

**Colorado Oil and Gas Conservation Commission  
Denver, Colorado**

**Monitoring Wells Summary Report  
December 2003**

**3M Project Monitoring Program  
La Plata County, Colorado**

Colorado Oil and Gas Conservation Commission  
Applied Hydrology Associates, Inc.  
Denver, Colorado

February 2004

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## 1.0 INTRODUCTION

The 3M Project Monitoring Program in La Plata County, Colorado was initiated by the Colorado Oil and Gas Conservation Commission (COGCC) in January 2001. This report describes the results of wellhead and bottomhole pressure monitoring at four monitoring well sites through December 31, 2003. The monitoring work was carried out by staff of the COGCC and Applied Hydrology Associates, Inc. (AHA) on behalf of the COGCC.

Figure 1 shows the location of the four monitoring well sites. Table 1 identifies the monitoring wells, locations, and the depths of completion at the four monitoring well sites. Table 2 lists the depth and type of pressures transducers used in each monitoring well. Table 3 provides a chronology of monitoring well installation, operation and maintenance activities from January 2001 through December 31, 2003.

## 2.0 MONITORING ACTIVITIES AND DATA SUMMARY

### 2.1 MONITORING SITE ACTIVITIES SINCE JUNE 2003

#### August 2003

1. **Beaver Creek Ranch Site:** In an attempt to fix the ongoing problem of a small leak and to safely control the shut in pressure, AHA and Raymond Construction designed and had a new wellhead built for MW 35-6-17-2. The new wellhead was installed on August 20, 2003. Unfortunately, even with the new wellhead, at pressures greater than 570 psia gas continues to leak around the transducer pass through cable fittings (Swagelok) at the wellhead. Additional modifications to wellhead design and an alternative method for measuring wellhead and bottomhole pressure will be implemented in the spring of 2004.
2. **Shamrock Mines Site:** Solar/battery power system for MW 35-6-13-1 became intermittent and was not sufficient to continuously energize the cell phone. The cell phone system was re-activated after the 14-volt battery was replaced on August 20, 2003
3. **South Fork Texas Creek Site:** Vented wells MW 35-7-8-1 and MW 35-7-8-2 on August 21, 2003 and tightened all transducer cable pass-through strain relief fittings to prevent leakage.

#### October 2003

1. **Beaver Creek Ranch Site:** Conducted pressure buildup test and replaced MW 35-6-17-2 upper transducer cable and Swagelok fitting on October 7, 2003. Conducted MW 35-6-17-1 pressure buildup test on October 8, 2003. Repeated MW 35-6-17-1 and MW 35-6-17-2 pressure buildup tests and replaced MW 35-6-17-2 transducer cable Swagelok o-rings with metal ferrule on October 21, 2003.
2. **Shamrock Mines Site:** MW 35-6-13-1 modem operating intermittently. Installed new lead-acid battery and checked solar panel voltage output on October 7, 2003. Conducted pressure buildup test on October 8, 2003. Tested solar panel output on October 21, 2003, determined amperage output was intermittent, and installed new solar panel to activate cell phone system.
3. **Basin Creek Site:** Conducted MW 34-9-7-1 and MW 34-9-7-2 pressure buildup tests on October 8, 2003.
4. **South Fork Texas Creek Site:** Conducted MW 35-7-8-1 and MW 35-7-8-2 pressure buildup tests on October 8, 2003.

## 2.2 MONITORING WELL PRESSURE DATA SUMMARY

Well pressure is currently being measured and recorded twice daily (12-hour interval) at all sites. Data recorded for the reporting period of June 15, 2003 through December 31, 2003 were downloaded by AHA via remote PC modem in January 2004. Data for the entire period of record for each monitoring well are plotted on the attached annotated charts. Data analyses by site and monitoring well are summarized below. The results of the pressure buildup tests conducted in October 2003 are available upon request to all interested parties.

### 2.2.1 BASIN CREEK

#### MW 34-9-7-1

Figure 2 charts the upper and lower pressure transducer data and the calculated water level in the well for the period of record. The water level in the well is calculated using the depth of the lower transducer and the difference in pressure between upper and lower transducers. Initial and ending monitoring well pressures are summarized in the table below. This well has been monitored continuously since November 29, 2001.

The upper transducer chart indicates a trend of gradually increasing pressure at the wellhead and corresponding decline in the water level in the well from December 2001 to July 2003. The short-term interruption in this trend is due to venting of the well on January 20, 2003 to replace the upper transducer. A gradual decline in wellhead pressure and a corresponding rise in the water level in the well are indicated from July to October 2003, prior to the pressure buildup test conducted October 8, 2003.

After the wellhead was vented and shut in on October 8, 2003, the wellhead pressure buildup reached 17.4 psia on December 31, 2003 and the calculated water level in the well declined from 48 fbg to 62.4 fbg on December 31, 2003. The bottomhole pressure rapidly returned to previous levels after the buildup test.

#### BASIN CREEK MONITORING WELLS

Well and Transducer	Period	Initial Pressure (psia)	Ending Pressure (psia)	Net Pressure Change (psi)	Initial Water Level in Well (fbgs)	Ending Water Level in Well (fbgs)	Net Water Level Change in Well (ft)
MW 34-9-7-1 Upper XD	11/29/01 to 12/31/03	11.46	17.35	+5.89	20.97	62.13	-41.16
Lower XD		249.34	237.40	-11.94			
MW 34-9-7-2 Upper XD	05/24/02 to 12/31/03	33.20	28.45	-4.75	4.42	4.96	-0.54
Lower XD		241.42	236.44	-4.98			

### **MW 34-9-7-2**

The pressure data for well MW-34-9-7-2 are plotted on Figures 3 and 3a. Figure 3 also shows the calculated water level in the well for the same period of record. This well has been monitored continuously since May 24, 2002.

Figure 3 and the table above indicate a trend of gradually declining wellhead and bottomhole pressures for the period of record. Figure 3a indicates that wellhead and bottomhole pressures are subject to slight seasonal fluctuations in the otherwise declining trend for the period of record.

The response to the pressure buildup test conducted on October 8, 2003 included a release of gas and water when the well was vented. One minute after the well was vented on October 8, 2003, water flowed from the wellhead at a measured rate of 0.17 gpm (250 gpd). Wellhead and bottomhole pressures rapidly returned to previous levels after the buildup test.

The upper transducer in this well is suspended at a depth of 5 fbgs. The response data suggest that when this well is shut in the water level is above the upper transducer. If this is the case, the upper transducer is measuring the wellhead pressure and the column of water above it. Therefore, in the spring of 2004, the upper transducer will be reset at the top of the wellhead, above the water level in the well.

### **2.2.2 SOUTH FORK TEXAS CREEK**

Both monitoring wells have been monitored continuously since November 29, 2001, except for the period between December 4, 2002 and January 20, 2003 when there was a monitoring system power failure.

### **MW 35-7-8-1**

Data for MW 35-7-8-1 are summarized on Figures 4 and 4a and in the table below. Upper transducer data recorded since January 1, 2002 indicate a relatively stable wellhead pressure, ranging between 13.1 psia and 13.8 psia, about 2 psia above atmospheric pressure (11.1 psia at altitude 7500 feet). The wellhead pressure in this well (13+ psia) is about seven times lower than the wellhead pressure in MW 35-7-8-2 (+/- 90 psia).

From early January 2002 through mid-June 2003, the calculated water level in this well rose about 10 feet, from 88 fbgs to 78 fbgs, without a corresponding change in the wellhead pressure. The rate of water rise during the period between December 2001 and mid-June 2003 exhibits two trends. A gradual rise of 2.7 feet, from about 88.4 fbgs to 85.5 fbgs, occurred during the 12-month period from December 2001 to December 2002. During the 5.5-month period between December 1, 2002 and June 15, 2003, the water level rose about 8 feet, from 86 fbgs to 78 fbgs, as compared to a rise of almost 3 feet during the first 12 months of monitoring (January thru December 2002).

