Groundwater Monitoring Well Installation and Groundwater Level Monitoring Report

Rio Grande Canalization Project Restoration Sites

Sierra and Dona Ana Counties, New Mexico
and El Paso County, Texas

October 2014

Prepared for:

International Boundary & Water Commission
United States & Mexico, U.S. Section
El Paso, Texas

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Executive Summary

HDR was retained by the International Boundary and Water Commission, United States Section (USIBWC) to install a total of 55 new groundwater monitoring wells at 20 habitat restoration sites located in the Rio Grande Canalization Project (RGCP) area, located in Sierra and Dona Ana counties, New Mexico and El Paso County, Texas. One monitoring well at each of the 20 restoration were equipped with a pressure transducer to measure water levels. Following the installation of these wells, HDR conducted up to six groundwater level monitoring events, which included manual observation of groundwater levels at each monitoring well and collection of water level data for each of the transducers. This report summarizes well construction activities within the restoration areas, the results of soil salinity field testing, and the water level data collected during the monitoring period following well installation.

Analysis of the groundwater well data collected revealed that groundwater levels at USIBWC restoration habitat along the Upper Rio Grande (URG) are highly susceptible to fluctuations due to managed surface flow in the river itself. Anomalies in groundwater levels in individual wells were also observed. Although limited by the number of wells providing data per restoration site, the groundwater flow direction indicated by the available data demonstrates that flow is generally towards the river but angling downstream at all the restoration sites.

It is recommended that monitoring be conducted on a regular (e.g., quarterly or semi-annual) basis to develop an inventory of groundwater levels throughout the year to help determine appropriate measures for best management of USIBWC habitat restoration sites along the Rio Grande. Should USIBWC install additional groundwater monitoring wells in the future, it is also recommended that, although more costly, other drilling technology and larger concrete bases be used to minimize potential issues with installation and performance of wells in sandy floodplain soils.

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1. Introduction

HDR was retained by the International Boundary and Water Commission, United States Section (USIBWC) to install a total of 54 new groundwater monitoring wells at 20 habitat restoration sites located in the Rio Grande Canalization Project (RGCP) area, located in Sierra and Dona Ana Counties, New Mexico and El Paso County, Texas. The goals and objectives of the project are to monitor groundwater levels at the sites, which have been identified for restoration of aquatic habitat and a mosaic of native riparian plant communities. The principal objectives of the restoration are to enhance river-floodplain hydrologic connectivity, encourage channel lateral migration and channel diversity at arroyo mouths by destabilizing banks, reduce exotic vegetation, restore Southwestern Willow Flycatcher (flycatcher) habitat, and reestablish riparian habitat. The USIBWC is using the groundwater level data collected as part of this project to determine planting depths at restoration sites and to identify sites that need supplemental irrigation.

During the drilling activities at each well, the upper two feet of soil at each location was tested for salinity using the U.S. Department of Agriculture (USDA) field method. One monitoring well at each of the 20 restoration sites was equipped with a pressure transducer to measure water levels. Following the installation of these wells, HDR conducted up to six groundwater level monitoring events, which included manual observation of groundwater levels at each monitoring well and collection of water level data for each of the transducers. All well installation and monitoring activities in the field were performed in accordance with the Health and Safety Plan (HASP) developed for the project. This report summarizes well construction activities within the restoration areas, the results of soil salinity field testing, and the water level data collected during the monitoring period following well installation.

2. Monitoring Well Installation and Construction

A total of 53 monitoring wells were installed within 20 habitat restoration sites along the Upper Rio Grande (URG) at the locations identified by the USIBWC in their April 2013 scope of work (SOW). Monitoring Well 3 at the Rincon Siphon restoration site could not be installed after repeated attempts to do so. Nearly all of the monitoring wells were installed during two mobilizations: May 31 through June 7, and June 24 through June 28, 2013. Six monitoring events occurred at these wells, primarily between September and December 2013. Due to site accessibility issues, an additional mobilization was made in March 2014 to install three monitoring wells at Seldon Point Bar, and four monitoring events were conducted at these wells. In April 2014, the SOW was modified to install two additional wells at a site located below Mesilla Dam in May 2014, for a total of 55 wells, and one monitoring event was conducted at the Below Mesilla Dam wells. All monitoring wells except the Below Mesilla Dam wells were installed using direct push technology (DPT). Drilling activities were conducted by GeoMechanics Southwest, Inc. using a track mounted AMS 9100 DPT drilling rig. The Below Mesilla Dam wells were installed using a hollow stem auger and sampled using a split spoon. HDR field personnel conducted soil salinity testing, logged boreholes, and provided drilling oversight during the monitoring well installation field task. All wells were installed in accordance

with the Final Well Construction Plan developed by HDR for this project and approved by USIBWC in May 2013 (see **Appendix A**). A groundwater well installation permit was required from the New Mexico Office of the State Engineer (NMOSE) for wells installed in New Mexico. A permit was obtained for this project and is provided in **Appendix B**, and the well records for the permit are provided in **Appendix L**. A permit was not required for wells installed in Texas.

Prior to well installation, HDR visited each of the habitat restoration sites to determine final well locations and conducted bird surveys to ensure project compliance with the Migratory Bird Treaty Act (MBTA). The migratory bird surveys were conducted to verify the presence or absence of MBTA species in the vicinity of the well locations. The well locations were sited as close as possible to well locations on maps provided by USIBWC. In a few instances, well locations were moved slightly with USIBWC approval to accommodate drilling equipment accessibility, unstable site conditions, or other issues. The results of the surveys are provided in **Appendix C**. Effective measures used to avoid impacts on migratory birds included identifying, mapping, and flagging nests. The results of the surveys and measures to minimize impacts during well installation were also conveyed to the drilling team, who avoided the flagged areas and installed the wells within a week of the surveys to meet survey requirements. Well site conditions were monitored during well construction and subsequent groundwater level monitoring activities to verify that no impacts on MBTA species from the project occurred, and no impacts were identified.

The monitoring wells were installed to depths ranging from 12 to 20 feet (ft) below land surface (BLS). The depth of each monitoring well was determined by the depth of groundwater encountered at each drilling location. The Groundwater Monitoring Well Installation Plan submitted by HDR in May 2013 proposed a depth of 12 ft BLS at each monitoring location. Due to field conditions at several well locations, several wells were installed to depths of 16 or 20 ft BLS in order to meet the goal of reaching groundwater at that site. Some of the monitoring wells were installed after water was released into the river. These wells were installed to a depth of at least six feet below groundwater to account for seasonal fluctuations in water level. Depths for each monitoring well are provided in the tables in **Appendix D**.

At each monitoring well location, continuous soil samples were collected using a dual tube macro core sampler. During drilling, subsurface conditions consisting of unconsolidated fluvial sediments were encountered. Generally, lithology in the restorations sites consisted of silty fine sand between 0 and 2 ft BLS. Deeper subsurface conditions generally consisted of fine-medium sand or fine-coarse sand with gravel and cobbles encountered at some locations. Intermittent clays and silts were also encountered at some locations, but the lithology at these depths was predominantly characterized by fluvial sands. A boring log for each monitoring well is included in **Appendix E**. After the core samples from each monitoring well location were logged, each monitoring well was installed using a 2.35-inch diameter dual tube direct push tooling. When the borehole reached total depth, the monitoring well screen and casing were inserted through dual-tube tooling. The monitoring well screen consisted of 0.010 inch slotted, 1.5-inch diameter schedule 40 polyvinyl chloride (PVC). Following the installation of the PVC screen and riser pipe, the filter pack was inserted around the screen as the dual tube tooling was removed from the borehole. The filter pack consisting of 20/40 quartz filter sand was installed in the annulus between the screen and borehole wall, to a depth of two feet above the

top of the screen interval. A bentonite seal was emplaced above the filter pack to the ground surface, between the borehole wall and PVC well pipe, and subsequently hydrated.

A locking steel protective casing was installed around each well, with a 12-inch diameter, 8- to 12-inch thick concrete pad was constructed around the protective casing to complete each well. Although the Well Construction Plan called for a 6-inch thick pad, a 12-inch concrete pad was installed to compensate for the loose, unconsolidated soil near the surface. Coarse-grained silica aggregate was placed in the annular space between the PVC monitoring well and the protective steel casing. The steel protective casing at each well was painted yellow and labeled with the well name for easy identification. Well construction diagrams are provided in **Appendix F**. Photographs of the wells are provided in **Appendix G**. After drilling was completed at each location and the DPT rig was moved off site, ground surface and site conditions were restored as close as possible to the conditions present prior to disturbance.

Upon completion of monitoring well installation, each well was surveyed by Elliott Surveying, a licensed, professional surveyor. Northing, easting, ground elevation, and top of PVC casing elevation were recorded for each monitoring well. Geographic coordinates were recorded in Universal Transverse Mercator (UTM) Zone 13 coordinate system using the horizontal North American Datum of 1983 and vertical North American Datum of 1988. The geographic coordinate information and construction details of each monitoring well are provided in **Appendix D**. Mapbooks were developed using available GIS and aerial photography data as well as data collected in the field. **Appendix H** provides a mapbook showing the location of each monitoring well on a site map, and coordinate information is shown on the maps and in a geodatabase provided separately.

In July 2014, due to a number of issues, four wells (BCA-MW-2, LEL-MW-3, VC-MW-1, and VC-MW-2) were reinstalled to a depth of 16 feet. **Appendices D and H** identify the locations of the new wells, all of which are within 50 feet of the previous well locations at these sites.

3. Deployment of Automatic Water Level Monitoring Equipment

Following the completion of the monitoring well installation, 20 wells were equipped with dedicated HOBO U-20 pressure transducers and data loggers made by the Onset Corporation and purchased for the project. The data loggers were deployed near the bottom of each well so that it is submerged during the seasonal low ground level. A data logger (baro logger) was also deployed in monitoring well BE-MW-1 above the water table to log barometric pressure. Baro loggers were also installed at the two Below Mesilla Dam wells by USIBWC. The data collected by the baro logger was used to compensate the water level readings recorded by the data loggers, which were deployed in the monitoring wells. **Table 1** shows the monitoring wells that were equipped with pressure transducers and their respective serial numbers. The data from the automatic monitoring equipment was downloaded onto a laptop computer in the field. Data logger specifications and instructions for maintaining equipment and downloading data are provided as an attachment to the Final Well Construction Plan (see **Appendix A**). **Appendix I** provides automatic monitoring data and graphs for the wells. The automatic monitoring data is

Table 1. Monitoring Wells Equipped with Pressure Transducers

Site	Well ID	Deployment Date	Transducer Serial Number
Anapra Bridge	AB-MW-2	6/25/2013	10329240
Below Mesilla Dam	BMD-MW-1	5/7/2014	GW – 10329238 Baro – 10499250, 10499251
Below Mesilla Dam	BMD-MW-2	5/7/2014	Baro – 10499248, 10499249
Berino East	BE-MW-1	6/6/2013	10329242
Berino West	BW-MW-1	6/6/2013	GW – 10329227 Baro – 10329228
Broad Canyon Arroyo	BCA-MW-1	6/5/2013	10329229
Clark Lateral	CL-MW-1	6/5/2013	10329236
Country Club East	CCE-MW-1	6/6/2013	10329241
Crow Canyon A	CCA-MW-1	6/6/2013	10329226
Crow Canyon B	CCB-MW-1	6/6/2013	10329232
Jaralosa	JAR-MW-1	6/6/2013	10329231
Leasburg Extension Lateral	LEL-MW-1	6/5/2013	10329235
Mesilla East	ME-MW-1	6/5/2013	10329338
Rincon Siphon	RS-MW-4	6/6/2013	10329237
Seldon Point Bar	SPB-MW-1	3/19/2014	10329244
Sunland Park	SP-MW-1	6/26/2013	10329239
Trujillo	TRU-MW-1	6/6/2013	10329225
Valley Creek	VC-MW-1	6/25/2013	10329233
Vinton A	VA-MW-1	6/7/2013	10329243
Vinton B	VB-MW-1	6/26/2013	10329234
Yeso East	YE-MW-1	6/6/2013	10329224

Notes:
GW – At sites where multiple types of transducers were used, 'GW' notes the number of the transducer measuring groundwater; transducers at all other sites were also GW.
Baro – Transducer is measuring barometric pressure

collected in pounds per square inch (psi). To convert psi to water levels, the following formula is used:

$$h = (p_w - p_b)/0.433$$

where:

- h is the head of water above transducer in ft
- p_w is the transducer reading in psi
- p_b is the barometric transducer reading in psi

This formula assumes specific gravity is 1.

To calculate the groundwater elevation, determine the amount (in feet) of water above the transducer at the time that the first manually-collected groundwater elevation level was recorded. Subtract h generated from the formula above from the manually-collected groundwater elevation level, and this elevation represents the base elevation of the transducer. Add all water levels calculated using the formula above to this transducer base elevation to get the groundwater elevation from the psi values.

For example, for well AB-MW-2, the groundwater elevation manually recorded on June 25, 2013 was 3,729.98 feet. The transducer psi value recorded on that date was 16.26 psi. Assuming the barometric pressure reading from a nearby well on that date was 30 inches or 14.74 psi, using the formula above, the water level above the transducer was 3.51 feet. This value is subtracted from 3,729.98 feet to get 3,726.47 feet, which represents the base elevation of the transducer. All water levels calculated from the psi values using the formula above are added to this base elevation to get the groundwater elevation for the transducer-generated values.

4. Field Soil Salinity Testing

The levels of soluble salts in soil samples were measured by determining the electrical conductivity (EC) of the soil solution. During the installation of the monitoring wells, soil samples at each monitoring well location were field tested for salinity. Soil samples were collected during monitoring well installation using a macro-core sampler and acetate liner, dual tube sampling system. Soil samples were collected from three intervals at each drilling location. These intervals include:

- 0-6 inches BLS
- 7-24 inches BLS
- 25-48 inches BLS

Field salinity testing was conducted using the following standard testing procedures:

- Soil samples from each interval were composited and dried.
- 50 grams of each composited soil sample was mixed with 250 mL of distilled or deionized water. The mixture was shaken for at least three minutes. This represents a 1:5 extraction method ($EC_{1:5}$).
- After shaking, the solution was allowed to settle.
- Salinity measurements were collected from the solution using a salinity meter.
- Salinity readings on the salinity meter were converted to soil salinity saturation extraction method (EC_e) values using conversion factors based on the soil type (see **Table 2**) to produce measurable soil salinity values.
- The salinity meter and other equipment were decontaminated using distilled or deionized water.

Table 2. Soil Salinity Conversion Factors

Soil Type	Multiplication Factor
Sands	17
Sandy Loams	13.8
Loams	9.5
Clay Loams and Light Clays	8.6
Medium and Heavy Clays	7

The results of the field measurement of soil salinity are provided in **Appendix D**, and the salinity data for each well is shown on the maps in Appendix **H**. **Table 3** provides a classification for soil salinity developed by the Natural Resource Conservation Service (NRCS).

Table 3. Salinity Classes as Defined by NRCS (EC_e Method [mS/cm])

Non-Saline	Slightly Saline	Moderately Saline	Strongly Saline	Very Saline
0-2.0	2.1-4.0	4.1-8.0	8.1-16.0	16.1

Calculated EC_e based on field measurements (see **Appendix D**) ranged from 0.01 milliSiemens per centimeter (mS/cm) to 4.44 mS/cm, with one greater outlier that could not be confirmed. Generally, the surface soil samples had the highest soluble salt content and levels dropped with depth. Sandy-textured soils tended to have lower soluble salts compared to finer textured soils, as would be expected. The soil samples from drilling activities are classified as non-saline to slightly saline, with only a few samples in the moderately saline range. These salinity levels, with contributions from mineralization due to evaporation, are expected in the project area.

5. Groundwater Elevation Monitoring

In addition to the automatic groundwater level monitoring process described in **Section 3**, water levels in each monitoring well were manually measured during monitoring events on a bi-monthly basis for three months at each well as field conditions permitted (six per well for 50 of 55 wells). Water level measurements were also collected at each well during the well installation mobilizations that took place in May and June 2013 and March and April 2014. With the exception of the Seldon Point Bar wells and the Below Mesilla Dam wells, the separate monitoring events were conducted between September 26, 2013, and December 6, 2013. Four monitoring events were conducted for Seldon Point Bar wells and two were conducted for the Below Mesilla Dam wells between May 6, 2014, and Jun 19, 2014. Groundwater levels were manually measured using a water level meter that indicated when the meter came into contact with pooled water, and the level was read from the meter's measuring tape. During the monitoring events, data from the automatic water level monitoring equipment was downloaded, and it was verified that the data loggers were properly recording groundwater level data.

