS database Wells Within Latitude-Longitude Box (Core, 2003) Used to Calcualte Regional Water Level Rate of Change

Site no	USGS ID	Lat_Deg_Deg	Long_dec_deg	Plot Date (mid pt)	Total WL Change	Time (yrs)	WL Rate Change	Pre-2003 rate (ft/yr)	Post-2002 rate (ft/yr)
894	354002105592101	35.667222	-105.989167	1/9/1982	-10.960000	22.079452	-0.496389	-0.496389	
898	354005106013501	35.668056	-106.026389	7/22/1962	7.930000	22.805479	0.347723	0.347723	
905	354009106012101	35.669167	-106.022500	1/24/1993	-5.420000	20.002740	-0.270963	-0.270963	
905	354009106012101	35.669167	-106.022500	3/21/2005	-1.479996	4.317808	-0.342766		-0.3428
907	35401105593201	35.669722	-105.992222	1/23/1993	-13.480000	19.931507	-0.676316	-0.676316	
907	35401105593201	35.669722	-105.992222	3/13/2005	2.430000	4.350685	0.558533		0.5585
906	35401105591102	35.669722	-105.986389	1/26/1959	1.740000	12.065753	0.144210	0.144210	
909	354013105590801	35.670278	-105.985556	1/16/1974	-4.190000	6.030137	-0.694843	-0.694843	
908	354013105580601	35.670278	-105.968333	7/14/1977	-141.360000	51.073973	-2.767750	-2.767750	
908	354013105580601	35.670278	-105.968333	5/18/2007	13.310000	8.654795	1.537876		1.5379
915	354018105590701	35.671667	-105.985278	1/21/1974	-11.700000	42.060274	-0.278172	-0.278172	
914	354018105584801	35.671667	-105.980000	7/11/1974	-10.470000	7.024658	-1.490464	-1.490464	
917	354019105590801	35.671944	-105.985556	2/8/1976	-9.770000	33.928767	-0.287956	-0.287956	
922	354021105585901	35.672500	-105.983056	8/9/1971	-1.800000	1.186301	-1.517321	-1.517321	
925	354023105584701	35.673056	-105.979722	8/11/1971	-1.780000	1.178082	-1.510930	-1.510930	
937	354033105583701	35.675833	-105.976944	1/27/1953	-21.660000	2.339726	-9.257494	-9.257494	
950	354041105581301	35.678056	-105.970278	6/26/1957	-58.650000	11.306849	-5.187121	-5.187121	
954	354046105570601	35.679444	-105.951667	7/25/1958	-21.790000	11.068493	-1.968651	-1.968651	
956	354051105575101	35.680833	-105.964167	2/6/1954	-21.090000	2.123288	-9.932710	-9.932710	
955	354051105573601	35.680833	-105.960000	2/7/1955	-10.890000	18.104110	-0.601521	-0.601521	
960	354052105582101	35.681111	-105.972500	1/17/1961	-54.160000	18.098630	-2.992492	-2.992492	
961	354053105552601	35.681389	-105.923889	2/3/1993	-4.280000	19.871233	-0.215890	-0.215890	
964	354059105575501	35.683056	-105.965278	8/8/1958	-74.350000	22.997260	-3.232994	-3.232994	
965	354100105562701	35.683333	-105.940833	2/3/1993	-11.890000	19.871233	-0.598352	-0.598352	
965	354100105562701	35.683333	-105.940833	8/12/2004	-1.630000	3.183562	-0.512005		-0.5120
975	354119106023801	35.688611	-106.043889	12/21/2007	0.063200	7.454795	0.009390		0.0094
976	354131105571801	35.691944	-105.955000	4/26/2006	5.460000	2.109589	2.588182		2.5882
990	354220105580301	35.705556	-105.967500	7/22/1959	-2.149998	1.808219	-1.189015	-1.189015	
992	354228106044901	35.707778	-106.080278	1/21/2009	0.719000	7.095890	0.101467		0.1015
993	354228106044902	35.707778	-106.080278	1/20/2009	5.190000	5.950685	0.872169		0.8722
994	354228106044903	35.707778	-106.080278	1/20/2009	-1.050000	5.950685	-0.176450		-0.1765
998	354244106005001	35.712222	-106.013889	7/13/1975	0.251000	1.939726	0.134040	0.134040	
1004	354321105573701	35.722500	-105.960278	3/4/2008	-10.320000	8.136986	-1.268283		-1.2683
1005	354321105573702	35.722500	-105.960278	3/4/2008	-9.630000	8.136986	-1.184714		-1.1847
1006	354321105573703	35.722500	-105.960278	3/22/2008	-19.600000	8.035616	-2.439141		-2.4391
1010	354338105571301	35.727222	-105.953611	4/8/1966	-22.000000	14.471233	-1.520257	-1.520257	
1012	354341105572101	35.728056	-105.955833	11/20/2005	-8.960000	2.969863	-3.016974		-3.0170
1015	354344105573301	35.728889	-105.959167	4/27/2006	-4.370000	2.101370	-2.079596		-2.0796
1017	354352106032601	35.731111	-106.057222	1/7/1975	-74.100000	9.520548	-7.783165	-7.783165	
1020	354401105574201	35.733611	-105.961667	11/19/2005	-12.770000	2.972603	-4.295899		-4.2959
1021	354403105580401	35.734167	-105.967778	5/4/2005	-0.589997	1.876712	-0.314380		-0.3144
1027	354418105583201	35.738333	-105.975556	10/1/1962	4.019998	10.613699	0.378756	0.378756	
1030	354419106022601	35.738611	-106.040556	6/15/1960	-1.490000	15.145205	-0.098381	-0.098381	
1029	354419105594201	35.738611	-105.995000	6/2/1987	20.510000	21.578082	0.950502	0.950502	
1034	354423105560201	35.739722	-105.933889	7/8/1971	2.690000	7.369863	0.365000	0.365000	
1040	354443106011001	35.745278	-106.019444	7/14/1978	-0.109996	3.010959	-0.036533	-0.036533	
1044	354458106060601	35.749444	-106.101667	10/15/2006	-2.589997	1.161644	-2.229599		-2.2296

-1.74 <-Average water level change, pre-2003
-0.72 <-Average water level change, post-2002