Between June 15, 2003 and October 8, 2003, the calculated water level in the well declined 17 feet, from about 77.9 fbgs to 94.9 fbgs, without a corresponding change in wellhead pressure. Subsequent to the October 8, 2003 pressure buildup test, the calculated water level in the well exhibits a rising trend, from 94.9 fbgs in mid-November 2003 to 90.2 fbgs on December 31, 2003.

**SOUTH FORK TEXAS CREEK MONITORING WELLS**

Well and Transducers	Period	Initial Pressure (psia)	Ending Pressure (psia)	Net Pressure Change (psi)	Initial Water Level in Well (fbgs)	Ending Water Level in Well (fbgs)	Net Water Level Change in Well (ft)
MW 35-7-8-1 Upper XD	12/01/01 to 12/31/03	13.79	13.82	0.03	88.39	90.19	-1.80
Lower XD		144.47	143.72	-0.75			
MW 35-7-8-2 Upper XD	1/15/02 to 12/31/03	91.33	88.43	-2.90	Water level in well is >225 fbgs		
Lower XD		91.91	89.00	-2.91			

**MW 35-7-8-2**

Figure 5 charts the pressure data for MW 35-7-8-2, which exhibits an entirely different pressure regime than the deeper monitoring well, MW 35-7-8-1. Figure 5 and the table above indicate that both lower and upper transducers are sensing essentially the same pressure. The consistently small pressure differential (approximately 0.6 psi) between the two transducers likely is due to a slight difference in instrument calibration. If the apparent pressure differential is due to calibration, then the water level in the well is deeper than 225 fbgs, which is the depth of the lower transducer.

The summary table above shows a net decrease of 2.9 psi in the wellhead pressure for the period of record. However, during the 13-month period from January 2002 to February 2003, there was a gradual (9-psi) decline in pressure, from 92 psia on January 15, 2002 to 83 psia on February 1, 2003 (Figure 5). This apparent downward trend reversed in March 2003. Between April 1, 2003 and June 15, 2003, the wellhead pressure increased about 6 psi, from 90 psia to 96 psia. Since July 2003, the trend in wellhead pressure shows a decline from 96 psia to about 89 psia.

Figure 5 also shows several downward spikes in the recorded wellhead pressure between January 2003 and June 2003. These occurrences may have been caused by leaky transducer cable strain relief fittings. The strain relief fittings on both wellheads were tightened on August 21, 2003 and the wells will be monitored to see whether similar pressure spikes occur again.

The wellhead and bottomhole pressure responses to the buildup test conducted on October 8, 2003 were identical. Well pressure dropped rapidly from about 91 psia to 11.9 psia, which is about atmospheric pressure. Well pressure rapidly returned to previous level after the wellhead was shut in on October 8, 2003 for the buildup test.

**2.2.3 BEAVER CREEK RANCH**

**MW 35-6-17-1**

Monitoring data for MW 35-6-27-1 are plotted on Figure 6 and summarized in the table below. This well has been monitored almost continuously since May 21, 2002. There are no data for the periods December 1, 2002 to December 13, 2002 and December 19, 2002 to January 7, 2003 due to power system failures. As described below, the pressure regime for this well is different than the regime exhibited by well MW 35-6-17-2.

The data indicate a trend of minor fluctuation in wellhead pressure between 13.6 psia and 15.5 psia for the 14-month period of August 2002 to October 2003. During the same period of time, the calculated water level in the well gradually declined 15 feet, from 194 fbgs to 219 fbgs.

Pressure buildup tests were conducted on October 7, 2003 and on October 21, 2003. Since these tests the wellhead pressure has increased about 79 psi, from 14.6 psia to 94 psia, which was measured on December 31, 2003. For the same period there was a corresponding decline in the calculated water level in the well of about 166 feet, from 219 fbgs to 385 fbgs. Neither of the buildup tests affected the pressures in well MW 35-6-17-2.

**BEAVER CREEK RANCH MONITORING WELLS**

Well and Transducers	Period	Initial Pressure (psia)	Ending Pressure (psia)	Net Pressure Change (psi)	Initial Water Level in Well (fbgs)	Ending Water Level in Well (fbgs)	Net Water Level Change in Well (ft)
MW 35-6-17-1 Upper XD	08/01/02 to 12/31/03	15.44	94.04	78.60	194.37	385.29	-190.92
Lower XD		609.55	605.40	-4.15			
MW 35-6-17-2 Upper XD	06/15/02 to 12/31/03	614.23	572.38	-41.85	1,377.64	1,377.40	0.24
Lower XD		632.64	588.67	-43.97			

**MW 35-6-17-2**

Wellhead pressure and the calculated water level data for MW 35-6-17-2 are plotted on Figure 7 and summarized in the above table. This well has been monitored since December 3, 2001. Data were not collected between April 8, 2002 and May 20, 2002 due to a damaged lower transducer cable. There are no data for the periods December 1 to December 13, 2002 and December 19, 2002 to January 7, 2003 due to power system failures.

The wellhead pressure has been measured in excess of 600 psia, which is notably higher than in the other 3M monitoring wells. However, the wellhead has not been completely shut in since February 2002 because of a variety of wellhead fitting leaks. Consequently, the pressure data plotted on Figure 7 and summarized in the table above are only considered to be lower bounds. True pressures and trends cannot be measured until a complete shut in is accomplished.

A new flanged wellhead assembly was installed on August 20, 2003. This new assembly eliminated most of the threaded fittings that previously leaked; however, a small gas leak now exists between the transducer cable and the Swagelok fitting. This leak prevents a buildup of wellhead pressure in excess of 575 psia. COGCC and AHA are currently investigating alternative wellhead assembly designs that will allow monitoring of shut-in well pressures without the need for flexible transducer cables to pass through the wellhead.

This well was vented several times in October 2003 to perform buildup tests in conjunction with wellhead assembly work. None of these events affected the pressures in MW 35-6-17-1.

#### 2.2.4 SHAMROCK MINES

Well MW 35-6-13-1 monitoring data are plotted on Figures 8 and 8a and summarized in the table below for the entire period of record. This well has been monitored continuously since May 22, 2002.

The pressure data continue to be quite stable. The wellhead appears to be at about atmospheric pressure and has only fluctuated within a range of 1 psi (between 11 psia and 12 psia) for the period of record. Atmospheric pressure at this site (altitude 7717 feet) is about 11 psia. The calculated water level in the well exhibits a similar trend, varying within a range of 1.5 feet, between 39 fbg and 41.5 fbg. Both Figures 8 and 8a suggest that the minor fluctuations in wellhead pressure and water level in the well are seasonal.

**SHAMROCK MINES MONITORING WELL**

Well and Transducers	Period	Initial Pressure (psia)	Ending Pressure (psia)	Net Pressure Change (psi)	Initial Water Level in Well (fbgs)	Ending Water Level in Well (fbgs)	Net Water Level Change in Well (ft)
MW 35-6-13-1 Upper XD	5/22/02 to 12/31/03	12.06	11.32	-0.74	39.66	41.15	-1.49
Lower XD		211.60	210.21	-1.39			

#### 3.0 FUTURE WORK

Routine work will continue to include periodic checks of monitoring systems and data downloads via telemetry. In addition, alternative wellhead assembly designs for safely containing the high wellhead pressure in Beaver Creek Ranch well MW 35-6-17-2 are being evaluated by COGCC and AHA. The upper transducer in Basin Creek well MW 33-9-7-2 will be raised from 5 fbg to the top of the wellhead assembly in the spring of 2004. Other maintenance work will be performed as needed.