Manually-collected groundwater level data for each well are provided in a table **Appendix D**; in hydrographs in **Appendix J**; and on the site maps in the mapbook provided as **Appendix K**.

During drilling activities in late May and early June in both 2013 and 2014, water was released from the Caballo Reservoir to flow south through the Rio Grande. Groundwater levels at the habitat restoration sites increased with reservoir releases in June in both 2013 and 2014 and then began to decrease. A late monsoonal rain event in mid-September 2013 resulted in another increase in water levels, after which the decrease continued.

Anomalous groundwater levels were apparent in a few wells when compared to levels in surrounding wells. Rincon Siphon well RS-MW-2 has noticeably higher groundwater levels than others nearby, as does Broad Canyon Arroyo well BCA-MW-3. It is possible that subsurface conditions such as a perched water table may account for the higher levels, although in the case of BCA-MW-3, this well is further inland than the others. In addition, spikes in water levels for certain dates were observed for a few wells but the reason for such could not be determined by the available data. For example, the groundwater level at Vinton well VB-MW-1 on November 25, 2013 was 5 feet higher than the observed levels 2 weeks before and after that date.

Although limited by the number of wells providing data per restoration site, the groundwater flow direction indicated by the available data demonstrates that flow is generally towards the river but angling downstream at all the restoration sites.

6. Conclusions and Recommendations for Future Well Installation and Monitoring

It is recommended that monitoring be conducted on a regular (e.g., quarterly or semi-annual) basis to develop an inventory of groundwater levels throughout the year to help determine appropriate measures for best management of USIBWC habitat restoration sites along the Rio Grande. Valuable data may also be obtained by conducting additional monitoring following dam releases and major storm events. Continuous monitoring data obtained by the transducers may provide enough data to evaluate groundwater level responses to dam releases and major storm events and negate the need for additional manual monitoring beyond regular quarterly or semi-annual monitoring to verify the wells and transducers are functioning properly.

Due to the high groundwater conditions and predominately fine-grained sand composition of the near-surface floodplain soils that occur in the project area, thin-walled PVC wells are susceptible to collapse during installation or performance if flowing sands are encountered. In two instances, a separation of riser coupling in upper portion of the well casing resulted in granular sand pack entering and plugging the well. To avoid this, future additional wells or well replacements could be installed using hollow-stem auger drilling methods, or similarly cased drilling methods, as was done for the Below Mesilla Dam wells. This method is more costly and may have some physical constraints in difficult/limited access areas, but it provides a greater degree of well protection during installation. It should be noted that the DPT drill methods used during this project are more economical and were adequate to meet the requirements for the majority of wells installed for this project. Planning for future well installations or replacements should consider the anticipated total depth of drilling, known or anticipated subsurface conditions including groundwater levels at the time of drilling, and past performance of other

similar well installations in the vicinity. In general, when groundwater levels are high and wells need to be installed relatively deep compared to current groundwater elevation to account for seasonal groundwater level fluctuation, the hollow-stem auger drilling method (or other similar cased drilling method) might be advantageous. Conversely, when groundwater elevations are low and wells will need to be installed relatively shallow compared to current groundwater elevation to account for seasonal groundwater level fluctuation, the DPT methods might be advantageous.

In some cases, movement of the well at/above the ground surface occurred. To mitigate this, it is recommended that wider and deeper concrete bases at the surface be installed to provide greater stability and resistance to lateral forces to minimize future occurrences, as was done for subsequent well installation during this project.

In one instance, root ball growth plugged the well. This likely cannot be avoided in some areas, especially where vegetated with woody plant or shrub species exist as these plants are drawn to any free water source, such as is provided by a screened groundwater well.

Lastly, the 1/8” braided stainless steel cables originally permanently installed to lower and raise the transducers in the wells have been subsequently identified as being susceptible to corrosion, possibly from the salinity content in the water. In a few instances, corrosion occurred along the cable just above the turnbuckle at the end of the cable. The turnbuckle has a galvanized coating which may have been compromised, the stainless steel in the cable became the anode, and the cable corroded. It is recommended that a higher grade stainless steel (Type 316 or greater), thicker stainless steel cabling, use of Teflon tape to wrap the lower part of the cable, or a polymer/nylon cable material be used to minimize or avoid corrosion.

APPENDIX A

FINAL WELL CONSTRUCTION PLAN

FINAL WELL CONSTRUCTION PLAN

Rio Grande Canalization Project Restoration Sites

Sierra and Dona Ana Counties, New Mexico and El Paso County, Texas

Prepared for:

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May 28, 2013

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1.0 INTRODUCTION

HDR Engineering, Inc. (HDR) has been retained by the United States International Boundary and Water Commission. (USIBWC) to install a total of 54 new groundwater monitoring wells in the Rio Grande Canalization Project (RGCP) area, located in Sierra and Dona Ana Counties, New Mexico and El Paso County, Texas. This groundwater monitoring well installation plan outlines the drilling and construction techniques that will be used to install monitoring wells. This plan also includes a description of groundwater monitoring equipment that will be installed in select wells and a description of field screening techniques for soil salinity.

2.0 MONITORING WELL INSTALLATION AND CONSTRUCTION

A total of 54 monitoring wells will be installed at the locations identified by the USIBWC. Individual well locations are included in Attachment 1. The scope of work outlined in the Request for Proposal states the monitoring wells are to be installed to minimum depth of 8 feet below land surface (ft BLS) at drilling locations above Leasburg Dam, and a minimum of 10 ft BLS at drilling locations below Leasburg Dam. The RFP also states that wells installed during the wet season or during irrigation flows should be installed at least six feet below the water level observed during drilling. To account for potential differences in groundwater levels at the different drilling locations, a well depth of 12 ft BLS is used for the purposes of this work plan. It is anticipated that well depths of some wells will be shallower than 12 ft BLS, and some wells may be slightly deeper than 12 ft BLS.

Based on subsurface conditions observed during previous investigations, these monitoring wells will likely be installed into unconsolidated fluvial deposits consisting of sand or silt. The advancement of these boreholes will require drilling through the unconsolidated sediments. Based on the locations of the wells in the Rio Grande floodplain and sensitive nature of the habitat surrounding the drilling locations, HDR will utilize direct push technology (DPT) for the installation of these wells. Monitoring well installation will be conducted using a small track mounted AMS 9100 or equivalent DPT rig. This rig is capable of reaching the drilling locations while causing minimal disturbance to the surrounding habitat. The use of DPT will also minimize the soil cuttings produced at each boring location, which will minimize impacts on surrounding habitat.

Each monitoring well will be installed using a 2.35-inch diameter dual tube direct push tooling. When the borehole reaches total depth, the monitoring well screen and casing will be inserted through dual-tube tooling. During the advancement of each borehole soil samples will be continuously logged between ground surface and the terminal depth of the borehole. Boring logs will be included for each well location with the *Monitoring Well Installation and Groundwater Elevation Monitoring Report.*

When borehole advancement is complete, a filter pack will be inserted around the screen as the dual tube tooling is removed from the borehole. The filter pack consisting of 20/40 quartz filter sand will be installed in the annulus between the screen and borehole wall, to a depth of two feet above the top of the screen interval. A bentonite seal will be emplaced above the filter pack to the ground surface, between the borehole wall and polyvinyl chloride (PVC) well pipe, and subsequently hydrated.

The groundwater monitoring wells will be constructed of 1.5 inch, Schedule 40, flush-threaded PVC riser and screen. To ensure the screen spans have a water yielding section, the screen will consist of a 5- or 10-foot section of machine-slotted 0.010-inch slot screen. The screen length will be determined in field based on the depth to groundwater and the seasonal fluctuations.

A locking steel protective casing will be installed around the well and a one-foot by one-foot by six-inch thick concrete pad is proposed to be constructed around the protective casing to complete the well. The pad will be gently sloped to direct run-off from the well. A vent hole will be constructed in the well riser to allow water table equilibration, and to allow for ventilation and drainage of moisture and rainwater in the protective steel casing. The weep hole in the protective steel casing will be at a lower elevation than the vent hole in the PVC well riser. Coarse-grained silica aggregate will be placed in the annular space between the PVC monitoring well and the protective steel casing. The steel protective casing will be labeled with the well name and painted yellow, so that it is easily identifiable. A generalized well construction diagram is provided as Figure 1. After drilling is completed at each location and the DPT rig has been moved off site, ground surface and site conditions will be restored as closely as possible to the conditions present prior to disturbance.

Each monitoring well will be given a unique name. The naming convention will consist of an abbreviation of the location, and a numerical designation as a monitoring well. For example a monitoring well installed at the Crow Canyon A location would be given the name “CCA- MW-1”. This designation would designate the location Crow Canyon A as CCA and the monitoring well number MW-1. This naming convention is simple and can be easily inputted into the automatic water level monitoring equipment. The name and location of each monitoring well is shown in Attachment 1.

Upon completion of monitoring well installation, each well will be surveyed by a licensed, professional surveyor. Northing, easting ground elevation and top of casing elevation will be recorded at each monitoring well. An accurate top of casing elevation will allow accurate water levels to be recorded in each monitoring well during the duration of water level monitoring.

3.0 DEPLOYMENT OF AUTOMATIC WATER LEVEL MONITORING EQUIPMENT

Following the completion of the monitoring well installation, 20 wells will be outfitted with pressure transducers and data loggers that will record water level elevations at least once per day over an extended period. The data loggers will be deployed at the bottom of each well so that it is submerged during the seasonal low ground level. A single data logger (baro logger) will also be deployed in one of the monitoring wells above the water table to log barometric pressure. The baro logger uses algorithms based on air pressure only. It measures and log’s changes in atmospheric pressure, which is then used to compensate the water level readings recorded by the data loggers which will be deployed in the monitoring wells.

HDR will deploy HOBO U-20 transducers made by the Onset Corporation, which will be programmed to record at least one water level per day. The battery life on these transducers is guaranteed for 5 years when recording the water level at one minute intervals. The battery life should be substantially longer if the device is recording fewer water levels. Data collected by the data logger will need to be periodically downloaded and erased. HDR will deploy the data loggers after well construction is complete and confirm that the data loggers are functioning properly during the three-month monitoring period outlined by USIBWC in the RPB. A specification sheet for the data logger is provided as Attachment 2.

4.0 FIELD SOIL SALINITY TESTING

During the installation of the monitoring wells, soil samples at each location will be field tested for salinity. Soil samples will be collected during monitoring well installation using a macro-core sampler and acetate liner, dual tube sampling system. Samples will be collected from three intervals at each drilling location. These intervals include:

- 0-6 inches BLS
- 7-24 inches BLS
- 25-48 inches BLS

Field salinity testing will follow standard field salinity testing procedures. Field salinity testing methods will be conducted using the following procedure:

- Soil samples from each interval will be composited and dried.
- 50 grams of each composited soil sample will be mixed with 250 mL of distilled or deionized water (deionized if it is available). The mixture will be shaken for at least three minutes.
- After shaking, solution will be allowed to settle.
- Salinity measurements will be collected from the solution using a salinity meter.
- Salinity readings on the salinity meter will be converted to soil salinity using conversion factors based on the soil type (Table 1).
- The salinity meter and other equipment will be decontaminated using distilled or deionized water.

Table 1

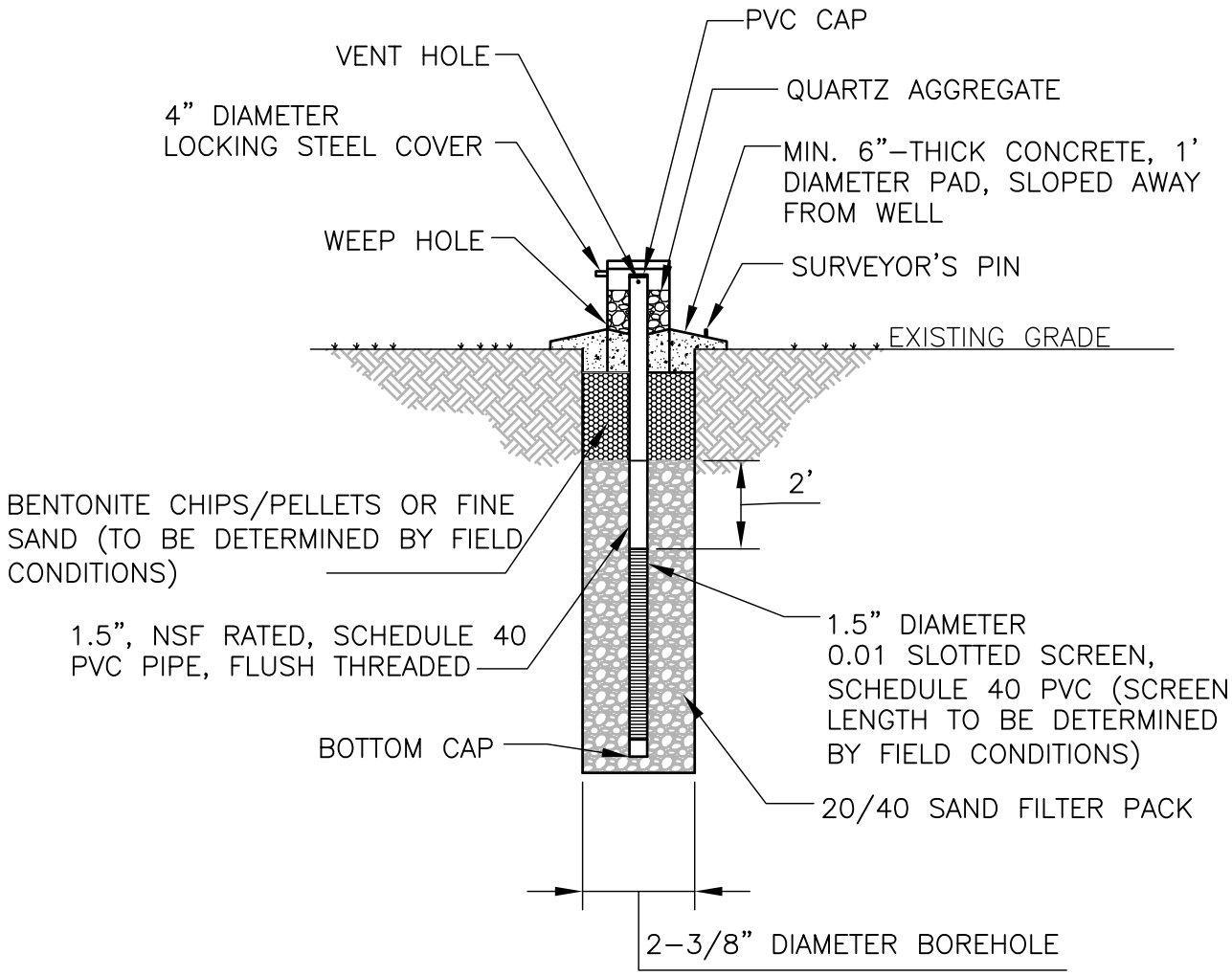
Soil Salinity Conversion Factors

Soil Type	Multiplication Factor
Sands	17
Sandy Loams	13.8
Loams	9.5
Clay Loams and Light Clays	8.6
Medium and Heavy Clays	7

The results of the field measurement of soil salinity will be recorded, tabularized and included in the *Monitoring Well Installation and Groundwater Elevation Monitoring Report.*

FIGURE 1

General Groundwater Monitoring Well Construction Diagram



HDR

GENERAL GROUNDWATER MONITORING WELL CONSTRUCTION DIAGRAM

–

DATE
4/24/13

FIGURE
1

ATTACHMENT 1

Monitoring Well Location Maps

Note: This attachment has been superseded by the maps included in Appendix H of the 2014 Groundwater Monitoring Well Installation and Monitoring Report.