**Table 1  
3M Project Monitoring Well Completion Summary**

Location	Well ID	Construction Completion Date	Drilled Depth (fbgs)	Cored Intervals (fbgs)	Casing Depth (fbgs)	Casing Stickup (fags)	Well Casing Material	Perforated Interval in Coal seam(s) (fbgs)	Wellhead Design (Figure Number)	Log Type	Logged Depth (fbgs)	Log Date
Basin Creek	MW 34-9-7-1	01/28/01	820		802	1	Schedule 40 galvanized steel pipe	578 - 609	2-1	gamma ray, bulk density, caliper, resistance	819	01/27/01
										64" normal resistivity, 16" normal resistivity, sp	822	01/27/01
										temperature, differential temperature	822	01/27/01
										gamma ray, casing collar locator	763	09/27/01
	MW 34-9-7-2	04/25/02	570	359 - 374 * 498 - 513 578 - 593	561	1.5	Oilfield steel tubing	496 - 526	2-2	gamma ray, casing collar locator	550	05/02/02
South Fork Texas Creek	MW 35-7-8-1	09/20/01	486		463	1.6	Schedule 40 galvanized steel pipe	403 - 416	2-1	gamma ray, bulk density, caliper, resistance	485	09/19/01
										64" normal resistivity, 16" normal resistivity, sp	485	09/19/01
										temperature, differential temperature	485	09/19/01
										gamma ray, casing collar locator	462	09/27/01
	MW 35-7-8-2	09/21/01	420	410 - 425	425	1.6	Schedule 40 galvanized steel pipe	235 - 241 254 - 258 264 - 274	2-1	gamma ray, casing collar locator	420	09/27/01
Beaver Creek Ranch	MW 35-6-17-1	04/04/02	1,645	1,457 - 1,467 1,564 - 1,572	1,631	1.5	Oilfield steel tubing	1,572 - 1,576 1,582 - 1,584	2-4	64" normal resistivity, 16" normal resistivity, sp	1,645	04/03/02
										temperature, differential temperature	1,640	04/03/02
										gamma ray, bulk density, caliper, resistance	1,643	04/03/02
										gamma ray, casing collar locator	1,618	05/02/02
	MW 35-6-17-2	10/04/01	1,550		1,500	2	Schedule 40 galvanized steel pipe	1,437 - 1,449 1,458 - 1,472	2-3	gamma ray, neutron	1,499	10/10/01
										temperature, 4Pi density	1,493	11/14/01
										signal amplitude, travel time \ D T, VDL	1,484	11/14/01
									gamma ray, casing collar locator	1,483	11/27/01	
Shamrock Mines	MW 35-6-13-1	05/07/02	627		606	1.5	Oilfield steel tubing	507 - 511 517 - 533 539 - 562	2-2	gamma ray, bulk density, caliper, resistance	626	05/06/02
										64" normal resistivity, 16" normal resistivity, sp	626	05/06/02
										gamma ray, casing collar locator	626	05/10/02

\* Cored interval from initial well drilled in February 2001 that was subsequently plugged and abandoned due to bad cement job.

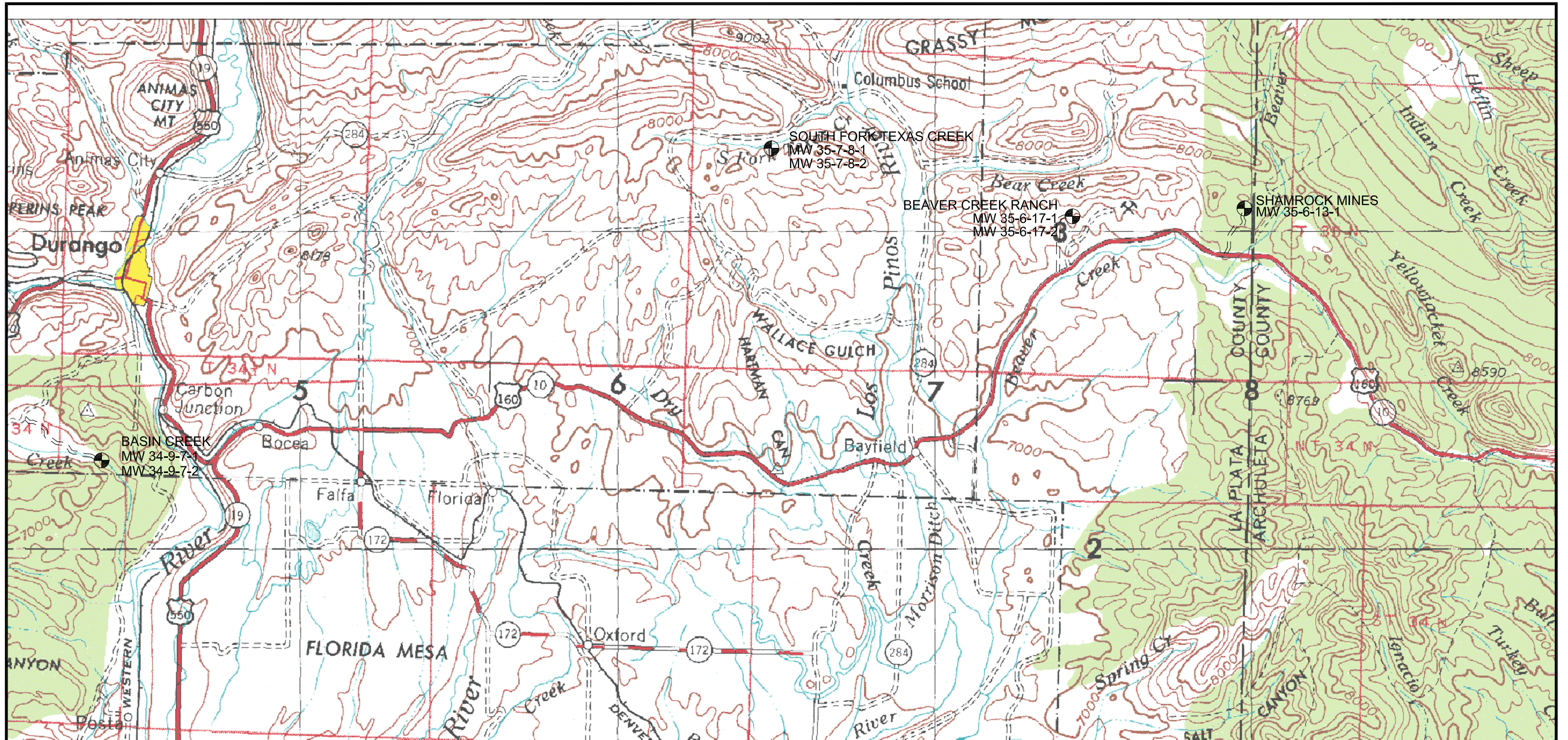
**Table 2**  
**3M Project Monitoring Well Transducers**

Location	Well ID	Upper Transducer		Lower Transducer	
		Depth (fbgs)	Type and Rating	Depth (fbgs)	Type and Rating
Basin Creek	MW 34-9-7-1	0.5	PXD-261-30 psig	570	PXD-461-500 psia
	MW 34-9-7-2	5	PXD-461-500 psia	485	PXD-461-500 psia
South Fork Texas Creek	MW 35-7-8-1	5	PXD-261-30 psig	390	PXD-461-500 psia
	MW 35-7-8-2	4	PXD-461-500 psia	225	PXD-461-500 psia
Beaver Creek Ranch	MW 35-6-17-1	5	PXD-461-500 psia	1,565	PXD-461-1,000 psia
	MW 35-6-17-2	2.5	PXD-461-1,000 psia	1415*	PXD-461-1,000 psia
Shamrock Mines	MW 35-6-13-1	5	PXD-461-500 psia	500	PXD-461-1,000 psia

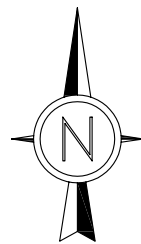
\* MW 35-6-17-2 lower transducer raised from 1420 fbgs to 1415 fbgs on August 22, 2003.


**Table 3  
3M Project Monitoring Well Chronology**

Location	Well	2001				2002								2003						
		January	September	November	December	January	February	March	April	May	June	July	November	December	January	Feb - May	May	August	October	December
Basin Creek	MW 34-9-7-1	Jan. 24-28: Drill/install well	Sept. 27: Perforate well	Nov. 28: Set up telemetry unit; replace bad xds cables	Surveyed	Jan. 18: Tighten wellhead fittings; rewire telemetry system	Install new batteries in telemetry unit with In-Situ assistance							Lost telemetry communication with datalogger	Jan 20: New well 34-9-7-1 upper xd (30 psig, sn 7201); move datalogger ext pwr + lead to + pole on batt charger regul.; replace datalogger bkup batt; re-flash modem memory; enable modem auto pwr-up; start new datalogger test	Telemetry system malfunction; datalogger & power OK	May 20: Replace modem and cell phone; power and datalogger systems OK	Aug 21: Vent both wells and tighten wellhead xd cable strain relief fittings	Oct 8: Conduct rapid blowdown & shutin test	
	MW 34-9-7-2							April 24-25: Drill & install well	May 5: Perforate well May 9: Fish out cable May 22: Install xds	Surveyed								Aug 21: Vent both wells and tighten wellhead xd cable strain relief fittings	Oct 8: Conduct rapid blowdown & shutin test	
South Fork Texas Creek	MW 35-7-8-1		Sept. 17-20: Drill/install well; Sept. 27: Perforate well	Nov. 29: Set up telemetry unit; replace bad xd cables	Surveyed	Jan. 18: Tighten wellhead fittings; rewire telemetry unit	Install new batteries in telemetry unit with In-Situ assistance						May 21: Ck for leaks		Dec. 4: Data lost through end of year due to Hermit internal battery failure; lost telemetry communication with datalogger	Jan 20: Move datalogger ext pwr + lead to + pole on batt charger regul.; replace datalogger bkup batt; re-flash modem memory; enable modem auto pwr-up; start new datalogger test	Telemetry system malfunction; datalogger & power OK	May 20: Replace modem and cell phone; power and datalogger systems OK		Oct 8: Conduct well pressure buildup test
	MW 35-7-8-2		Sept. 20-21: Drill/install well Sept. 27: Perforate well	Nov. 29: Set up telemetry unit; replace bad xd cables	Surveyed	Jan. 18: Tighten wellhead fittings							May 21: Ck for leaks							Oct 8: Conduct well pressure buildup test
Beaver Creek Ranch	MW 35-6-17-1						Install new batteries in telemetry unit with In-Situ assistance	Mar. 5-Apr 4: Drill & install well		May 2: Perforate well; May 20-21: Install xds	Surveyed	July 10: Replace lower xd cable with unvented cable		Dec 13: Insp by Raymond Const. - no wellhead gas leak; solar pwr @ 14.8 v; datalogger batt pack @ 0% capacity; modem pwr off (auto pwr-up disabled or modem memory prob); Dec. 19: Data lost through end of year due to bad datalogger bkup battery	Jan 7 & Jan 21: No wellhead gas leak @ MW35-6-17-2; Jan 21: Move datalogger, modem & solar panel pwr common leads to charger regul. common poles; replace datalogger bkup lith. batt; re-flash modem memory; enable modem auto pwr-up; start new datalogger test	Telemetry system malfunction; datalogger & power OK	May 20: Replace modem and cell phone; power and datalogger systems OK		Oct 7 & 21: conduct well pressure buildup tests	
	MW 35-6-17-2		Sept. 22-Oct. 4: Drill/install well	Nov. 26: Perforate well Nov. 27: Set up telemetry unit	Surveyed	Jan. 17 - Install new xd cables with SwageLok fittings; rewire telemetry unit			Apr 8: Pull lower xd cable; no data Apr 8 to May 20	May 21: Install unvented, heavy duty xd cable		Gas leak @ top bushing; July 10: Vent well & ck bushing galls; July 11: Shutin well	Nov. 14: Vent well; replace valve and reseal all connections			MW 35-6-17-2: Bushing leak	May 20: Location of wellhead threaded bushing leak identified; wellhead assembly to be redesigned	Aug 20: New flanged wellhead assembly installed; xd cable leak at swagelok fitting	Oct 8 & 21: well pressure buildup tests; wellhead leaks @ pressure >570 psia	wellhead leaks @ pressure >570 psia
Shamrock Mines	MW 35-6-13-1								May 3-7: Drill/install well; May 10: Perforate well; May 20, 21: Install pad, telemetry & datalogger systems, & xds	Surveyed				Lost telemetry communication with datalogger	Jan 21: Move solar pwr common lead to common pole on charger regul.; replaced datalogger bkup lith. batt; re-flash modem memory; enable modem auto pwr-up; start new datalogger test	Telemetry system malfunction; datalogger & power OK	May 20: Replace modem and cell phone; power and datalogger systems OK	Aug 20: Modem not powering up; replaced 12v battery - works	Oct 7: Replace 12v Pb-acid battery, modem works; Oct 8: well pressure buildup tests; Oct 21: Replace solar panel	




**MONITORING WELL SITE AND DESIGNATION**



0      10,000      20,000  
  
 FEET  
 CONTOUR INTERVAL 200 FEET

SOURCE  
 USGS 1° X 2° SERIES (TOPOGRAPHIC)  
 NJ 13-7  
 DURANGO, COLORADO

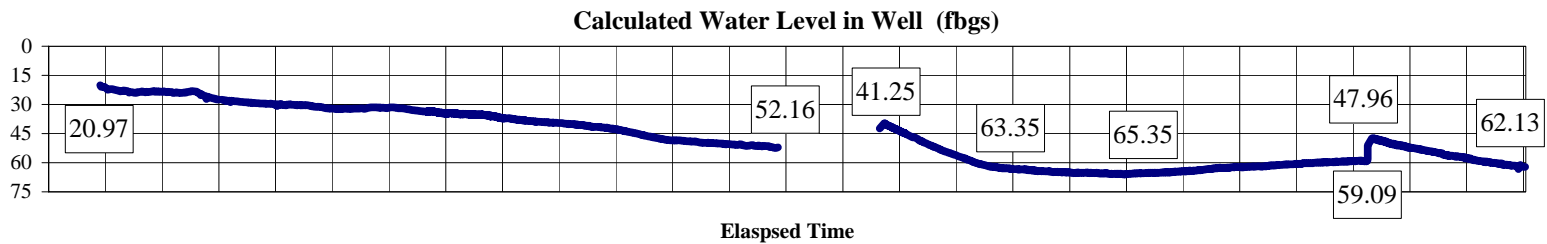
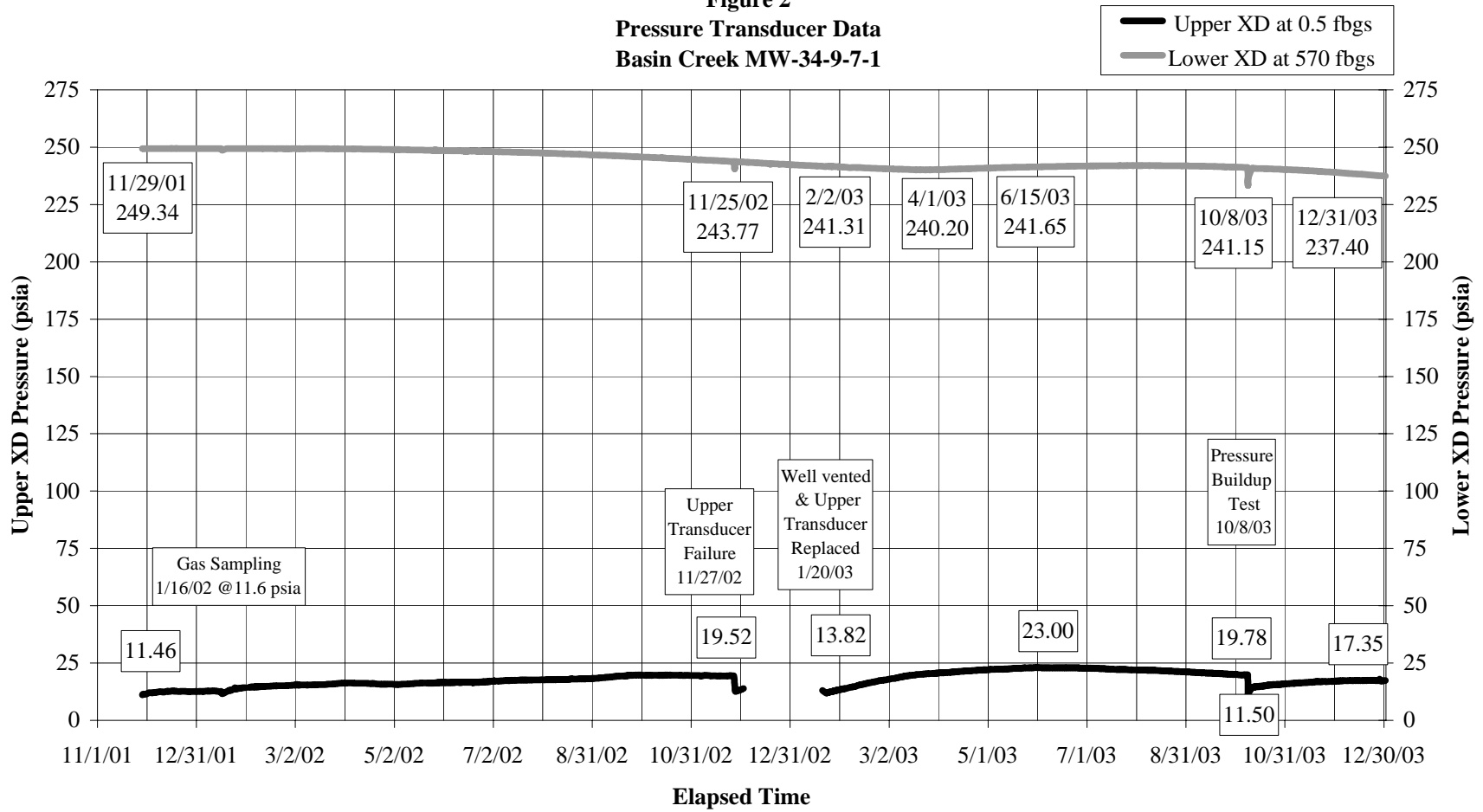