ATTACHMENT 2

Data Logger Specifications

HOBO® U20 Water Level Logger (U20-001-0x and U20-001-0x-Ti) Manual

The HOBO U20 Water Level Logger is used for monitoring changing water levels in a wide range of applications including streams, lakes, wetlands, tidal areas, and groundwater. The loggers are typically deployed in existing wells or stilling wells installed specifically for deploying the loggers. This logger features high accuracy at a great price and HOBO ease-of-use, with no cumbersome vent tubes or desiccants to maintain.

The logger uses a maintenance-free absolute pressure sensor and features a durable stainless steel or titanium housing (depending on model) and ceramic pressure sensor. The HOBO Water Level Titanium is recommended for saltwater deployment for recording water levels and temperatures in wetlands and tidal areas. The logger uses precision electronics to measure pressure and temperature and has enough memory to record over 21,700 combined pressure and temperature measurements.

HOBO Water Level Logger

Models:

- U20-001-01 (30-foot depth) and U20-001-01-Ti (30-foot depth/Titanium)
- U20-001-02 (100-foot depth) and U20-001-02-Ti (100-foot depth/Titanium)
- U20-001-03 (250-foot depth) and U20-001-03-Ti (250-foot depth/Titanium)
- U20-001-04 (13-foot depth) and U20-001-04-Ti (13-foot depth/Titanium)

Required Items:

- Coupler (COUPLER-2-B) with USB Optic Base Station (BASE-U-4) *or* HOBO Waterproof Shuttle (U-DTW-1)
- HOBOware® Pro

Accessories:

- Cable (CABLE-1-300 or CABLE-1-50) and Cable Crimp (CABLE-1-CRIMP)
- Replacement Coupler (Coupler2-B)

Specifications

Pressure and Water Level Measurements U20-001-01 andU20-001-01-Ti

Operation Range	0 to 207 kPa (0 to 30 psia); approximately 0 to 9 m (0 to 30 ft) of water depth at sea level, or 0 to 12 m (0 to 40 ft) of water at 3,000 m (10,000 ft) of altitude
Factory Calibrated Range	69 to 207 kPa (10 to 30 psia), 0° to 40°C (32° to 104°F)
Burst Pressure	310 kPa (45 psia) or 18 m (60 ft) depth
Water Level Accuracy*	Typical error: ±0.05% FS, 0.5 cm (0.015 ft) water Maximum error: ±0.1% FS, 1.0 cm (0.03 ft) water
Raw Pressure Accuracy**	±0.3% FS, 0.62 kPa (0.09 psi) maximum error
Resolution	< 0.02 kPa (0.003 psi), 0.21 cm (0.007 ft) water
Pressure Response Time (90%)	< 1 second
Thermal Response Time (90%)***	Approximately 10 minutes in water to achieve full temperature compensation of the pressure sensor

Pressure and Water Level Measurements U20-001-02 andU20-001-02-Ti

Operation Range	0 to 400 kPa (0 to 58 psia); approximately 0 to 30.6 m (0 to 100 ft) of water depth at sea level, or 0 to 33.6 m (0 to 111 ft) of water at 3,000 m (10,000 ft) of altitude
Factory Calibrated Range	69 to 400 kPa (10 to 58 psia), 0° to 40°C (32° to 104°F)
Burst Pressure	500 kPa (72.5 psia) or 40.8 m (134 ft) depth
Water Level Accuracy*	Typical error: ±0.05% FS, 1.5 cm (0.05 ft) water Maximum error: ±0.1% FS, 3 cm (0.1 ft) water
Raw Pressure Accuracy**	±0.3% FS, 1.20 kPa (0.17 psi) maximum error
Resolution	< 0.04 kPa (0.006 psi), 0.41 cm (0.013 ft) water
Pressure Response Time (90%)	< 1 second
Thermal Response Time (90%)***	Approximately 10 minutes in water to achieve full temperature compensation of the pressure sensor

Pressure and Water Level Measurements U20-001-03 andU20-001-03-Ti

Operation Range	0 to 850 kPa (0 to 123.3 psia); approximately 0 to 76.5 m (0 to 251 ft) of water depth at sea level, or 0 to 79.5 m (0 to 262 ft) of water at 3,000 m (10,000 ft) of altitude
Factory Calibrated Range	69 to 850 kPa (10 to 123.3 psia), 0° to 40°C (32° to 104°F)
Burst Pressure	1200 kPa (174 psia) or 112 m (368 ft) depth
Water Level Accuracy*	Typical error: ±0.05% FS, 3.8 cm (0.125 ft) water Maximum error: ±0.1% FS, 7.6 cm (0.25 ft) water
Raw Pressure Accuracy**	±0.3% FS, 2.55 kPa (0.37 psi) maximum error

Specifications (continued)

Pressure and Water Level Measurements U20-001-03 andU20-001-03-Ti (continued)

Resolution	< 0.085 kPa (0.012 psi), 0.87 cm (0.028 ft) water
Pressure Response Time (90%)	< 1 second
Thermal Response Time (90%)* **	Approximately 10 minutes in water to achieve full temperature compensation of the pressure sensor

Pressure and Water Level Measurements U20-001-04 andU20-001-04-Ti

Operation Range	0 to 145 kPa (0 to 21 psia); approximately 0 to 4 m (0 to 13 ft) of water depth at sea level, or 0 to 7 m (0 to 23 ft) of water at 3,000 m (10,000 ft) of altitude
Factory Calibrated Range	69 to 145 kPa (10 to 21 psia), 0° to 40°C (32° to 104°F)
Burst Pressure	310 kPa (45 psia) or 18 m (60 ft) depth
Water Level Accuracy*	Typical error: ±0.075% FS, 0.3 cm (0.01 ft) water Maximum error: ±0.15% FS, 0.6 cm (0.02 ft) water
Raw Pressure Accuracy**	±0.3% FS, 0.43 kPa (0.063 psi) maximum error
Resolution	< 0.014 kPa (0.002 psi), 0.14 cm (0.005 ft) water
Pressure Response Time (90%)	< 1 second
Thermal Response Time (90%)* **	Approximately 10 minutes in water to achieve full temperature compensation of the pressure sensor

Temperature Measurements (All Models)

Operation Range	-20° to 50°C (-4° to 122°F)
Accuracy	±0.44°C from 0° to 50°C (±0.79°F from 32° to 122°F), see Plot A
Resolution	0.10°C at 25°C (0.18°F at 77°F), see Plot A
Response Time (90%)	3.5 minutes in water (typical)
Stability (Drift)	0.1°C (0.18°F) per year

Logger

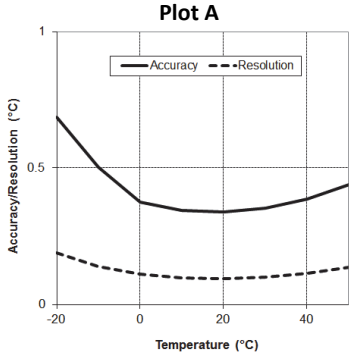
Real-time Clock	± 1 minute per month 0° to 50°C (32° to 122°F)
Battery	2/3 AA, 3.6 Volt lithium, factory-replaceable
Battery Life (Typical Use)	5 years with 1 minute or greater logging interval
Memory (Non-volatile)	64K bytes memory (approx. 21,700 pressure and temperature samples)
Weight	Stainless steel models: approximately 210 g (7.4 oz) Titanium models: approximately 140 g (4.8 oz)
Dimensions	2.46 cm (0.97 inches) diameter, 15 cm (5.9 inches) length; mounting hole 6.3 mm (0.25 inches) diameter
Wetted Materials	Stainless Steel models: 316 stainless steel, Viton® o-rings, acetyl cap, ceramic sensor Titanium models: Titanium, Viton o-rings, acetyl cap, ceramic sensor
Logging Interval	Fixed-rate or multiple logging intervals, with up to 8 user-defined logging intervals and durations; logging intervals from 1 second to 18 hours. Refer to the HOBOware software manual.
Launch Modes	Immediate start and delayed start
Offload Modes	Offload while logging; stop and offload
Battery Indication	Battery voltage can be viewed in status screen and optionally logged in datafile. Low battery indication in datafile.
CE	The CE Marking identifies this product as complying with all relevant directives in the European Union (EU).

* Water Level Accuracy: With accurate reference water level measurement and Barometric Compensation Assistant data

** Raw Pressure Accuracy: Absolute pressure sensor accuracy includes all pressure drift, temperature, and hysteresis-induced errors

*** Thermal Response Time: Maximum error due to rapid thermal changes is approximately 0.5%

Plot A



Software

HOBOware Pro software is required for logger operation. Using a reference water level, HOBOware Pro automatically converts the pressure readings into water level readings. The software also supports compensation for temperature, fluid density, and barometric pressure.

Communication

For launching and reading out the Water Level logger in the field, you can use a laptop computer with HOBOware Pro and an Onset Optic USB Base Station (BASE-U-4), with a coupler (COUPLER2-B) or the HOBO Waterproof Shuttle (U-DTW-1) with a coupler (COUPLER2-B).

The optical interface allows the logger to be offloaded without breaking the integrity of the seals. The USB compatibility allows for easy setup and fast downloads.

Barometric Compensation

The HOBO Water Level Logger records absolute pressure, which is later converted to water level readings by the software. In this application, absolute pressure includes atmospheric pressure and water head. Atmospheric pressure is nominally 100 kPa (14.5 psi) at sea level, but changes with weather and altitude. Left uncompensated, barometric variations could result in errors of 0.6 m (2 ft) or more.

To compensate for barometric pressure changes, you can use the HOBO U20 Water Level Logger as a barometric reference. The barometric reference is typically deployed in the same well or at the same location as the water level of interest, but rather than being placed in the water column, it is deployed above the water in air.

Barometric pressure readings are consistent across a region (except during fast-moving weather events), so you can generally use barometric pressure readings that are taken within 15 km (10 miles) of the logger or more, without significantly degrading the accuracy of the compensation.

Therefore, one U20 or weather station (HOBO U30 or H21 recommended) can be used to compensate all of the water level loggers in an area. The U20-001-01 model with its 0–9m (0–30 ft) range or the U20-001-04 with its 0–4 m (0–13 ft) range are both good barometric references due to their smaller range, temperature-compensated accuracy, and rugged stainless steel case. HOBOware Pro includes a Barometric Compensation Assistant for easy and accurate barometric compensation.

LEDs

A light (LED) in the communications window of the logger confirms logger operation.

The following table explains when the logger blinks during logger operation:

When:	The Light:
The logger is logging	Blinks once every one to four seconds (the shorter the logging interval, the faster the light blinks); blinks when logging a sample
The logger is awaiting a start because it was launched in Start At Interval or Delayed Start mode	Blinks once every eight seconds until logging begins

Calibration

The pressure sensor in each HOBO Water Logger is individually calibrated. During calibration, raw pressure sensor data is collected at multiple pressures and temperatures over the calibrated range of the logger (see the specifications table). This data is used to generate calibration coefficients that are stored in the logger's non-volatile memory. The calibration coefficients are then checked to be sure that the logger meets its stated accuracy over the calibrated range.

The pressure sensor can be used at pressures and temperatures that are outside of the calibrated range, but the accuracy cannot be guaranteed.

Important: Never exceed the burst pressure of the sensor!

Sleep Mode

The logger consumes significantly more power when it is "awake" and connected to a base station or shuttle. To conserve power, the logger will go into a low-power (sleep) mode if there has been no communication with your computer for 30 minutes. To wake up the logger, remove the logger from the coupler, wait a moment, then re-insert the logger.

Sample and Event Logging

The logger can record two types of data: samples and events. Samples are the sensor measurements recorded at each logging interval (for example, the pressure every minute). Events are independent occurrences triggered by a logger activity, such as Bad Battery or Host Connected. Events help you determine what was happening while the logger was logging.

The logger stores 64K of data, and can record over 21,700 samples of pressure and temperature.

Setup

Before you deploy the HOBO U20 Water Level Logger in the field, perform the following steps in the office:

1. Start HOBOware.
2. Connect the logger to the computer. See the next section.
3. Verify the status. Click Status on the toolbar and observe that the absolute pressure is near barometric pressure for the location and the temperature is near the actual temperature.

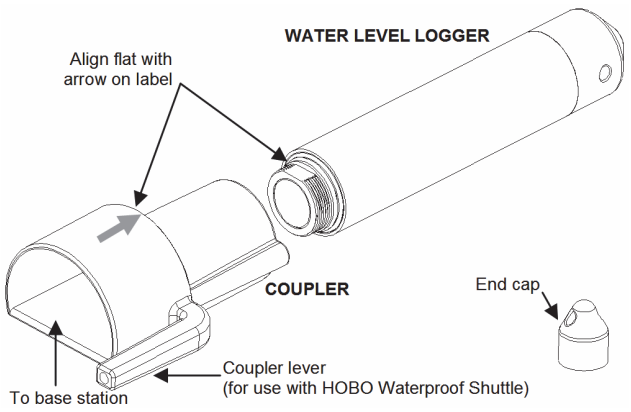
4. Launch the logger. See the *HOBOware User's Guide* for details.
   - Make sure both *Abs. Pressure* and *Temperature* are selected (temperature is required for temperature compensation of pressure).
   - *Logging Battery Voltage* is not essential since you can check the battery voltage using the Status screen at launch or readout of logger.

Connecting the Logger to a Computer

The HOBO Water Level Logger requires a coupler (COUPLER2-B) and USB Optic Base Station (BASE-U-4) or HOBO Waterproof Shuttle (U-DTW-1) to connect to the computer.

1. Follow the instructions that came with your base station or shuttle to attach the base station or shuttle to a USB port on the computer.
2. Unscrew the black plastic end cap from the logger by turning it counter-clockwise.
3. Attach the coupler to the base station or shuttle
4. Insert the logger into the coupler with the flat on the logger aligned with the arrow on the coupler label. Gently twist the logger to be sure that it is properly seated in the coupler (it should not turn).

NOTE: If you are using the Waterproof Shuttle, briefly press the coupler lever to put the shuttle into base station mode.

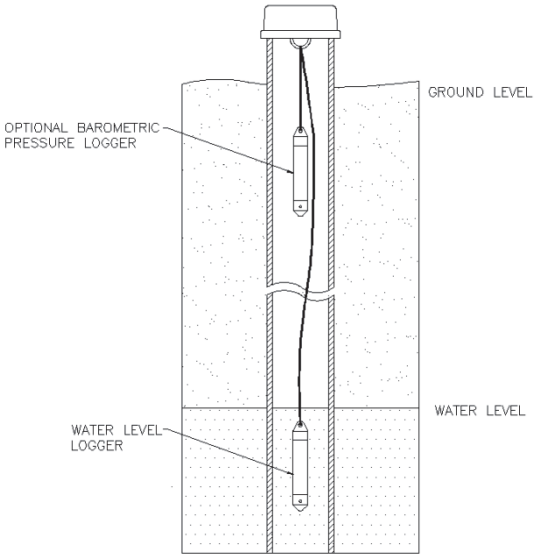


If the logger has never been connected to the computer before, it may take a few seconds for the new hardware to be detected by the computer.

Important: USB communications may not function properly at temperatures below 0°C (32°F) or above 50°C (122°F).

Deploying the Logger

The HOBO Water Level Logger is designed to be easy to deploy in many environments. The logger uses an absolute pressure sensor, so no vent tube is required. The small size of the logger is convenient for use in small wells and allows the logger to be mounted and/or hidden in the field.



Deployment Guidelines

Full Temperature Equilibrium

The pressure sensor is temperature compensated over the range of 0° to 40°C (32° to 104°F). To obtain the highest level of accuracy, the logger should be allowed to come to full temperature equilibrium (approximately 20 minutes) before the reference level is recorded.

Sudden Temperature Changes

Sudden temperature changes should be avoided. When deploying a HOBO Water Level Logger for barometric pressure reference, some consideration should be made to minimize the rate of temperature fluctuations. Ideally, the barometric pressure reference logger should be hung several feet below ground level in an observation well where ground temperatures are stable (while making sure the logger remains above the water level). If that is not possible (or if a well is not used), try to put the logger in a location where it will not be subject to rapid daily temperature cycles.

Venting

When deploying a HOBO Water Level logger in a well, make sure the well is vented to the atmosphere. Typically, a small hole can be drilled in the well cap to ensure that the pressure inside and outside the well is at equilibrium. If this is not possible, the barometric pressure reference logger should be used inside the same well.