 Applied  
 Hydrology  
 Associates, Inc.

3M Project  
 La Plata County, CO

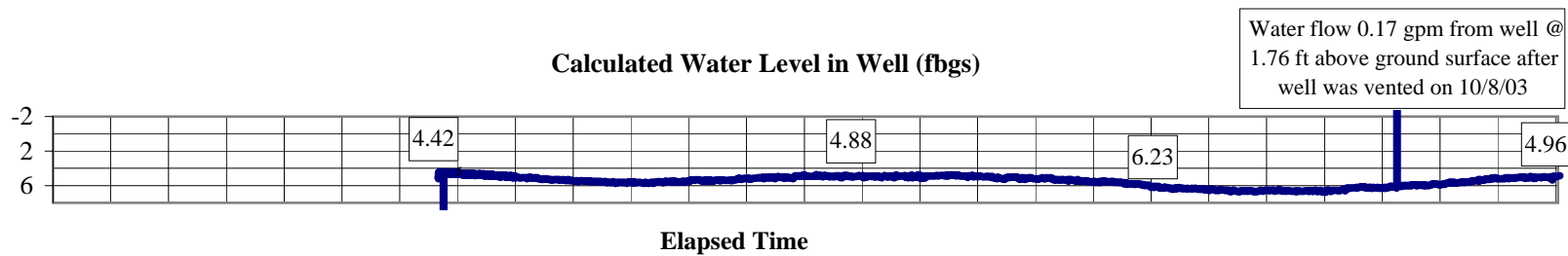
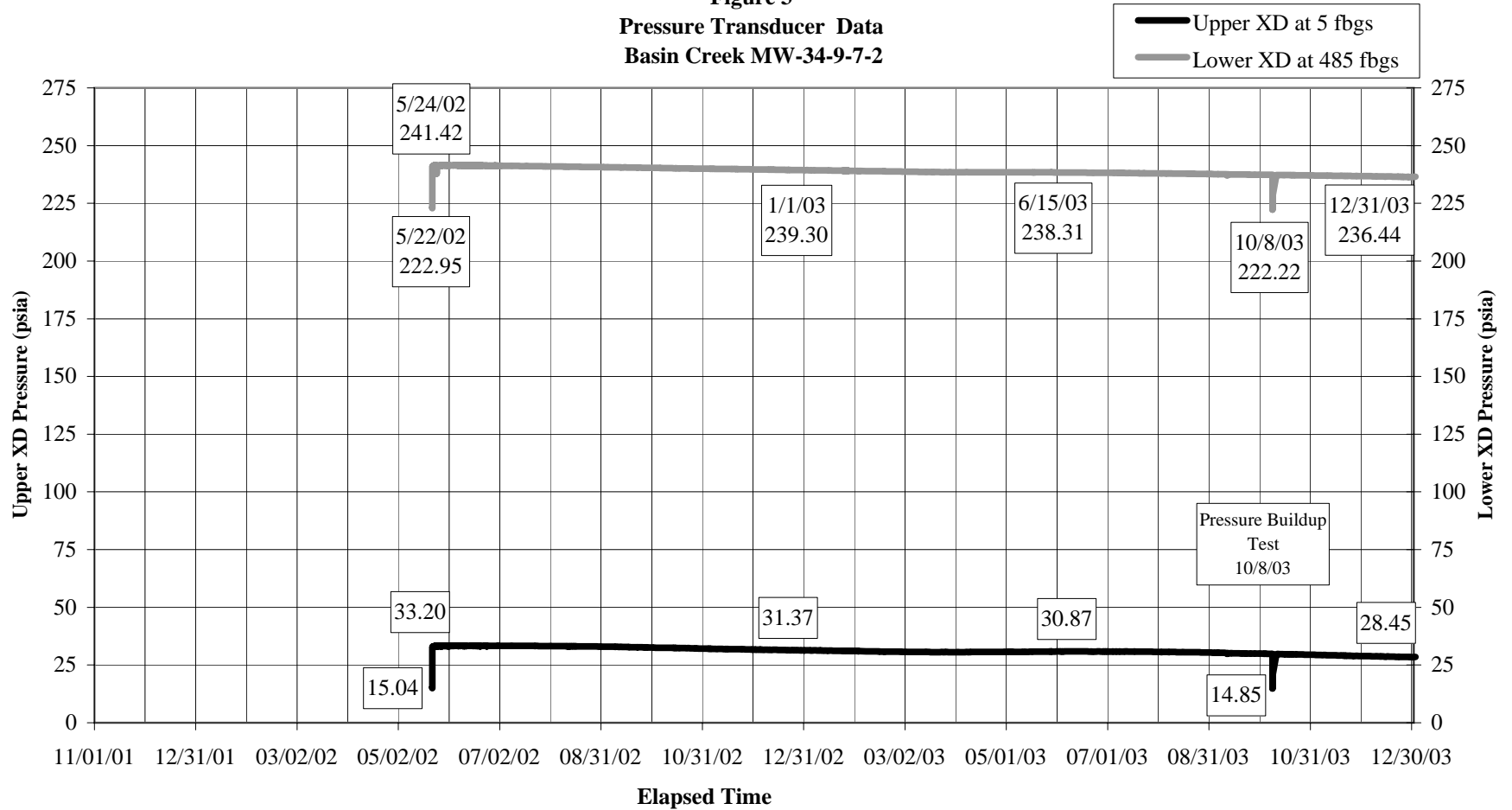
**Figure 1**  
**3M Site Map**  
**Well Locations**

DESIGN: NLH	DATE: 6/12/02	DRAWING NUMBER:
DRAWN: JLS	SCALE: AS SHOWN	San Juan Dur-Bay.dwg
SCRIPT:		