Wire

Use a no-stretch wire to hang the water level logger. Any change in length of the wire will result in a 1-to-1 corresponding error in the depth measurement. Always pull-test a cable prior to deploying a logger in a well to make sure it does not stretch.

Stilling Well
If you are deploying the logger in a lake, river, or stream, you must first build a stilling well to protect the logger from vibration, shock, and movement.

A simple stilling well can be constructed with PVC or ABS pipe. A properly constructed stilling well helps to protect the logger from currents, wave action, and debris. Suspend the logger in the stilling well so it is always underwater, but not on the bottom to be buried by silt.

For more information, see the Technical Application Note for Constructing a Stilling Well at:
http://www.onsetcomp.com/water_level_stilling_well.html

Burst Pressure
Be very careful not to exceed the burst pressure for the logger. The pressure sensor will burst if the maximum depth is exceeded (see specifications table). The logger should be positioned at a depth where the logger will remain in the water for the duration of the deployment, but not exceed the rated bursting depth.

Deployment Procedure

1. Cut wire to suspend logger.
    a. Measure the physical depth to the surface of the water from the suspension point.
    b. Cut a piece of stranded, stainless steel wire (Teflon coated is best) so that the logger will be deep enough to always be in the water. Estimate the low water level and make the cable length such that the logger will be about 2 feet below that level.
2. Attach the wire to the suspension point and to the logger cap.
3. Relaunch the logger if desired (if a PC or a HOBO U-Shuttle is available).
4. Lower the logger into the well or stilling well.
5. Measure the water depth from the desired reference point (top of pipe, ground level, or sea level).
    - To maximize accuracy, allow 20 minutes after deploying the logger before measuring water depth to allow the logger to reach temperature equilibrium with the water.
    - If the well is too small in diameter to measure the water depth after deployment, measure the water depth before deployment, then deploy the logger immediately and record deployment time.
    - For well deployments: If the water level surface is below the reference point (such as referencing groundwater measurements to the top of the well), record the water level as a negative number. If the water level surface is above the reference point (such as height above sea level), record the water level as a positive number.
    - For lake, stream, and river deployments: If the water level is being referenced to some point above the logger (such as the top of the stilling well), record the water level as a negative number. If the water depth is being referenced to a point below the water surface such as the bottom of the stream, record the water level as a positive number.
6. Record the reference measurement date and time.

Deploying a U20 Logger for Barometric Pressure Data (Optional)

If you are using a U20 logger to record barometric pressure data, install one logger in one of the wells as follows:

1. Cut wire for suspending the logger.
    a. Measure the physical depth to the surface of the water from the suspension point.
    b. Cut a piece of stranded, stainless steel wire (Teflon coated is best) so that the logger will hang about 2 feet below the ground surface but always above the water surface.
2. Attach the wire to the suspension point and to the logger cap.
3. Relaunch the logger if desired (if a PC or a HOBO U-Shuttle is available)
4. Lower the logger into the well or stilling well. Make sure the logger does not go below the water surface.
5. Record the deployment time.

Collecting Data

For reading out the Water Level logger in the field, you can use either of the following:

- Laptop computer with HOBOware Pro and an Optic USB Base Station (BASE-U-4), with a coupler (COUPLER2-B)
- HOBO Waterproof Shuttle (U-DTW-1) with a coupler (COUPLER2-B)

1. Measure the water depth using the original reference point with the correct sign.
2. Record depth and date and time.
3. Pull the logger out of the well.
4. Remove the logger from its cap, leaving the suspension undisturbed.
5. Readout the data using one of the options listed above.
6. Save the data in a test folder location.
7. Redeploy the logger (optional). See below.

Barometric Pressure Data
To read out a U20 logger used for barometric pressure data:

1. Remove the logger from the well.
2. Readout the data using one of the options listed above.
3. Save the data in a test folder location.
4. Redeploy the logger (optional). See the next section.

Redeploying the Logger
If you are redeploying the logger, you must first make sure that it is launched. If you used the HOBO Waterproof Shuttle to offload data, the shuttle automatically performs a synchronized relaunch of the logger so that data is logged on the same measurement intervals. If you wish to change the launch settings, you must launch the logger using HOBOware Pro.

The existing suspension can be reused as long as the water level logger remained in the water and the barometric logger remained out of the water for the entire test interval. Take a new reference reading with the date and time as described in *Collecting Data*. Record this information in your field notebook to use later to calibrate your data, which will zero out any drift error.

Processing Data using Barometric Pressure Data

To determine water level using barometric pressure data, use the **Barometric Compensation Assistant** in HOBOware Pro, as described below.

If you are using barometric pressure data from a HOBO weather station, you can use the data file as if it were U20 barometric data. For data from sources other than Onset products, see *Barometric Data from Other Sources* below.

1. In HOBOware Pro, open the water depth data file. The **Plot Setup** window appears.
2. Uncheck all boxes except *Abs. Pressure*.
3. Run the Barometric Compensation Assistant.
    a. Click the **Process** button.
    b. Select the water density box that best describes the water that you are measuring or enter the actual water density.
    c. Check the *Use a Reference Water Level* box and enter the reference water level that you measured at the beginning of the deployment.
    d. Select the date and time from the pull-down menu that is closest to the recorded date/time for the measurement. If you measured the depth before deployment because of pipe size, then select a date/time after the start of the deployment.
    e. Check *Use Barometric Data file*.
    f. Click the **Choose** button. This will allow you to select the data file to use for barometric pressure compensation.
    g. Select and open the data file.
    h. Click the **Create New Series** button. A new Plot Setup window appears.
4. Select the *Water Level* box and any other series that you want plotted. Click the **Plot** button to obtain a plot of the resulting water level data.

Measurement Error
Measurement error can be caused by manual measurement error, sensor drift, or change in the suspension cable length.

To quantify measurement error (which is ideally zero), compare the calculated water level at the end of the plot with the water level measured just before you removed the water level logger.

Barometric Data from Other Sources

Third Party Weather Station or Barometric Logger
If you choose to use barometric pressure from a third party weather station or barometric logger, you need to convert the date, time, and pressure data to a text file with special header requirements. For information on how to set up the text file, see the HOBOware Help or User Guide. It is easiest to do this work in EXCEL and then save it as a text file.

Online Weather Station
If you choose to use barometric pressure from an online weather station, such as the National Weather Service, the measured barometric pressure is modified to be at sea level. This sea level pressure is useable since all pressure offsets are zeroed when you enter the reference measurement.

In the Barometric Compensation Assistant, when you select the Barometric Data File, select the text file that you generated. HOBOware Pro will ask for the data format and data separation characters (tab or comma) and then import the barometric data.

Maintenance

Protecting the Logger

Important: Do not attempt to open the logger housing! Unscrewing the metal nose cone of the logger will cause serious damage to the pressure sensor and logger electronics. There are no user serviceable parts inside the case. Contact Onset technical support if your logger requires servicing.

This logger can be damaged by shock. Always handle the logger with care. The logger may lose its calibrated accuracy or be damaged if it is dropped. Use proper packaging when transporting or shipping the logger.

Biofouling
Periodically inspect the logger for fouling. Biological growth on the face of the pressure sensor will throw off the pressure sensor's accuracy. Organisms that grow inside the sensor nose cone and on the sensor itself can interfere with the sensor's operation and eventually make the sensor unusable. If the deployment area is prone to biofouling, check the logger periodically for marine growth.

Solvents
Check a materials-compatibility chart before deploying the logger in locations where untested solvents are present.

The logger is shipped with Viton O-rings installed. Viton has an excellent resistance to most solvents and is suitable for deployments in water that contain a mixture of most fuels, solvents and lubricants. However, the Viton O-rings are sensitive to polar solvents (acetone, ketone), ammonia, and brake fluids.

The black acetyl cap is provided to help protect the communications window. Acetyl is resistant to most solvents, fuels, and lubricants.

The polycarbonate communications window is sealed as an additional barrier to water and dirt entering the logger housing.

Compensating for Drift

All pressure sensors drift over time. The drift for the pressure sensor and electronics in the HOBO Water Level logger is less than 0.3% FS (worst case) per year. In most applications, drift is not a significant source of error, because the offset created by any drift is zeroed out when you take a manual reference level measurement and use the logger software to automatically calculate the level readings relative to the reference measurement. In effect, you are re-zeroing the sensor each time you apply a reference reading to the data file.

Pressure sensor drift matters only when absolute pressure values are needed, or if there are no recent reference level or depth measurements available. For example, if the logger is deployed for one year and no new reference level readings are taken during the deployment, it is possible that the sensor could have drifted as much as 0.3% FS by the end of the deployment.

It is possible to determine the actual amount of drift during a deployment if a reference level is taken at the beginning and the end of a long-term deployment. The results of applying the two different reference levels (once at the beginning of the data file, and again at the end of the data file) can be compared. Any difference between the files indicates the amount of sensor drift (assuming accurate reference levels).

Verifying Accuracy

You can check the *differential accuracy* of your loggers for water level measurements by deploying the loggers at two depths and comparing the difference in level readings. When verifying the accuracy this way, be sure to allow the loggers' temperature to stabilize at each depth. Use the logger software to convert the readings from pressure to level. The level readings should be taken close enough together that the barometric pressure does not change.

You can check the *absolute pressure accuracy* of your HOBO Water Level Logger by comparing its ambient pressure readings to a second HOBO logger. Their readings should be within each other's specified accuracy. Alternatively, you can check the pressure reading against an accurate local barometer. If you use a non-local source of barometric information, such as the NOAA website, adjust for altitude.

Recalibration

If you would like to have your logger's absolute accuracy verified against a NIST standard, or to have your logger recalibrated, contact Onset or your place of purchase for pricing and return arrangements.

The Battery

The battery in the HOBO Water Level Logger is a 3.6 Volt lithium battery.

Battery Life

The battery life of the logger should be about five years or more. Actual battery life is a function of the number of deployments, logging interval, and operation/storage temperature of the logger. Frequent deployments with logging intervals of less than one minute, and continuous storage/operation at temperatures above 35°C will result in significantly lower battery life. For example, continuous logging at a one-second logging interval will result in a battery life of approximately one month.

To obtain a five-year battery life, a logging interval of one minute or greater should be used and the logger should be operated and stored at temperatures between 0° and 25°C (32° and 77°F).

Voltage

The logger can report and log its battery voltage. If the battery falls below 3.1 V, the logger will record a "bad battery" event in the datafile. If the datafile contains "bad battery" events, or if logged battery voltage repeatedly falls below 3.3 V, the battery is failing and the logger should be returned to Onset for battery replacement.

Replacing the Battery

To have your logger's battery replaced, contact Onset or your place of purchase for return arrangements. Do not attempt to replace the battery yourself. Severe damage to the logger will result if the case is opened without special tools, and the warranty will be voided.

WARNING: Do not cut open, incinerate, heat above 100°C (212°F), or recharge the lithium battery. The battery may explode if the logger is exposed to extreme heat or conditions that could damage or destroy the battery case. Do not dispose of the logger or battery in fire. Do not expose the contents of the battery to water. Dispose of the battery according to local regulations for lithium batteries.

onset®

1-800-LOGGERS (564-4377) • 508-759-9500
www.onsetcomp.com • loggerhelp@onsetcomp.com

Patent #: 6,826,664 12315-E MAN-U20

APPENDIX B

NEW MEXICO OFFICE OF STATE ENGINEER WELL PERMIT

Scott A. Verhines, P.E.
State Engineer

Las Cruces Office
1680 HICKORY LOOP, SUITE J
LAS CRUCES, NM 88005

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
District 4 Office

Trn Nbr: 528022
File Nbr: LRG 15537

July 17, 2014

DAVID J. ATTEBERRY
U.S. SECTION OF INTL. BOUNDARY AND WATER COMM.
THE COMMONS BLDG. C, STE. 310
4171 N. MESA ST.
EL PASO, TX 79902

Greetings:

Enclosed is your copy of the above numbered permit that has been approved subject to the conditions set forth on the approval page. In accordance with the conditions of approval, the well can only be tested for 10 cumulative days, and the well is to be plugged on or before 06/17/2015, unless a permit to use the water is acquired from this office.

A Well Record & Log (OSE Form wr-20) shall be filed in this office within twenty (20) days after completion of drilling, but no later than 06/17/2015.

Appropriate forms can be downloaded from the OSE website www.ose.state.nm.us or will be mailed upon request.

Sincerely,

Andrea J. Mendoza
(575) 524-6161

Enclosure

explore

4-19685
CN

File No. LRG 15537
LRG -15537

NEW MEXICO OFFICE OF THE STATE ENGINEER

APPLICATION FOR PERMIT TO DRILL A WELL WITH NO CONSUMPTIVE USE OF WATER

(check applicable box):

For fees, see State Engineer website: http://www.ose.state.nm.us/

Purpose:	☐ Pollution Control And / Or Recovery	☐ Geo-Thermal
☐ Exploratory	☐ Construction Site De-Watering	☐ Other (Describe):
☒ Monitoring	☐ Mineral De-Watering	

A separate permit will be required to apply water to beneficial use.

☐ Temporary Request - Requested Start Date: Requested End Date:

Plugging Plan of Operations Submitted? ☐ Yes ☒ No

---

1. APPLICANT(S)

Name: **United States Section of International Boundary and Water Commission (USIBWC)**	Name:
Contact or Agent: check here if Agent ☒ **DAVID J. ATTEBERRY**	Contact or Agent: check here if Agent ☐
Mailing Address: **The Commons Bldg. C, Ste. 310 4171 N. Mesa St.**	Mailing Address:
City: **El Paso**	City:
State: **TX** Zip Code: **79902**	State: Zip Code:
Phone: ☐ Home ☐ Cell Phone (Work): **915-832-4702**	Phone: ☐ Home ☐ Cell Phone (Work):
E-mail (optional): – David.atteberry@ibwc.com	E-mail (optional):

RECEIVED
JUN 17 2014
STATE ENGINEER OFFICE
LAS CRUCES, NM

FOR OSE INTERNAL USE — Application for Permit, Form wr-07, Rev 12/14/11

File Number: LRG 15537	Trn Number: 528022
Trans Description (optional):	
Sub-Basin:	
PCW/LOG Due Date: 6/30/15	

2. **WELL(S)** Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84)

☐ NM State Plane (NAD83) (Feet)
☐ NM West Zone
☐ NM East Zone
☐ NM Central Zone

☐ UTM (NAD83) (Meters)
☐ Zone 12N
☐ Zone 13N

☒ Lat/Long (WGS84) (to the nearest 1/10th of second)

Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Optional: **Complete boxes labeled "Other" below with PLSS (Public Land Survey System, i.e. Quarters, Section, Township, Range); Hydrographic Survey Map & Tract; Lot, Block & Subdivision; OR Land Grant Name if known.**
PLEASE SEE ATTACHED			

NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)
Additional well descriptions are attached: ☒ **Yes** ☐ **No** **If yes, how many** **47**

Other description relating well to common landmarks, streets, or other:

Well is on land owned by: **U.S. Government - Usibwc**

Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. **Attached?** ☒ **Yes** ☐ **No**
If yes, how many **47**

Approximate depth of well (feet): **15.00**	Outside diameter of well casing (inches): **1.50**
Driller Name: **Geomechanics Southwest, Inc.**	Driller License Number: **WD-1522**

3. **ADDITIONAL STATEMENTS OR EXPLANATIONS**

Please see attached spreadsheet for well names and GPS locations.

The wells are being installed to monitor groundwater levels within the Rio Grande flood plain for the United States Section, International Boundary and Water Commission (USIBWC). These wells will support a habitat restoration project in the Rio Grande Canalization Area. The duration of the wells is 15 years.

See attached authorization letter.

Please see attached Scope of Work - Planning, Installation and Monitoring of Shallow Groundwater Monitoring Wells at USIBWC Restoration Sites.

Please see attached well construction diagram.