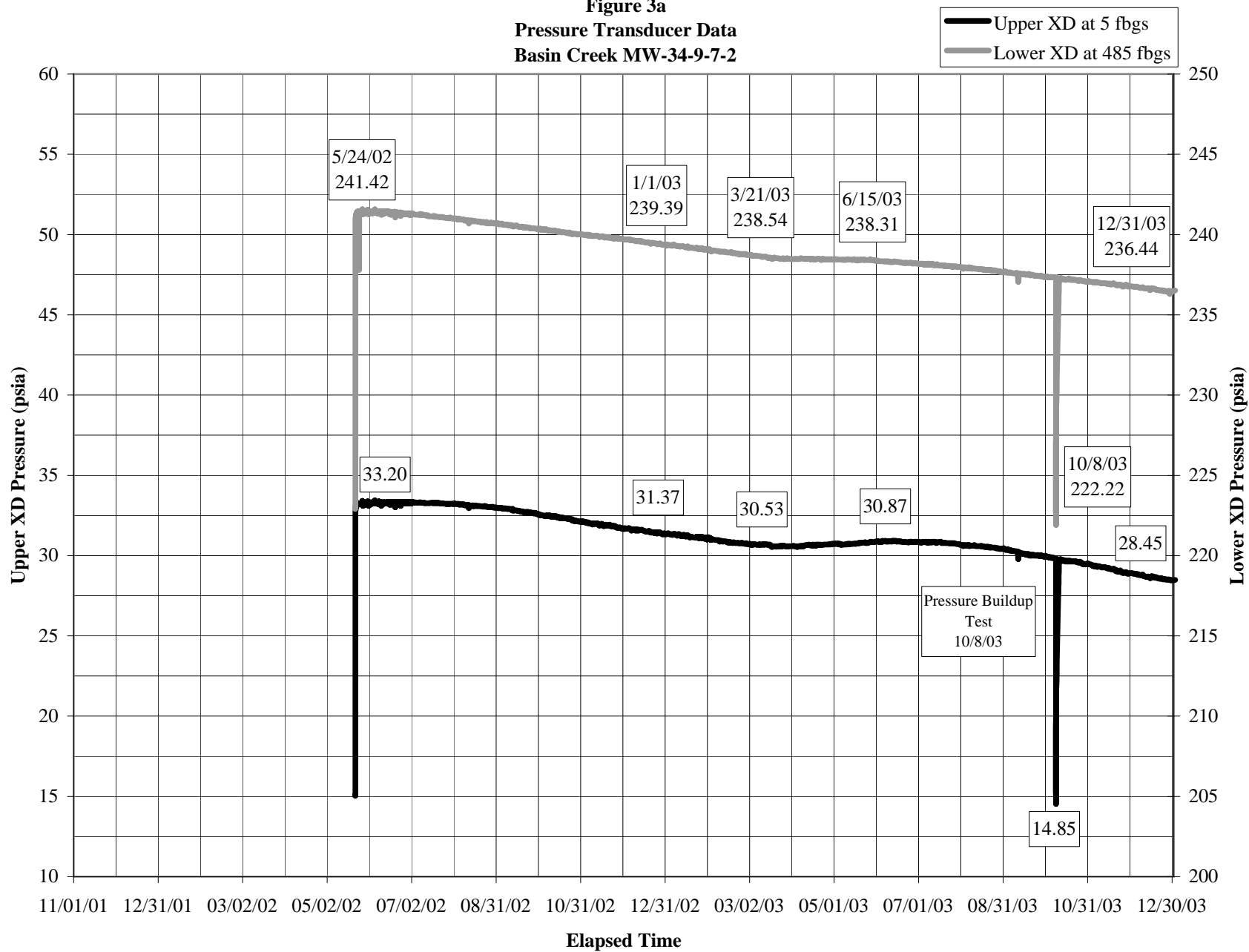
**Figure 2**  
**Pressure Transducer Data**  
**Basin Creek MW-34-9-7-1**



**Figure 3**  
**Pressure Transducer Data**  
**Basin Creek MW-34-9-7-2**



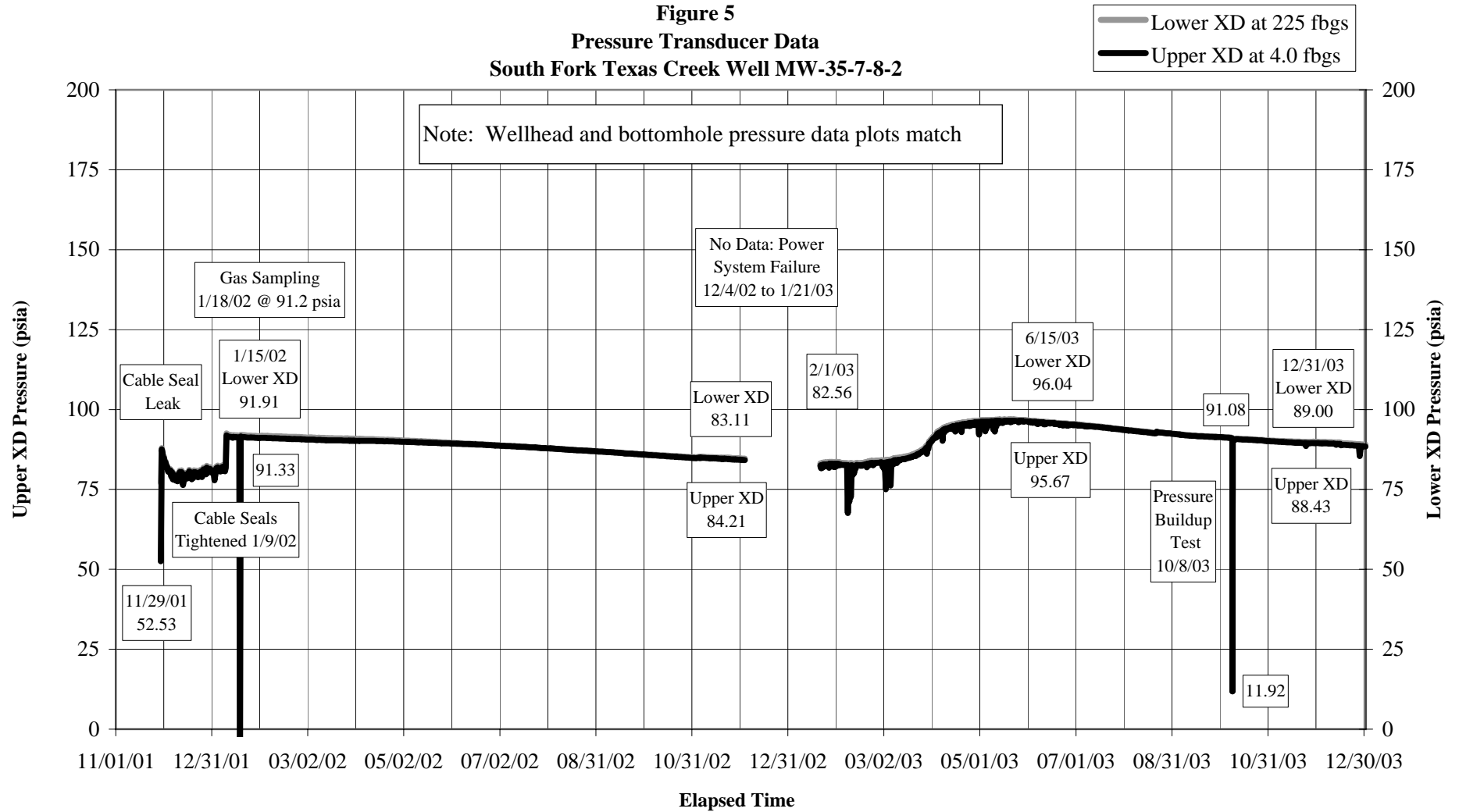
**Figure 3a**  
**Pressure Transducer Data**  
**Basin Creek MW-34-9-7-2**