Send permits to: HDR Engineering, David J. Atteberry 3200 E. Camelback Rd. Ste 350, Phoenix, AZ 85018
e-mail: david.atteberry@hdrinc.com

FOR OSE INTERNAL USE

Application for Permit, Form wr-07

File Number:	Trn Number:

4. SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

Exploratory:	Pollution Control and/or Recovery:	Construction De-Watering:	Mine De-Watering:
☐ Include a description of any proposed pump test, if applicable.	☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for the pollution control or recovery operation. ☐ The estimated maximum period of time for completion of the operation. ☐ The annual diversion amount. ☐ The annual consumptive use amount. ☐ The maximum amount of water to be diverted and injected for the duration of the operation. ☐ The method and place of discharge.	☐ Include a description of the proposed dewatering operation, ☐ The estimated duration of the operation, ☐ The maximum amount of water to be diverted, ☐ A description of the need for the dewatering operation, and, ☐ A description of how the diverted water will be disposed of.	☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for mine dewatering. ☐ The estimated maximum period of time for completion of the operation. ☐ The source(s) of the water to be diverted. ☐ The geohydrologic characteristics of the aquifer(s). ☐ The maximum amount of water to be diverted per annum. ☐ The maximum amount of water to be diverted for the duration of the operation. ☐ The quality of the water. ☐ The method of measurement of water diverted. ☐ The recharge of water to the aquifer. ☐ Description of the estimated area of hydrologic effect of the project. ☐ The method and place of discharge. ☐ An estimation of the effects on surface water rights and underground water rights from the mine dewatering project. ☐ A description of the methods employed to estimate effects on surface water rights and underground water rights. ☐ Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.
Monitoring: ☒ Include the reason for the monitoring well, and, ☒ The duration of the planned monitoring.	☐ The method of measurement of water produced and discharged. ☐ The source of water to be injected. ☐ The method of measurement of water injected. ☐ The characteristics of the aquifer. ☐ The method of determining the resulting annual consumptive use of water and depletion from any related stream system. ☐ Proof of any permit required from the New Mexico Environment Department. ☐ An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.	**Geo-Thermal:** ☐ Include a description of the geothermal heat exchange project, ☐ The amount of water to be diverted and re-injected for the project, ☐ The time frame for constructing the geothermal heat exchange project, and, ☐ The duration of the project. ☐ Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.	

ACKNOWLEDGEMENT

I, We (name of applicant(s)), David J. Atteberry
Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Applicant Signature

Applicant Signature

ACTION OF THE STATE ENGINEER

This application is:

☒ approved ☐ partially approved ☐ denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 17 day of July 20 14, for the State Engineer,

Scott A. Verhines, P.E. / STATE ENGINEER

State Engineer

By: Signat

BY: Andrea Jo Mendoza, M.S.
District IV Manager

Title: Print

STATE OF NEW MEXICO STATE ENGINEER

FOR OSE INTERNAL USE

Application for Permit, Form wr-07

File Number: LG 15537	Trn Number: 528022

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL

4 No water shall be appropriated and beneficially used under this permit.

6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

7 The Permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C Driller's well record must be filed with the State Engineer within 20 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.

LOG The Point of Diversion LRG 15537 POD1 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD10 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD11 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD12 must be completed and the Well Log filed on or before 06/17/2015.

SPECIFIC CONDITIONS OF APPROVAL (Continued)

LOG The Point of Diversion LRG 15537 POD13 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD14 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD15 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD16 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD17 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD18 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD19 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD2 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD20 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD21 must be completed and the Well Log filed on or before 06/17/2015.

SPECIFIC CONDITIONS OF APPROVAL (Continued)

LOG The Point of Diversion LRG 15537 POD22 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD23 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD24 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD25 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD26 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD27 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD28 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD29 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD3 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD30 must be completed and the Well Log filed on or before 06/17/2015.

SPECIFIC CONDITIONS OF APPROVAL (Continued)

LOG The Point of Diversion LRG 15537 POD31 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD32 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD33 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD34 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD35 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD36 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD37 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD38 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD39 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD4 must be completed and the Well Log filed on or before 06/17/2015.

SPECIFIC CONDITIONS OF APPROVAL (Continued)

LOG The Point of Diversion LRG 15537 POD40 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD41 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD42 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD43 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD44 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD45 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD46 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD47 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD5 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD6 must be completed and the Well Log filed on or before 06/17/2015.

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL (Continued)

LOG The Point of Diversion LRG 15537 POD7 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD8 must be completed and the Well Log filed on or before 06/17/2015.

LOG The Point of Diversion LRG 15537 POD9 must be completed and the Well Log filed on or before 06/17/2015.

SEE ATTACHED SHEET FOR CONDITIONS

ACTION OF STATE ENGINEER

Notice of Intention Rcvd: Date Rcvd. Corrected: 06/17/2014
Formal Application Rcvd: 05/20/2013 Pub. of Notice Ordered:
Date Returned - Correction: 05/30/2014 Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 30 day of May A.D., 2013

Scott A. Verhines, P.E., State Engineer

By: ANDREA MENDOZA

STATE OF NEW MEXICO STATE ENGINEER

Trn Desc: LRG 15537-POD1 THRU POD47

File Number: LRG 15537
Trn Number: 528022

ATTACHMENT
Conditions of Approval

APPLICATION TO DRILL MONITORING WELLS

This application is approved as follows:

Permit Number: LRG-15537

Points of Diversion:

Well Number	IBWC Well ID#	Longitude DMS(X)	Latitude DMS(Y)
LRG-15537-POD1	AB-MW-1	106° 33' 41.040"" W	31° 47' 58.200"" N
LRG-15537-POD2	AB-MW-2	106° 33' 56.760"" W	31° 47' 59.400"" N
LRG-15537-POD3	BCA-MW-1	106° 59' 6.142"" W	32° 32' 12.399"" N
LRG-15537-POD4	BCA-MW-2	106° 59' 12.843"" W	32° 32' 18.970"" N
LRG-15537-POD5	BCA-MW-3	106° 59' 10.303"" W	32° 32' 14.767"" N
LRG-15537-POD6	BE-MW-1	106° 39' 39.180"" W	32° 4' 31.560"" N
LRG-15537-POD7	BE-MW-2	106° 39' 41.280"" W	32° 4' 42.780"" N
LRG-15537-POD8	BW-MW-1	106° 39' 53.760"" W	32° 5' 1.320"" N
LRG-15537-POD9	BW-MW-2	106° 39' 50.742"" W	32° 5' 8.091"" N
LRG-15537-POD10	CCA-MW-1	107° 15' 13.980"" W	32° 42' 48.900"" N
LRG-15537-POD11	CCA-MW-2	107° 15' 12.360"" W	32° 43' 17.760"" N
LRG-15537-POD12	CCA-MW-3	107° 15' 30.540"" W	32° 43' 20.460"" N
LRG-15537-POD13	CCB-MW-1	107° 14' 59.700"" W	32° 42' 11.400"" N
LRG-15537-POD14	CCB-MW-2	107° 15' 19.800"" W	32° 42' 24.480"" N
LRG-15537-POD15	CCB-MW-3	107° 14' 40.464"" W	32° 42' 2.384"" N
LRG-15537-POD16	CCE-MW-1	106° 36' 26.880"" W	31° 49' 57.060"" N
LRG-15537-POD17	CCE-MW-2	106° 36' 22.920"" W	31° 49' 57.480"" N
LRG-15537-POD18	CL-MW-1	106° 49' 34.620"" W	32° 16' 36.900"" N
LRG-15537-POD19	CL-MW-2	106° 49' 32.580"" W	32° 16' 34.740"" N
LRG-15537-POD20	JAR-MW-1	107° 17' 0.840"" W	32° 44' 49.740"" N
LRG-15537-POD21	JAR-MW-2	107° 17' 3.604"" W	32° 44' 56.141"" N
LRG-15537-POD22	JAR-MW-3	107° 17' 0.551"" W	32° 44' 52.233"" N
LRG-15537-POD23	LEL-MW-1	106° 50' 3.480"" W	32° 20' 16.380"" N
LRG-15537-POD24	LEL-MW-2	106° 50' 3.720"" W	32° 20' 13.020"" N
LRG-15537-POD25	LEL-MW-3	106° 49' 59.644"" W	32° 20' 2.535"" N
LRG-15537-POD26	ME-MW-1	106° 49' 1.380"" W	32° 14' 59.760"" N
LRG-15537-POD27	ME-MW-2	106° 48' 53.055"" W	32° 14' 40.201"" N
LRG-15537-POD28	ME-MW-2	106° 49' 7.805"" W	32° 15' 30.285"" N
LRG-15537-POD29	RS-MW-1	107° 7' 48.480"" W	32° 40' 31.980"" N
LRG-15537-POD30	RS-MW-2	107° 7' 37.816"" W	32° 40' 28.011"" N
LRG-15537-POD31	RS-MW-3	107° 7' 14.263"" W	32° 40' 8.202"" N
LRG-15537-POD32	RS-MW-4	107° 7' 34.505"" W	32° 40' 17.566"" N
LRG-15537-POD33	RS-MW-5	107° 7' 23.640"" W	32° 40' 16.320"" N
LRG-15537-POD34	RS-MW-6	107° 8' 52.800"" W	32° 40' 44.400"" N
LRG-15537-POD35	RS-MW-7	107° 8' 38.400"" W	32° 40' 51.600"" N
LRG-15537-POD36	SPB-MW-1	106° 58' 5.966"" W	32° 31' 6.697"" N

LRG-15537-POD37	SPB-MW-2	106° 58' 14.517"" W	32° 31' 1.206"" N
LRG-15537-POD38	SPB-MW-3	106° 58' 16.752"" W	32° 31' 2.515"" N
LRG-15537-POD39	SP-MW-1	106° 34' 55.320"" W	31° 48' 22.920"" N
LRG-15537-POD40	SP-MW-2	106° 34' 35.640"" W	31° 48' 8.340"" N
LRG-15537-POD41	SP-MW-3	106° 34' 44.760"" W	31° 48' 11.880"" N
LRG-15537-POD42	TRU-MW-1	107° 17' 51.720"" W	32° 50' 20.400"" N
LRG-15537-POD43	TRU-MW-2	107° 17' 52.680"" W	32° 50' 33.840"" N
LRG-15537-POD44	TRU-MW-3	107° 17' 53.250"" W	32° 50' 27.192"" N
LRG-15537-POD45	YE-MW-1	107° 16' 38.700"" W	32° 44' 13.140"" N
LRG-15537-POD46	YE-MW-2	107° 16' 27.180"" W	32° 44' 4.320"" N
LRG-15537-POD47	YE-MW-3	107° 16' 28.703"" W	32° 44' 10.135"" N

1) There is no water right associated with this Permit. No water shall be appropriated and beneficially used under this Permit.

2) This Permit authorizes the drilling of wells LRG-15537-POD1 thru LRG-15537-POD47 for data collection and aquifer exploration. These wells may not be used for any other purpose unless a permit to use the well is acquired from the Office of the State Engineer.

3) The New Mexico Office of the State Engineer requests copies of the final monitoring report documenting one-time soil salinity test results and water level readings obtained at the restoration sites.

4) The well drilled under this Permit shall be drilled by a well driller licensed in the State of New Mexico and completed in accordance with the New Mexico Rules and Regulations Governing Well Driller Licensing; Construction, Repair and Plugging of Wells under 19.27.4 NMAC

5) With the exception of necessary access for monitoring instrumentation and associated activities, the well shall otherwise be capped and maintained in a manner acceptable to the State Engineer so as to prevent groundwater contamination or other safety hazards.

6) At the conclusion of monitoring activities, the permitted wells shall be plugged completely, and a record of plugging shall be filed with District IV Office of the State Engineer within twenty (20) days of the plugging, using the following method per Rules and Regulations Governing Well Driller Licensing, Construction, Repair and Plugging of Wells; 19.27.4.30, paragraph C as follows:

   Method and materials: *to plug a well the entire well shall be filled from the bottom upwards to land surface using a tremi pipe. The well shall be plugged with neat cement slurry, bentonite based plugging material, or other sealing material approved by the State Engineer for use in the plugging of non-artesian wells. Wells that do not encounter a water bearing stratum shall be immediately plugged by filling the well with drill cuttings or clean native dill to within ten (10) feet of land surface and by plugging the remaining ten (10) feet of the well to land*

surface with a plug of neat cement slurry, bentonite based plugging material, or other sealing material approved by the State Engineer.

7) A Well Record(s) shall be submitted to the Office of the State Engineer in Las Cruces within 20 days of completion of the drilling of the well, but no later than June 30, 2015. Failure to submit the required Well Record within this time allowed will cause this Permit to be cancelled. The well's location using Longitude and Latitude in degrees, minutes, and seconds to at least a 10^{th} of a second accuracy, as obtained thru the use of GPS must be included on the Well Record.

8) The State Engineer retains jurisdiction over this permit.

Witness my hand and seal this 17 day of July 2014.

Scott A Verhines, PE
State Engineer

By: _____
Andrea J. Mendoza, District IV Manager

APPENDIX C

MBTA SURVEY RESULTS

Table C.1. MBTA Survey Results

Site Name	Well #	Date MBTA Complete	Date Well Installed	Notes
Anapra Bridge	AB-MW-1	6/25/2013	6/25/2013	No MBTA nests observed
	AB-MW-2	6/25/2013	6/25/2013	No MBTA nests observed
Below Mesilla Dam	BMD-MW-1	MBTA survey not required (not a USIBWC habitat restoration site)		
	BMD-MW-1			
Berino East	BE-MW-1	5/28/2013	6/6/2013	No MBTA nests observed
	BE-MW-2	6/25/2013	6/25/2013	Inactive nest ~20 ft north of well site in salt cedar
Berino West	BW-MW-1	5/28/2013	6/6/2013	No MBTA nests observed
	BW-MW-2	5/28/2013	6/6/2013	No MBTA nests observed
Broad Canyon	BCA-MW-1	5/29/2013	6/2/2013	Killdeer nest likely in area, but none observed within 50m of stake
Arroyo	BCA-MW-2	5/29/2013	6/3/2013	No MBTA nests observed; well reinstalled at same location on 7/2/14 and subsequent MBTA survey not required
	BCA-MW-3	5/29/2013	6/3/2013	No MBTA nests observed
Clark Lateral	CL-MW-1	5/28/2013	6/3/2013	No MBTA nests observed
	CL-MW-2	5/28/2013	6/3/2013	No MBTA nests observed
Country Club East	CCE-MW-1	5/29/2013	6/6/2013	No MBTA nests observed
	CCE-MW-2	6/25/2013	6/25/2013	No MBTA nests observed
	CCE-MW-3	5/29/2013	6/6/2013	No MBTA nests observed
Crow Canyon A	CCA-MW-1	5/28/2013	6/2/2013	1/4 mi area observed; drill after 9AM
	CCA-MW-2	5/27/2013	6/2/2013	1 nest within 1/4 mi area observed; drill after 9AM; avoid cottonwood
	CCA-MW-3	5/27/2013	6/2/2013	1/4 mi area observed; drill after 9AM; avoid cottonwood
Crow Canyon B	CCB-MW-1	5/28/2013	6/2/2013	3 SWFL confirmed to southeast within 1/4 mi area observed; stake moved a little to the north; drill after 9AM
	CCB-MW-2	5/28/2013	6/2/2013	2 SWFL confirmed to south within 1/4 mi area observed; drill after 9AM
	CCB-MW-3	5/28/2013	6/2/2013	1 SWFL confirmed to south on far bank within 1/4 mi area observed; stake moved a little to the north; drill after 9AM
Jaralosa	JAR-MW-1	5/27/2013	6/1/2013	1 nest observed; drill after 9AM
	JAR-MW-2	5/27/2013	6/1/2013	5 swainson hawk nests in cottonwood; stake north of nests; access site from north; drill after 9AM
	JAR-MW-3	5/27/2013	6/1/2013	No MBTA nests observed
Leasburg Extension	LEL-MW-1	5/28/2013	6/3/2013	No MBTA nests observed
Lateral	LEL-MW-2	5/28/2013	6/3/2013	No MBTA nests observed
	LEL-MW-3	5/28/2013	6/3/2013	No MBTA nests observed; well reinstalled at same location on 7/2/14 and subsequent MBTA survey not required
Mesilla East	ME-MW-1	5/29/2013	6/3/2013	No MBTA nests observed
	ME-MW-2	5/29/2013	6/3/2013	No MBTA nests observed
	ME-MW-3	5/29/2013	6/3/2013	No MBTA nests observed
Rincon Siphon	RS-MW-1	6/24/2013	6/24/2013	No MBTA nests observed within 1/4 mi; stake just southeast of the northwest corner of site, adjacent to 4WD track; drill after 9AM
	RS-MW-2	6/24/2013	6/24/2013	3 nests observed within 1/4 mi during initial visit on 5/28/13; 1 inactive nest observed 40 feet north of well site on 6/24/13; drill after 9AM
	RS-MW-3	5/28/2013	Not Installed	2 nests observed within 1/4 mi; stake temporarily moved off wash southwest if 4WD track; dense vegetation; drill after 9AM
	RS-MW-4	5/28/2013	5/31/2013	4 nests observed (3 inactive) within 1/4 mi; drill after 9AM
	RS-MW-5	6/24/2013	6/24/2013	1 nest observed within 1/4 mi during initial visit on 5/28/13; no nests observed on 6/24/13; stake adjacent to 4WD track; drill after 9AM
	RS-MW-6	5/28/2013	5/31/2013	No MBTA nests observed; drill after 9AM
	RS-MW-7	6/24/2013	6/24/2013	No MBTA nests observed within 1/4 mi; drill after 9AM
Seldon Point Bar	SPB-MW-1	3/19/2014	3/19/2014	No MBTA nests observed
	SPB-MW-2	3/19/2014	3/19/2014	No MBTA nests observed
	SPB-MW-3	3/19/2014	3/19/2014	No MBTA nests observed
Sunland Park	SP-MW-1	6/25/2013	6/26/2013	No MBTA nests observed within 1/4 mi; drill after 9AM
	SP-MW-2	6/25/2013	6/25/2013	2 nests observed (1 inactive) within 1/4 mi; active nest 90 feet northwest of well site; drill after 9AM
	SP-MW-3	6/25/2013	6/26/2013	No MBTA nests observed within 1/4 mi; drill after 9AM
Trujillo	TRU-MW-1	5/27/2013	6/1/2013	2 nests observed within 1/4 mi; well site stake moved 150 feet north into clearing
	TRU-MW-2	5/27/2013	6/1/2013	No MBTA nests observed
	TRU-MW-3	5/27/2013	6/1/2013	No MBTA nests observed
Valley Creek	VC-MW-1	6/25/2013	6/25/2013	No MBTA nests observed; well reinstalled at same location on 7/2/14 and subsequent MBTA survey not required
	VC-MW-2	6/25/2013	6/25/2013	No MBTA nests observed; well reinstalled at same location on 7/2/14 and subsequent MBTA survey not required
Vinton A	VA-MW-1	5/29/2013	6/7/2013	No MBTA nests observed
	VA-MW-2	6/25/2013	6/25/2013	No MBTA nests observed
Vinton B	VB-MW-1	5/29/2013	6/7/2013	No MBTA nests observed
	VB-MW-2	6/25/2013	6/25/2013	No MBTA nests observed
Yeso East	YE-MW-1	5/27/2013	6/1/2013	No MBTA nests observed
	YE-MW-2	5/27/2013	6/1/2013	1 nest in cottonwood
	YE-MW-3	5/27/2013	6/1/2013	No MBTA nests observed

APPENDIX D

GROUNDWATER MONITORING WELL CONSTRUCTION, DEPTH, AND SALINITY DATA TABLES

Table D.1. Well Construction Details

Site	Well ID	Installation Date	Northing	Easting	Top of Casing Elevation	Gound Surface Elevation	Total Depth (BLS)	Screen Interval (BLS)	Screen Material	Screen Size	Filter	DTW during Drilling (ft BLS from Land Surface)	Transducer Serial Number	Water Flowing in River (Y/N)	Comments
Anapra Bridge	AB-MW-1	6/25/2013	3519269.142	352196.443	3737.62	3734.21	12 ft BLS	2-12 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	5.51	ND	Y	
	AB-MW-2	6/25/2013	3519306.240	351773.152	3738.49	3735.14	12 ft BLS	2-12 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	2.92	10329240	Y	
Below Mesilla Dam*	BMD-MW-1	5/7/2014	3565175.597	333078.794	3859.50	3856.00	20 ft BLS	10-20 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	15.91	GW: 10329238; Baro: 10499250, 10499251	N	
	BMD-MW-2	5/7/2014	3565158.362	333067.852	3859.50	3856.00	20 ft BLS	10-20 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	15.69	Baro: 10499248, 10499249	N	
Berino East	BE-MW-1	6/6/2013	3549980.886	343266.923	3810.06	3806.77	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	6.81	10329242	Y	
	BE-MW-2	6/25/2013	3550347.823	343189.254	3811.13	3807.92	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	5.06	ND	Y	
Berino West	BW-MW-1	6/6/2013	3550915.124	342861.374	3812.60	3809.21	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	7.21	GW: 10329227; Baro: 10329228	Y	
	BW-MW-2	6/6/2013	3551131.717	342953.217	3812.58	3809.28	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	5.98	ND	Y	
Broad Canyon Arroyo**	BCA-MW-1	6/2/2013	3601667.238	313593.283	3991.41	3988.22	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	6.13	10329229	Y	
	BCA-MW-2	7/2/2014	3601897.190	313407.670	3991.51	3987.89	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	2.71	ND	Y	Well reinstalled due to sedimentation/well failure
	BCA-MW-3	6/3/2013	3601749.387	313474.116	3996.14	3992.79	12 ft BLS	2-12 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	9.61	ND	Y	
Clark Lateral	CL-MW-1	6/3/2013	3572595.355	328032.067	3887.76	3884.56	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	10.61	10329236	N	
	CL-MW-2	6/3/2013	3572524.709	328055.588	3887.88	3884.84	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	9.47	ND	N	
Country Club East	CCE-MW-1	6/6/2013	3522109.712	348409.926	3746.76	3743.48	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	8.19	ND	N	
	CCE-MW-2	6/25/2013	3522991.219	347881.117	3748.67	3745.48	12 ft BLS	2-12 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	10.52	10329241	Y	
	CCE-MW-3	6/6/2013	3522332.249	348241.089	3747.23	3743.96	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	4.28	ND	N	
Crow Canyon A	CCA-MW-1	6/2/2013	3621822.205	288822.067	4086.32	4083.29	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	12.51	10329226	N	
	CCA-MW-2	6/2/2013	3622698.149	288873.055	4087.10	4083.67	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	11.8	ND	N	
	CCA-MW-3	6/2/2013	3622762.109	288419.485	4088.44	4085.20	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	10.29	ND	N	
Crow Canyon B	CCB-MW-1	6/2/2013	3620638.847	289075.228	4082.18	4079.22	12 ft BLS	2-12 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	13.12	10329232	N	
	CCB-MW-2	6/2/2013	3621016.333	288628.142	4084.67	4081.43	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	6.78	ND	N	
	CCB-MW-3	6/2/2013	3620335.008	289595.733	4074.22	4070.92	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	7.89	ND	N	
Jaralosa	JAR-MW-1	6/1/2013	3625552.017	286059.140	4095.74	4093.43	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	10.21	10329231	N	
	JAR-MW-2	6/1/2013	3625804.542	285970.943	4097.23	4094.32	12 ft BLS	2-12 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	10.64	ND	N	
	JAR-MW-3	6/1/2013	3625647.653	286062.690	4095.86	4093.04	12 ft BLS	2-12 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	10.81	ND	N	
Leasburg Extension Lateral**	LEL-MW-1	6/3/2013	3579365.923	327359.262	3903.13	3900.12	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	12.97	10329235	N	
	LEL-MW-2	6/3/2013	3579286.098	327353.563	3903.35	3900.31	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	12.85	ND	N	
	LEL-MW-3	7/2/2014	3578940.790	327454.700	3902.42	3899.31	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	13.04	ND	N	Well reinstalled due to sedimentation/well failure
Mesilla East	ME-MW-1	6/3/2013	3569587.616	328825.936	3881.24	3877.88	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	12.84	10329338	N	
	ME-MW-2	6/3/2013	3570542.636	328663.63	3882.63	3879.42	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	11.56	ND	N	
	ME-MW-3	6/3/2013	3568974.307	329035.64	3878.28	3874.97	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	11.98	ND	N	
Rincon Siphon	RS-MW-1	6/24/2013	3617358.926	300271.354	4052.00	4048.02	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	6.26	ND	Y	
	RS-MW-2	6/24/2013	3617269.54	300470.172	4055.44	4051.89	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	3.36	ND	Y	
	RS-MW-3	Location abandoned; site conditions not suitable for well installation													
	RS-MW-4	5/31/2013	3617218.341	300188.098	4048.08	4045.13	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	9.54	10329237	N	
	RS-MW-5	6/24/2013	3616879.681	300901.855	4046.11	4043.14	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	1.86	ND	Y	
	RS-MW-6	5/31/2013	3617727.901	298600.186	4051.99	4048.94	12 ft BLS	2-12 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	8.96	ND	N	
	RS-MW-7	6/24/2013	3617971.857	298995.455	4054.38	4050.87	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	6.24	ND	Y	
Seldon Point Bar	SPB-MW-1	3/19/2014	3599583.313	315069.847	3982.45	3979.54	20 ft BLS	10-20 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	12.83	10329244	N	
	SPB-MW-2	3/19/2014	3599486.989	314931.232	3983.07	3979.91	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	9.12	ND	N	
	SPB-MW-3	3/19/2014	3599449.659	314742.094	3984.52	3981.47	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	10.26	ND	N	
Sunland Park	SP-MW-1	6/26/2013	3520045.962	350245.369	3741.37	3737.91	12 ft BLS	2-12 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	2.65	10329239	Y	
	SP-MW-2	6/25/2013	3519632.106	350766.969	3740.51	3737.08	12 ft BLS	2-12 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	5.41	ND	Y	
	SP-MW-3	6/26/2013	3519737.688	350559.415	3740.35	3736.85	12 ft BLS	2-12 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	3.36	ND	Y	
Trujillo	TRU-MW-1	6/1/2013	3635904.691	284967.189	4130.35	4127.16	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	7.41	10329225	N	
	TRU-MW-2	6/1/2013	3636204.004	284938.187	4132.71	4128.92	12 ft BLS	2-12 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	9.31	ND	N	
	TRU-MW-3	6/1/2013	3636026.326	284960.995	4131.22	4128.14	12 ft BLS	2-12 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	9.16	ND	N	
Valley Creek**	VC-MW-1	7/2/2014	3526298.950	348165.840	3755.64	3752.26	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	4.16	10329233	Y	Well reinstalled due to sedimentation/well failure
	VC-MW-2	7/2/2014	3525732.900	348075.230	3754.72	3751.16	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	3.51	ND	Y	Well reinstalled due to sedimentation/well failure
Vinton A	VA-MW-1	6/7/2013	3539048.463	347213.245	3780.70	3777.44	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	9.21	10329243	Y	
	VA-MW-2	6/25/2013	3538860.002	347354.728	3780.41	3776.76	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	4.00	ND	Y	
Vinton B	VB-MW-1	6/7/2013	3537905.709	348157.189	3777.12	3774.04	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	4.78	10329234	Y	
	VB-MW-2	6/25/2013	3537597.966	348283.897	3777.31	3773.60	12 ft BLS	2-12 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	7.56	ND	Y	
Yeso East	YE-MW-1	6/1/2013	3624421.134	286602.653	4093.98	4090.86	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	8.35	10329224	N	
	YE-MW-2	6/1/2013	3624146.749	286892.238	4094.18	4090.68	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	8.19	ND	N	
	YE-MW-3	6/1/2013	3624323.547	286863.809	4093.01	4090.13	16 ft BLS	6-16 ft BLS	Sched. 40 PVC	0.010-inch	8-12 Sand	8.46	ND	N	

ft BLS = feet Below Land Surface

ND = Not Deployed

Elevation Base & Rim Feet, UTM COORDINATES (Zone 13) Meters

DTW= Depth to Water

*The Below Mesilla Dam wells have not yet been surveyed by USIBWC. Coordinates and elevation values are approximate based on submeter GPS data and USGS elevation data respectively

**For wells BCA-MW-2 and LEL-MW-3, and the two Valley Creek wells, the elevation data, DTW and Water Flowing in River values are based on original well installation in June 2013