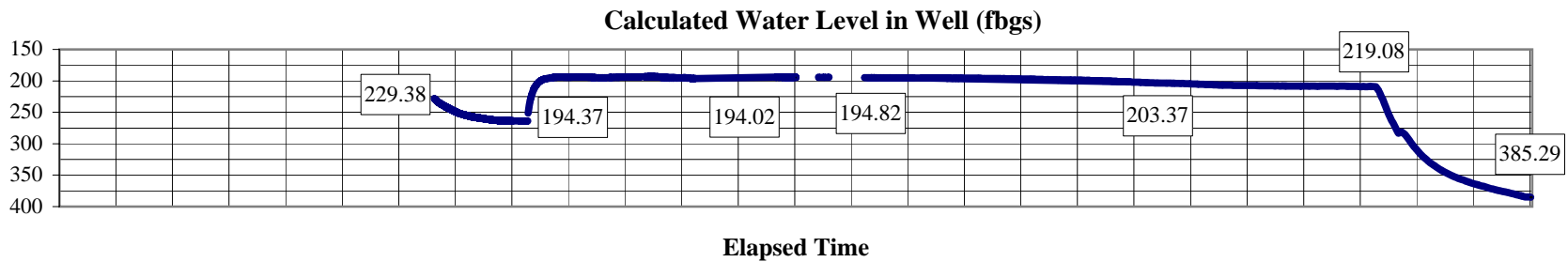
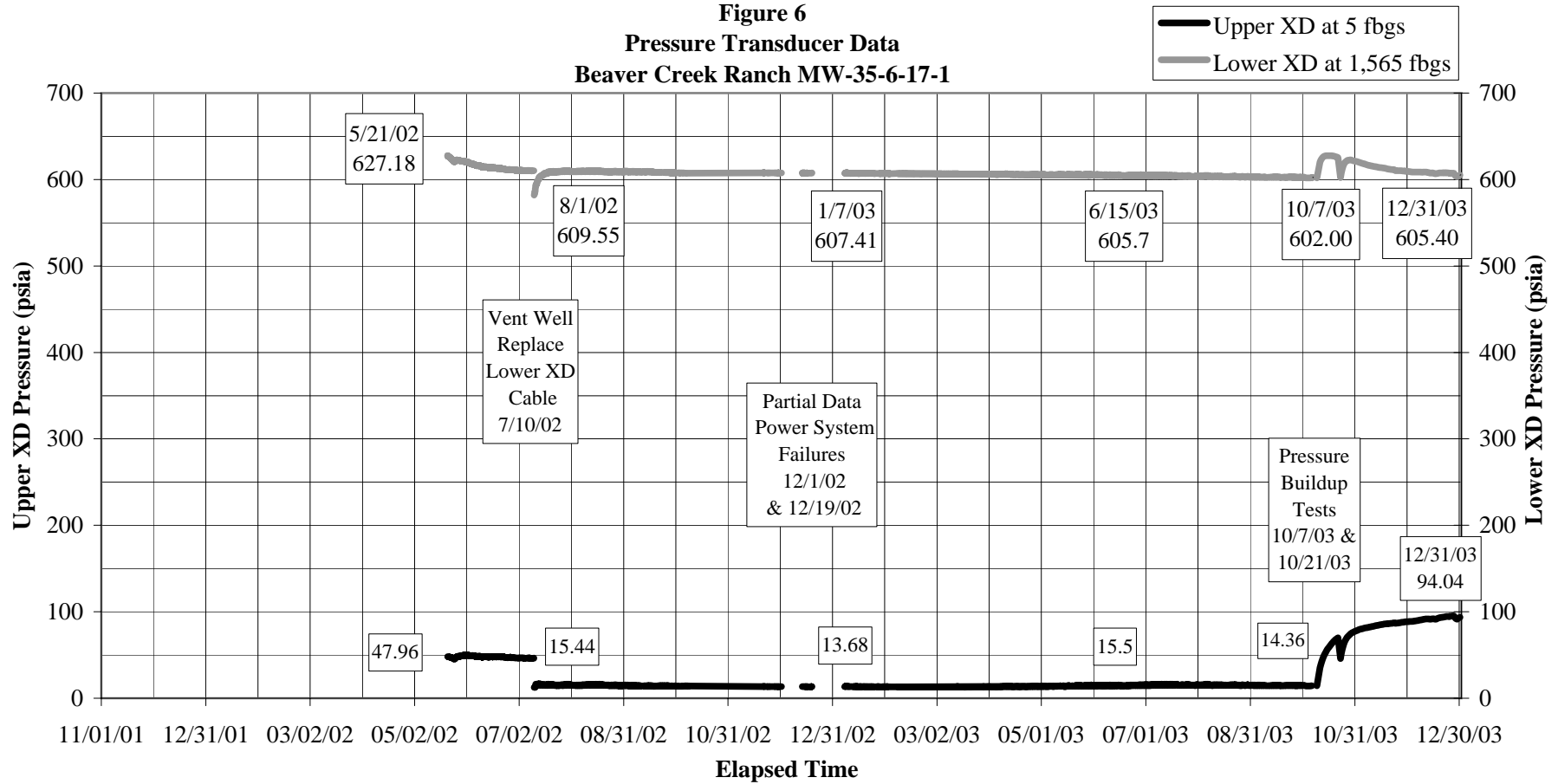




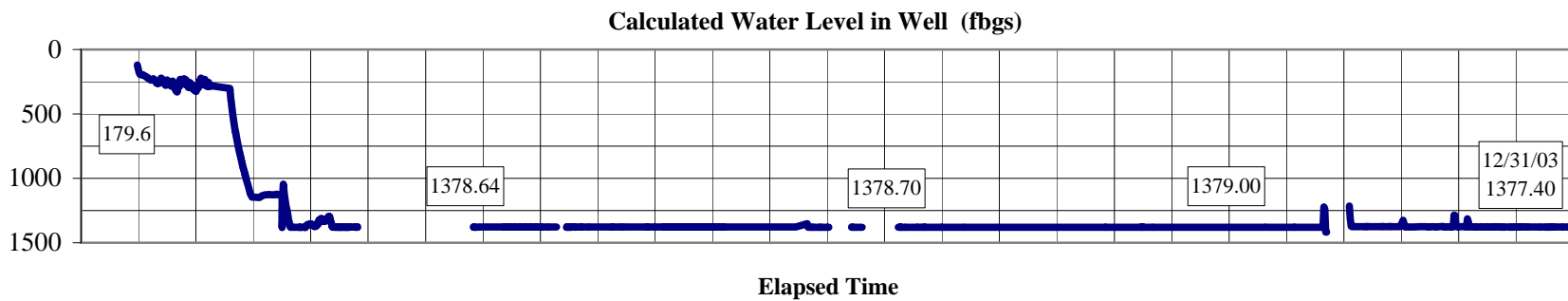
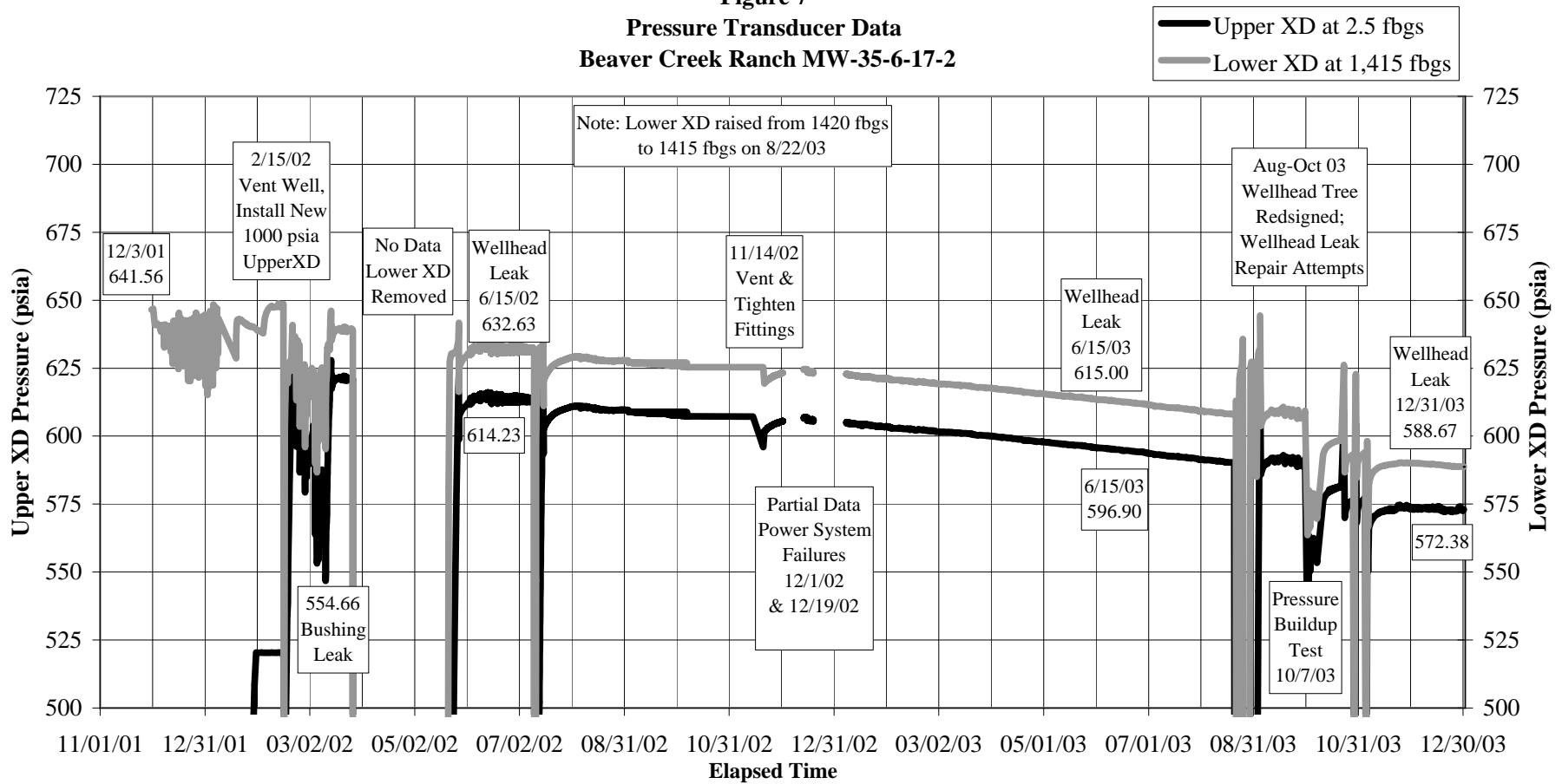
**Figure 5**  
**Pressure Transducer Data**  
**South Fork Texas Creek Well MW-35-7-8-2**