Table D.2. Depth to Groundwater

Site	Well ID	TOC Elevation	Ground Surface Elevation	Date	Depth to Water (From TOC)	Groundwater Elevation	Date	Depth to Water (From TOC)	Groundwater Elevation	Date	Depth to Water (From TOC)	Groundwater Elevation	Date	Depth to Water (From TOC)	Groundwater Elevation	Date	Depth to Water (From TOC)	Groundwater Elevation	Date	Depth to Water (From TOC)	Groundwater Elevation	Date	Depth to Water (From TOC)	Groundwater Elevation	Date	Depth to Water (From TOC)	Groundwater Elevation
Anapra Bridge	AB-MW-1	3737.62	3734.21	Not Installed			6/25/2013	5.92	3731.70	9/26/2013	6.98	3730.64	10/19/2013	7.21	3730.41	10/29/2013	7.21	3730.41	11/12/2013	7.31	3730.31	11/25/2013	7.23	3730.39	12/5/2013	7.11	3730.51
	AB-MW-2	3738.49	3735.14	Not Installed			6/25/2013	8.51	3729.98	9/26/2013	7.44	3731.05	10/19/2013	7.93	3730.56	10/29/2013	8.02	3730.47	11/12/2013	7.98	3730.51	11/25/2013	8.89	3729.60	12/5/2013	7.87	3730.62
Below Mesilla Dam	BMD-MW-1	3859.50	3856.00	Not Installed																		5/7/2014	18.41	3841.09	5/21/2014	18.73	3840.77
	BMD-MW-2	3859.50	3856.00																			5/7/2014	19.19	3840.31	5/21/2014	18.43	3841.07
Berino East	BE-MW-1	3810.06	3806.77	6/6/2013	10.21	3799.85	6/26/2013	8.24	3801.82	9/26/2013	11.17	3798.89	10/19/2013	12.29	3797.77	10/29/2013	12.43	3797.63	11/12/2013	12.60	3797.46	11/25/2013	12.61	3797.45	12/5/2013	12.69	3797.37
	BE-MW-2	3811.13	3807.92	Not Installed			6/26/2013	8.03	3803.10	9/26/2013	11.29	3799.84	10/19/2013	12.06	3799.07	10/29/2013	12.18	3798.95	11/12/2013	12.37	3798.76	11/25/2013	12.43	3798.70	12/5/2013	12.46	3798.67
Berino West	BW-MW-1	3812.60	3809.21	6/6/2013	8.87	3803.73	6/26/2013	8.31	3804.29	9/26/2013	10.87	3801.73	10/19/2013	11.55	3801.05	10/29/2013	11.72	3800.88	11/12/2013	11.84	3800.76	11/25/2013	11.91	3800.69	12/5/2013	11.91	3800.69
	BW-MW-2	3812.58	3809.28	Not Installed			6/26/2013	7.23	3805.35	9/26/2013	9.71	3802.87	10/19/2013	10.48	3802.10	10/29/2013	10.68	3801.90	11/12/2013	11.81	3800.77	11/25/2013	10.88	3801.70	12/5/2013	10.88	3801.70
Broad Canyon Arroyo	BCA-MW-1	3991.41	3988.22	6/5/2013	8.35	3983.06	6/26/2013	7.28	3984.13	9/26/2013	8.14	3983.27	10/20/2013	7.91	3983.50	10/30/2013	7.80	3983.61	11/12/2013	7.79	3983.62	11/26/2013	7.78	3983.63	12/6/2013	7.78	3983.63
	BCA-MW-2	3991.51	3987.89	6/5/2013	13.74	3977.77	6/26/2013	12.45	3979.06	9/26/2013	10.32	3981.19	10/20/2013	10.33	3981.18	10/30/2013	10.35	3981.16	11/12/2013	10.29	3981.22	11/26/2013	10.24	3981.27	12/6/2013	10.22	3981.29
	BCA-MW-3	3996.14	3992.79	6/5/2013	5.64	3990.50	6/26/2013	5.61	3990.53	9/26/2013	13.26	3982.88	10/20/2013	11.86	3984.28	10/30/2013	11.73	3984.41	11/12/2013	11.70	3984.44	11/26/2013	11.71	3984.43	12/6/2013	11.71	3984.43
Clark Lateral	CL-MW-1	3887.76	3884.56	6/5/2013	11.89	3875.87	6/26/2013	10.43	3877.33	9/26/2013	12.04	3875.72	10/20/2013	12.54	3875.22	10/29/2013	12.49	3875.27	11/12/2013	12.61	3875.15	11/26/2013	12.53	3875.23	12/5/2013	12.52	3875.24
	CL-MW-2	3887.88	3884.84	6/5/2013	13.41	3874.47	6/26/2013	11.63	3876.25	9/26/2013	13.01	3874.87	10/20/2013	13.40	3874.48	10/29/2013	13.34	3874.54	11/12/2013	13.47	3874.41	11/26/2013	13.38	3874.50	12/5/2013	13.44	3874.44
Country Club East	CCE-MW-1	3746.76	3743.48	6/6/2013	11.26	3735.50	6/26/2013	6.96	3739.80	9/26/2013	3.43	3743.33	10/19/2013	10.18	3736.58	10/29/2013	10.37	3736.39	11/12/2013	10.37	3736.39	11/25/2013	10.51	3736.25	12/5/2013	10.55	3736.21
	CCE-MW-2	3748.67	3745.48	Not Installed			6/25/2013	6.1	3742.57	9/26/2013	8.15	3740.52	10/19/2013	9.37	3739.30	10/29/2013	9.67	3739.00	11/12/2013	9.97	3738.70	11/25/2013	11.87	3736.80	12/5/2013	10.18	3738.49
	CCE-MW-3	3747.23	3743.96	6/6/2013	11.84	3735.39	6/26/2013	7.12	3740.11	9/26/2013	9.49	3737.74	10/19/2013	10.53	3736.70	10/29/2013	10.77	3736.46	11/12/2013	10.86	3736.37	11/25/2013	10.04	3737.19	12/5/2013	10.87	3736.36
Crow Canyon A	CCA-MW-1	4086.32	4083.29	6/6/2013	13.51	4072.81	6/27/2013	11.64	4074.68	9/27/2013	13.41	4072.91	10/20/2013	15.17	4071.15	10/30/2013	15.35	4070.97	11/13/2013	14.60	4071.72	11/26/2013	14.71	4071.61	12/6/2013	15.79	4070.53
	CCA-MW-2	4087.10	4083.67	6/6/2013	14.68	4072.42	6/27/2013	13.51	4073.59	9/27/2013	14.39	4072.71	10/20/2013	14.18	4072.92	10/30/2013	14.39	4072.71	11/13/2013	14.59	4072.51	11/26/2013	14.68	4072.42	12/6/2013	14.79	4072.31
	CCA-MW-3	4088.44	4085.20	6/6/2013	12.96	4075.48	6/27/2013	11.11	4077.33	9/27/2013	13.09	4075.35	10/20/2013	13.36	4075.08	10/30/2013	13.46	4074.98	11/13/2013	13.56	4074.88	11/26/2013	13.64	4074.80	12/6/2013	13.72	4074.72
Crow Canyon B	CCB-MW-1	4082.18	4079.22	6/6/2013	9.87	4072.31	6/27/2013	7.47	4074.71	9/27/2013	8.99	4073.19	10/20/2013	13.21	4068.97	10/30/2013	13.70	4068.48	11/13/2013	14.23	4067.95	11/26/2013	14.21	4067.97	12/6/2013	15.79	4066.39
	CCB-MW-2	4084.67	4081.43	6/6/2013	12.84	4071.83	6/27/2013	9.29	4075.38	9/27/2013	11.47	4073.20	10/20/2013	13.55	4071.12	10/30/2013	13.87	4070.80	11/13/2013	14.24	4070.43	11/26/2013	14.41	4070.26	12/6/2013	14.66	4070.01
	CCB-MW-3	4074.22	4070.92	6/6/2013	9.28	4064.94	6/27/2013	8.64	4065.58	9/27/2013	11.11	4063.11	10/20/2013	11.39	4062.83	10/30/2013	11.44	4062.78	11/13/2013	11.13	4063.09	11/26/2013	11.95	4062.27	12/6/2013	13.95	4060.27
Jaralosa	JAR-MW-1	4095.74	4093.43	6/6/2013	10.36	4085.38	6/27/2013	7.73	4088.01	9/27/2013	11.08	4084.66	10/20/2013	12.37	4083.37	10/30/2013	11.93	4083.81	11/13/2013	11.42	4084.32	11/26/2013	11.03	4084.71	12/6/2013	10.88	4084.86
	JAR-MW-2	4097.23	4094.32	6/6/2013	9.98	4087.25	6/27/2013	8.02	4089.21	9/27/2013	11.17	4086.06	10/20/2013	12.48	4084.75	10/30/2013	12.36	4084.87	11/13/2013	12.04	4085.19	11/26/2013	12.81	4084.42	12/6/2013	11.45	4085.78
	JAR-MW-3	4095.86	4093.04	6/6/2013	10.53	4085.33	6/27/2013	7.82	4088.04	9/27/2013	11.03	4084.83	10/20/2013	12.03	4083.83	10/30/2013	11.69	4084.17	11/13/2013	11.26	4084.60	11/26/2013	11.01	4084.85	12/6/2013	10.73	4085.13
Leasburg Extension Lateral	LEL-MW-1	3903.13	3900.12	6/5/2013	13.66	3889.47	6/26/2013	6.74	3896.39	9/26/2013	10.08	3893.05	10/20/2013	12.12	3891.01	10/30/2013	12.93	3890.20	11/12/2013	13.69	3889.44	11/25/2013	14.18	3888.95	12/6/2013	14.55	3888.58
	LEL-MW-2	3903.35	3900.31	6/5/2013	12.74	3890.61	6/26/2013	6.63	3896.72	9/26/2013	12.23	3891.12	10/20/2013	12.51	3890.84	10/30/2013	13.31	3890.04	11/12/2013	14.11	3889.24	11/25/2013	13.72	3889.63	12/6/2013	15.05	3888.30
	LEL-MW-3	3902.42	3899.31	6/5/2013	11.56	3890.86	6/26/2013	6.03	3896.39	9/26/2013	12.51	3889.91	10/20/2013	12.83	3889.59	10/30/2013	13.59	3888.83	11/12/2013	14.13	3888.29	11/25/2013	13.97	3888.45	12/6/2013	15.29	3887.13
Mesilla East	ME-MW-1	3881.24	3877.88	6/5/2013	9.53	3871.71	6/26/2013	6.78	3874.46	9/26/2013	11.17	3870.07	10/20/2013	14.13	3867.11	10/29/2013	14.58	3866.66	11/12/2013	14.97	3866.27	11/25/2013	15.66	3865.58	12/5/2013	16.03	3865.21
	ME-MW-2	3882.63	3879.42	6/5/2013	11.61	3871.02	6/26/2013	7.25	3875.38	9/26/2013	11.36	3871.27	10/20/2013	13.97	3868.66	10/29/2013	14.50	3868.13	11/12/2013	14.93	3867.70	11/25/2013	15.72	3866.91	12/5/2013	15.26	3867.37
	ME-MW-3	3878.28	3874.97	6/5/2013	12.8	3865.48	6/26/2013	6.73	3871.55	9/26/2013	11.29	3866.99	10/20/2013	13.32	3864.96	10/29/2013	13.77	3864.51	11/12/2013	14.21	3864.07	11/25/2013	14.91	3863.37	12/5/2013	13.40	3864.88
Rincon Siphon	RS-MW-1	4052.00	4048.02	Not Installed			6/24/2013	6.73	4045.27	9/27/2013	9.34	4042.66	10/20/2013	11.17	4040.83	10/30/2013	11.58	4040.42	11/12/2013	12.09	4039.91	11/26/2013	12.22	4039.78	12/6/2013	12.65	4039.35
	RS-MW-2	4055.44	4051.89	Not Installed			6/24/2013	6.28	4049.16	9/27/2013	8.91	4046.53	10/20/2013	10.68	4044.76	10/30/2013	11.16	4044.28	11/12/2013	11.86	4043.58	11/26/2013	12.12	4043.32	12/6/2013	12.45	4042.99
	RS-MW-3	Site conditions not suitable for well installation																									
	RS-MW-4	4048.08	4045.13	6/6/2013	5.76	4042.32	6/27/2013	4.19	4043.89	9/27/2013	7.45	4040.63	10/20/2013	8.68	4039.40	10/30/2013	9.08	4039.00	11/12/2013	9.52	4038.56	11/26/2013	9.82	4038.26	12/6/2013	10.08	4038.00
	RS-MW-5	4046.11	4043.14				6/24/2013	4.73	4041.38	9/27/2013	6.87	4039.24	10/20/2013	10.90	4035.21	10/30/2013	11.28	4034.83	11/12/2013	11.71	4034.40	11/26/2013	11.98	4034.13	12/6/2013	12.33	4033.78
	RS-MW-6	4051.99	4048.94	6/6/2013	8.94	4043.05	6/27/2013	7.33	4044.66	9/27/2013	9.71	4042.28	10/20/2013	10.29	4041.70	10/30/2013	10.48	4041.51	11/12/2013	10.58	4041.41	11/26/2013	10.49	4041.50	12/6/2013	10.56	4041.43
	RS-MW-7	4054.38	4050.87	Not Installed			6/24/2013	9.14	4045.24	9/27/2013	8.1	4046.28	10/20/2013	13.11	4041.27	10/30/2013	13.28	4041.10	11/12/2013	13.46	4040.92	11/26/2013	13.72	4040.66	12/6/2013	14.48	4039.90
Seldon Point Bar	SPB-MW-1	3982.45	3979.54	Not Installed												5/6/2014	8.98	3973.47	5/21/2014	9.5	3972.95	6/5/2014	4.78	3977.67	6/19/2014	4.36	3978.09
	SPB-MW-2	3983.07	3979.91													5/6/2014	9.33	3973.74	5/21/2014	9.75	3973.32	6/5/2014	4.09	3978.98	6/19/2014	4.00	3979.07
	SPB-MW-3	3984.52	3981.47													5/6/2014	10.31	3974.21	5/21/2014	11.78	3972.74	6/5/2014	4.95	3979.57	6/19/2014	5.87	3978.65
Sunland Park	SP-MW-1	3741.37	3737.91	Not Installed			6/26/2013	5.35	3736.02	9/26/2013	10.78	3730.59	10/19/2013	11.57	3729.80	10/29/2013	11.76	3729.61	11/12/2013	12.13	3729.24	11/25/2013	11.97	3729.40	12/5/2013	12.02	3729.35
	SP-MW-2	3740.51	3737.08	Not Installed			6/26/2013	6.27	3734.24	9/26/2013	9.41	3731.10	10/19/2013	10.08	3730.43	10/29/2013	10.23	3730.28	11/12/2013	10.34	3730.17	11/25/2013	10.31	3730.20	12/5/2013	10.31	3730.20
	SP-MW-3	3740.35	3736.85	Not Installed			6/26/2013	5.87	3734.48	9/26/2013	8.99	3731.36	10/19/2013	10.22	3730.13	10/29/2013	10.34	3730.01	11/12/2013	10.41	3729.94	11/25/2013	10.42	3729.93	12/5/2013	10.50	3729.85
Trujillo	TRU-MW-1	4130.35	4127.16	6/6/2013	5.61	4124.74	6/27/2013	4.82	4125.53	9/27/2013	9.04	4121.31	10/20/2013	8.82	4121.53	10/30/2013	8.67	4121.68	11/12/2013	8.35	4122.00	11/26/2013	7.96	4122.39	12/6/2013	7.90	4122.45
	TRU-MW-2	4132.71	4128.92	6/6/2013	10.91	4121.80	6/27/2013	9.47	4123.24	9/27/2013	10.41	4122.30	10/20/2013	11.86	4120.85	10/30/2013	11.47	4121.24	11/12/2013	9.89	4122.82	11/26/2013	9.43	4123.28	12/6/2013	10.44	4122.27
	TRU-MW-3	4131.22	4128.14	6/6/2013	8.93	4122.29	6/27/2013	8.01	4123.21	9/27/2013	10.72	4120.50	10/20/2013	10.40	4120.82	10/30/2013	10.12	4121.10	11/12/2013	11.33	4119.89	11/26/2013	10.66	4120.56	12/6/2013	9.24	4121.98
Valley Creek	VC-MW-1	3755.64	3752.26	Not Installed			6/25/2013	7.27	3748.37	9/26/2013	10.11	3745.53	10/19/2013	10.65	3744.99	10/29/2013	10.93	3744.71	11/12/2013	11.41	3744.23	11/25/2013	11.49	3744.15	12/5/2013	11.66	3743.98
	VC-MW-2	3754.72	3751.16	Not Installed			6/25/2013	6.48	3748.24	9/26/2013	9.45	3745.27	10/19/2013	11.29	3743.43	10/29/2013	11.58	3743.14	11/12/2013	11.43	3743.29	11/25/2013	11.97	3742.75	12/5/2013	N/A	N/A
Vinton A	VA-MW-1	3780.70	3777.44	6/7/2013	12.21	3768.49	6/26/2013	7.01	3773.69	9/26/2013	10.71	3769.99	10/19/2013	12.54	3768.16	10/29/2013	12.98	3767.72	11/12/2013	13.45	3767.25	11/25/2013	13.65	3767.05	12/5/2013	14.02	3766.68
	VA-MW-2	3780.41	3776.76	Not Installed			6/26/2013	7.34	3773.07	9/26/2013	10.97	3769.44	10/19/2013	12.75	3767.66	10/29/2013	13.21	3767.20	11/12/2013	13.73	3766.68	11/25/2013	14.06	3766.35	12/5/2013	14.34	3766.07
Vinton B	VB-MW-1	3777.12	3774.04	6/7/2013	Dry	N/A	6/26/2013	10.48	3766.64	9/26/2013	13.39	3763.73	10/19/2013	15.41	3761.71	10/29/2013	15.88	3761.24	11/12/2013	16.41	3760.71	11/25/2013	11.49	3765.63	12/5/2013	17.40	3759.72
	VB-MW-2	3777.31	3773.60	Not Installed			6/26/2013	7.97	3769.34	9/26/2013	13.61	3763.70	10/19/2013	14.44	3762.87	10/29/2013	14.40	3762.91	11/12/2013	14.10	3763.21	11/25/2013	14.39	3762.92	12/5/2013	14.48	3762.83
Yeso East	YE-MW-1	4093.98	4090.86	6/6/2013	10.49	4083.49	6/27/2013	8.81	4085.17	9/27/2013	11.39	4082.59	10/20/2013	11.57	4082.41	10/30/2013	11.79	4082.19	11/13/2013	12.53	4081.45	11/26/2013	12.21	4081.77	12/6/2013	12.32	4081.66
	YE-MW-2	4094.18	4090.68	6/6/2013	10.99	4083.19	6/27/2013	8.87	4085.31	9/27/2013	10.56	4083.62	10/20/2013	12.83	4081.35	10/30/2013	12.83	4081.35	11/13/2013	13.08	4081.10	11/26/2013	12.93	4081.25	12/6/2013	13.21	4080.97
	YE-MW-3	4093.01	4090.13	6/6/2013	10.19	4082.82	6/27/2013	9.06	4083.95	9/27/2013	11.31	4081.70	10/20/2013	11.70	4081.31	10/30/2013	11.71	4081.30	11/13/2013	11.90	4081.11	11/26/2013	11.81	4081.20	12/6/2013	11.98	4081.03