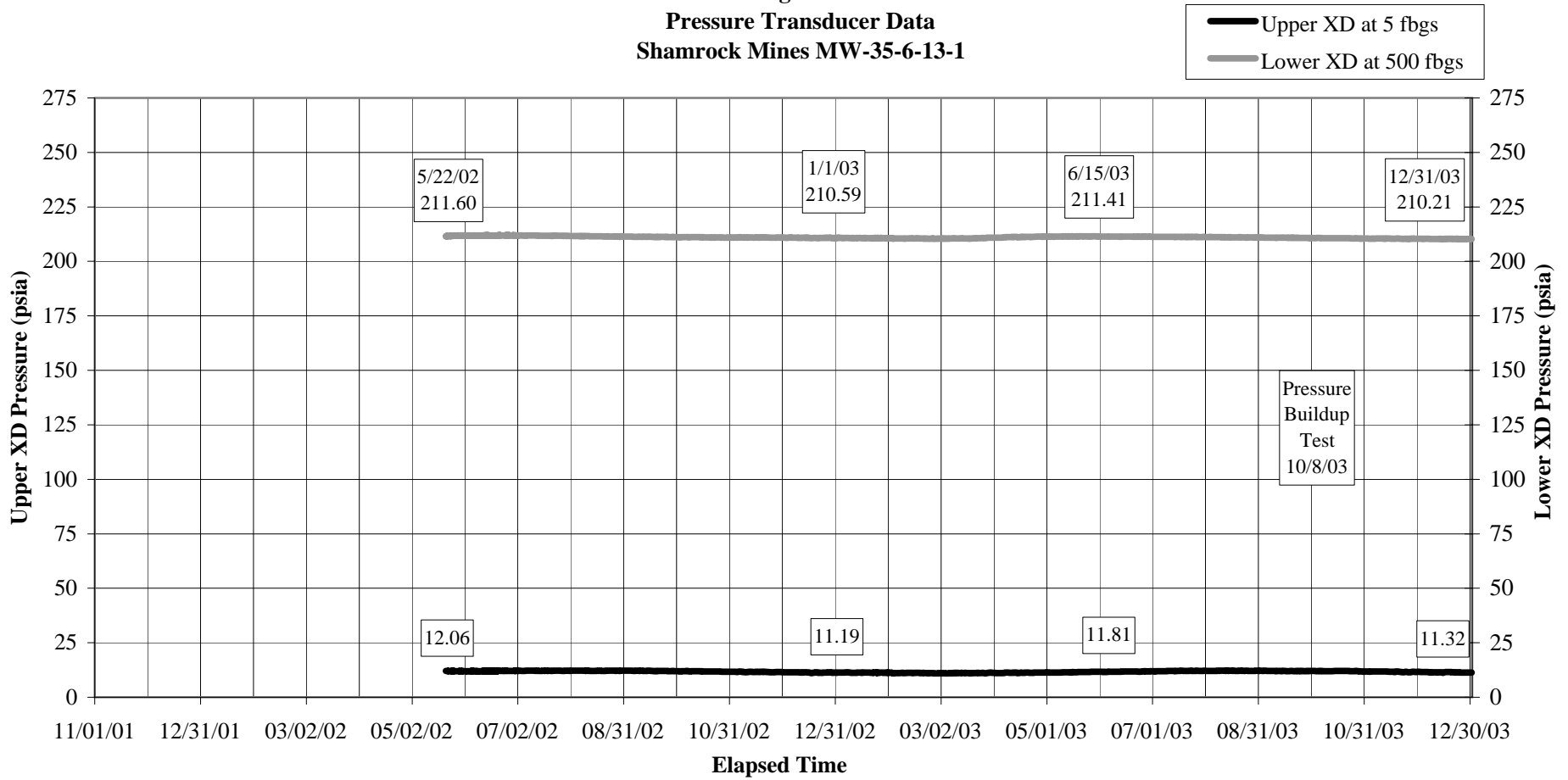
**Figure 6**  
**Pressure Transducer Data**  
**Beaver Creek Ranch MW-35-6-17-1**



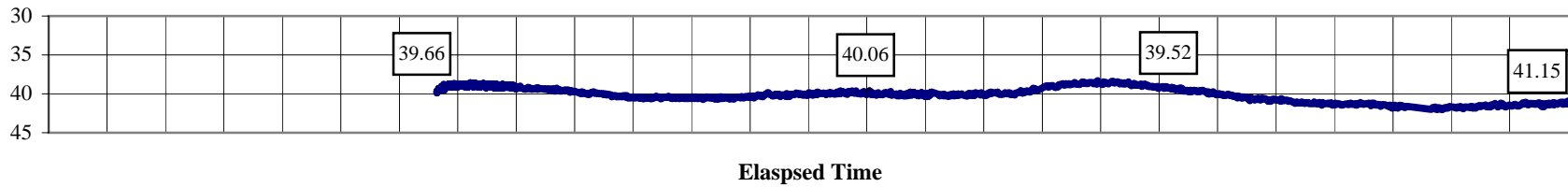
**Figure 7**  
**Pressure Transducer Data**  
**Beaver Creek Ranch MW-35-6-17-2**



**Figure 8**  
**Pressure Transducer Data**  
**Shamrock Mines MW-35-6-13-1**



**Calculated Water Level in Well (fbgs)**



**Figure 8a**  
**Pressure Transducer Data**  
**Shamrock Mines MW-35-6-13-1**

— Upper XD at 5 fbgs  
 — Lower XD at 500 fbgs