Table D.3. Field Salinity Data

Site	Well ID	Depth Interval (inches)	Soil Type	Salinity (PPT)	Conductivity (mS/cm)
Anapra Bridge	AB-MW-1	0-6	Sand	0.2	0.522
		7-24	Sand	0.1	0.228
		25-48	Sand	0.0	0.078
	AB-MW-2	0-6	Sand	0.2	0.298
		7-24	Sand	0.0	0.076
		25-48	Sand	0.0	0.068
Below Mesilla Dam	BMD-MW-1	0-6	Silty sand	4.4	4.435
		7-24	Sand	0.1	0.276
		25-48	Sand	0.0	0.118
	BMD-MW-2	0-6	Silty sand	0.0	0.126
		7-24	Sand	0.0	0.131
		25-48	Sand	0.0	0.124
Berino East	BE-MW-1	0-6	Silt	6.2	10.720*
		7-24	Sand	2.5	3.439
		25-48	Sand	0.0	0.157
	BE-MW-2	0-6	Silt	0.2	0.513
		7-24	Sand	0.0	0.111
		25-48	Sand	0.0	0.089
Berino West	BW-MW-1	0-6	Silt	0.8	1.371
		7-24	Sand	0.0	0.078
		25-48	Sand	0.1	0.224
	BW-MW-2	0-6	Silt	0.1	0.212
		7-24	Sand	0.0	0.086
		25-48	Sand	0.1	0.234
Broad Canyon Arroyo	BCA-MW-1	0-6	Silt	0.1	0.223
		7-24	Sand	0.1	0.319
		25-48	Sand	0.0	0.372
	BCA-MW-2	0-6	Sand	0.2	0.071
		7-24	Sand	0.0	0.082
		25-48	Clay	0.7	1.683
	BCA-MW-3	0-6	Sand	0.2	0.421
		7-24	Sand	0.6	1.308
		25-48	Sand	1.8	2.483
Clark Lateral	CL-MW-1	0-6	Silty sand	0.0	0.074
		7-24	Sand	0.1	0.263
		25-48	Sand	0.1	0.316
	CL-MW-2	0-6	Silty sand	0.0	0.113
		7-24	Sand	0.2	0.465
		25-48	Sand	0.2	0.425

Site	Well ID	Depth Interval (inches)	Soil Type	Salinity (PPT)	Conductivity (mS/cm)
Country Club East	CCE-MW-1	0-6	Silty sand	0.7	1.591
		7-24	Sand	0.1	0.178
		25-48	Sand	0.1	0.211
	CCE-MW-2	0-6	Silty Sand	0.2	0.436
		7-24	Sand	0.0	0.084
		25-48	Sand	0.0	0.077
	CCE-MW-3	0-6	Silt	0.6	1.340
		7-24	Sand	0.4	0.880
		25-48	Sand	0.3	0.612
Crow Canyon A	CCA-MW-1	0-6	Silty sand	0.0	0.061
		7-24	Sand	0.1	0.173
		25-48	Sand	0.0	0.057
	CCA-MW-2	0-6	Sand	0.1	0.302
		7-24	Sand	0.9	1.741
		25-48	Clay	1.1	2.845
	CCA-MW-3	0-6	Sand	0.0	0.071
		7-24	Sand	0.1	0.294
		25-48	Sand	0.0	0.064
Crow Canyon B	CCB-MW-1	0-6	Silt	1.3	2.562
		7-24	Sand	1.1	2.400
		25-48	Sand	0.8	1.632
	CCB-MW-2	0-6	Silty sand	0.1	0.276
		7-24	Sand	0.0	0.074
		25-48	Sand	0.0	0.069
	CCB-MW-3	0-6	Sand	0.0	0.101
		7-24	Sand	0.0	0.094
		25-48	Sand	0.4	0.926
Jaralosa	JAR-MW-1	0-6	Clay	0.8	1.641
		7-24	Clay	0.9	1.711
		25-48	Sand	0.0	0.047
	JAR-MW-2	0-6	Sand	0.2	0.389
		7-24	Sand	0.4	0.403
		25-48	Sand	0.2	0.459
	JAR-MW-3	0-6	Silt	1.8	1.651
		7-24	Silt	2.2	1.893
		25-48	Sand	0.2	0.390
Leasburg Extension Lateral	LEL-MW-1	0-6	Silty sand	0.0	0.116
		7-24	Sand	0.1	0.404
		25-48	Sand	0.0	0.083
	LEL-MW-2	0-6	Sand	0.0	0.071
		7-24	Sand	0.0	0.064
		25-48	Sand	0.0	0.074
	LEL-MW-3	0-6	Silty sand	0.1	0.347
		7-24	Sand	0.7	1.701
		25-48	Sand	0.1	0.022

Site	Well ID	Depth Interval (inches)	Soil Type	Salinity (PPT)	Conductivity (mS/cm)
Mesilla East	ME-MW-1	0-6	Sand	0.1	0.518
		7-24	Sand	0.0	0.076
		25-48	Sand	0.0	0.071
	ME-MW-2	0-6	Silty sand	0.1	0.485
		7-24	Sand	0.4	0.875
		25-48	Sand	0.2	0.348
	ME-MW-3	0-6	Sand	0.1	0.395
		7-24	Sand	0.6	0.998
		25-48	Sand	0.1	0.196
Rincon Siphon	RS-MW-1	0-6	Silty sand	0.6	1.084
		7-24	Sand	0.2	0.361
		25-48	Sand	0.0	0.074
	RS-MW-2	0-6	Silty sand	0.8	1.471
		7-24	Sand	0.1	0.216
		25-48	Sand	0.0	0.034
	RS-MW-3	0-6	Site conditions not suitable for well installation		
		7-24			
		25-48			
	RS-MW-4	0-6	Silty sand	0.2	0.290
		7-24	Sand	0.2	0.385
		25-48	Sand	0.0	0.042
	RS-MW-5	0-6	Silty sand	1.2	3.204
		7-24	Sand	0.8	1.741
		25-48	Sand	0.0	0.076
	RS-MW-6	0-6	Silty sand	0.1	0.150
		7-24	Sand	0.0	0.063
		25-48	Sand	0.0	0.050
	RS-MW-7	0-6	Silty sand	0.4	0.834
		7-24	Sand	0.2	0.340
		25-48	Sand	0.0	0.420
Seldon Point Bar	SPB-MW-1	0-6	Sand	0.4	0.831
		7-24	Sand	0.0	0.048
		25-48	Sand	0.0	0.041
	SPB-MW-2	0-6	Sand	0.8	1.326
		7-24	Sand	0.0	0.031
		25-48	Sand	0.1	0.078
	SPB-MW-3	0-6	Sand	4.6	2.654
		7-24	Sand	1.3	2.102
		25-48	Sand	0.0	0.046

Site	Well ID	Depth Interval (inches)	Soil Type	Salinity (PPT)	Conductivity (mS/cm)
Sunland Park	SP-MW-1	0-6	Silty sand	0.1	0.286
		7-24	Sand	0.3	0.612
		25-48	Sand	0.0	0.045
	SP-MW-2	0-6	Silty sand	0.2	0.436
		7-24	Sand	0.2	0.451
		25-48	Sand	0.0	0.071
	SP-MW-3	0-6	Silty sand	0.4	0.792
		7-24	Sand	0.2	0.396
		25-48	Sand	0.2	0.409
Trujillo	TRU-MW-1	0-6	Silty sand	0.0	0.085
		7-24	Sand	0.1	0.277
		25-48	Sand	0.0	0.062
	TRU-MW-2	0-6	Sand	0.0	0.610
		7-24	Sand	0.1	0.116
		25-48	Clay	0.1	0.313
	TRU-MW-3	0-6	Sand	0.1	0.012
		7-24	Sand	0.1	0.113
		25-48	Sand	0.0	0.078
Valley Creek	VC-MW-1	0-6	Silty sand	0.9	1.673
		7-24	Sand	0.1	0.151
		25-48	Sand	0.1	0.134
	VC-MW-2	0-6	Silty sand	1.1	1.673
		7-24	Sand	0.1	0.151
		25-48	Sand	0.1	0.134
Vinton A	VA-MW-1	0-6	Silty sand	0.1	0.311
		7-24	Sand	0.0	0.042
		25-48	Sand	0.0	0.025
	VA-MW-2	0-6	Silty sand	0.6	2.632
		7-24	Sand	0.0	0.093
		25-48	Sand	0.0	0.071
Vinton B	VB-MW-1	0-6	Silty sand	0.1	0.165
		7-24	Sand	0.1	0.223
		25-48	Sand	0.0	0.041
	VB-MW-2	0-6	Silty sand	0.2	0.436
		7-24	Sand	0.1	0.357
		25-48	Sand	0.0	0.081

Site	Well ID	Depth Interval (inches)	Soil Type	Salinity (PPT)	Conductivity (mS/cm)
Yeso East	YE-MW-1	0-6	Silty sand	0.0	0.321
		7-24	Sand	0.0	0.145
		25-48	Sand	0.1	0.289
	YE-MW-2	0-6	Silty sand	0.1	0.135
		7-24	Sand	0.4	0.898
		25-48	Sand	0.1	0.131
	YE-MW-3	0-6	Sand	0.0	0.072
		7-24	Sand	0.0	0.078
		25-48	Sand	0.0	0.034

Notes:

PPT = parts per thousand

mS/cm = microSiemens per centimeter

* = unconfirmed value

APPENDIX E

GROUNDWATER MONITORING WELL BORING LOGS

HDR

Boring Log

Page 1 of

Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
TRU-MW-1	Trujillo	Ams 9100

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		1		Gray brown silty fine sand (SM) 0-1.5		
		2		1.5-4 brown well grad fine sand (SW)		
		3				
		4				
		5		Brown well grad fine sand (SW)		
		6				
		7		DTW- 7.41 ft bls		
		8				
		9		Brown well grad fine - medium sand (SW)		
		10				
		11				
		12				
		13		Same.		
		14				
		15				
		16				
				• Boring terminated at 16 ft bls • 6-16 schedule 40 PVC 0.010 inch slotted PVC. 4/6 8-12 filter sand 2-4 Bentonite chips 0-2 concrete		

Logged By:	Drilled/Sampled By:
G.	

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/2/2015

HDR

Boring Log

Page ___ of ___

Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
TRW-MW-2		AMS 9100 Power Probe

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-3 gray brown silty sand (SP) 3-4 red dry clay (CL)		
		4		same grading into sandy gravel w/ (GP)		
		6				
		8		same		
				DTW - 8.31		
		10				
		12		2-12 schedule 40 PVC 0.010 in slot screen		
				1-12 8-12 quartz sand filter		
				0-1 bentonite		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/1/2013

HDR

Boring Log

Project Name	Project No.	Drilling Company
IBWC Rio Grande		GSI

Boring No	Location	Drilling Rig Type and Drilling Method
TRU-MW-3	Trujillo	AMS 9100 Power Probe

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		(SM) Grey-brown silt to 2ft 2-4 brown silty sandy gravel - water coarse gravel (GM)		Difficult Drilling
		4				
		6		Grey brown silt, sand coarse gravel (GM)		
		8				
		10		Same (GM)		
		12				
				2-12 ft bls Schedule 40 PVC 0.010-inch slotted screen		
				1-12 8-12 filter sand		
				0-1 Bentonite		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/1/2015

HDR

Boring Log

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Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
IAR-MW-1	Jacinto	AMS 9100 Power Probe

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		gray - silty clay 0-2 (SC)		
		4		2-4 ~~fine~~ brown fine grained well graded sand (SW)		
		6		brown fine well graded sand (SW)		
		8		Sand		
		10				
		12		Brown - medium - coarse well graded sand (SW)		
		14				
		16		Boring terminated at 16 ft bls		
				6-16 Schedule 40 slotted PVC screen		
				4-16 8-12 filter sand		
				2-4 bentonite		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/1/13

HDR

Boring Log

Page 1 of

Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
JAR-MW-2	Javalosa	AMS 9100 Power Probe

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 gray sandy silt (ML) 2-4 gray brown silty fine sand poorly graded (SP)		
		4				
		6		gray Brown silty medium-fine poorly graded sand (SP)		
		8				
		10		Same as above		
		12				
		14		Brown medium-course gravelly poorly graded sand (SP)		
		16				
				- Boring terminated at 16 ft bgs. - 6-16 Schedule 40 0.010 in slotted PVC Screen - 4-16 8-12 filter sand - 2-4 bentonite DTW - 10.64 ft bgs		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
			6/1/2013	6/1/2013

HDR

Boring Log

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Project Name	Project No.	Drilling Company
IBWC	211502	GSI

Boring No.	Location	Drilling Rig Type and Drilling Method
JAR-MW-3	Jacalosa	

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		Gray silt (ML) 0-1 1-4 Gray-brown medium-fine poorly graded sand (SP)		
		4		Brown medium-fine poorly graded sand (SP)		
		6 8				
		8 10		Brown-gray medium well graded sand (SW)		
		12		Brown-gray medium-coarse well graded sand (SW)		
		14				
		16		6-16 Schedule 40 0.010 inch slotted PVC screen 4-16 8-12 filter sand 2-4 Bentonite GW @ ~0.81 ft bgs		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
			6/1/2013	6/4/2013

HDR

Boring Log

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Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
YE-MW-1	Yeso East	AMS 8/00

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-3 gray brown silt grading into brown clay ML-CL		
		4		3-4 gray fine sand (SP)		
		6		Brown-gray medium-fine silty poorly graded sand SP		
		8				
		10		Same		
		12				
		14		Brown medium-course incl graded sand (SW)		
		16				
				Boring terminated at 16 FL bls 6-16 screen - 0.010 4-16 8-12 filter sand 2-4 Bentonite		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
			6/1/2013	

HDR

Boring Log

Page 1 of

Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
4EMW-2		Ams 9100 10PT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 gray silt (ML) 2-4 gray brown fine well graded sand (SW)		
		4				
		6		Brown mixture fine well graded sand (SW)		
		8				
		10		Same		
		12				
				Boring terminated at 12 ft bls -2-12 screen 0.010 in slotted PVC 1-12 8-12 filter SW 0-1 Bentonite DTW 8.19 ft bls		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/2/2013

HDR

Boring Log

Page 1 of

Project Name	Project No.	Drilling Company
IBWC Rio Grande	241502	GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
YE-MW-3	Yeso East	AMS 9100 Power Probe / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-4 Fine medium poorly graded sand w fine coarse gravel (GP)		
		4				
		6		Same		
		8				
		10		Same		
		12				
		14				
		16				
				- Boring terminated at 12 ft bgs - 2-12 screen - schedule 40 PVC 0.010 slot - 1-2 8-12 filter sand 0-1 Bentonite		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/1/2013

HDR

Boring Log

Page 1 of

Project Name	Project No.	Drilling Company
IBWC Rio Grande	211507	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
CCA-MW-1	Crow Canyon A	Ames 9100 IDPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-1 Gray brown silty sand (SM) 1-4 Gray-tan Fine well graded [redacted] (SW)		
		4				
		6		Same (SW)		
		8				
		10				
		12				
		14				
		16				
				- Boring terminated at 16 ft bgs - 6-16 screen - 4-16 filter - 2-4 bentonite seal - DTW - 12.51		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/2/2013

HDR

Boring Log

Project Name	Project No.	Drilling Company
JBWC	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
CCA-MW-2	Crow Canyon A	AMS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		Gray-tan silty sand (SM)		
		4		2-4 brown fine well graded sand (SW)		
		6		same (SW)		
		8		same (SW)		
		10				
		12		same (SW)		
		14				
		16		- Boring terminated at 16 ft bls - 6-16 screen sched. 40 PVC 0.010 slotted - 4-16 8-12 filter 2-4 bentonite seal DTW 11.80 ft bb		

Logged By:	Drilled/Sampled By:
-	

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/2/2013

HDR

Boring Log

Page 1 of

Project Name	Project No.	Drilling Company
TBWCR Grnd.	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
CCA-MW-3	Crow Canyon A	AMS 9100 10PT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-1 sand gravel (GP) 1-4 Gray medium-fine well graded sand (SW)		
		4				
		6		Same (SW)		
		8				
		10		Gray medium sand and fine gravel (GP)		
		12				
		14		Same GP		
		16				
				6-16 screen - slot 40 PVC 0.010 slot 4-16 8-12 filter sand 2-4 bentonite DTW = 10.29		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/2/2017

HDR

Boring Log

Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
CCB-MW-1	Crow Canyon B	AMS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 gray silty sand (SP)		
		4		2-4 brown fine well graded sand (SW)		
		6		Same (SW)		
		8				
		10		same (SW) to 10 10-12 sand & gravel mix (GP)		
		12		Boring terminated at 12 ft bgs 2-12 screen 1-12 filter 0-1 bentonite		

Water Level			Logged By:	Drilled/Sampled By:
While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed: 6/2/2013

HDR

Boring Log

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Project Name	Project No.	Drilling Company
IBWC R.O Grant	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
CCB-MW-2	Crow Canyon B	AMS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		Gray silty sand (SM) 0-2 2-4 gradual gray fine well graded sand (SW)		
		4				
		6		same (SW)		
		8				
		10		(SW)		
		12				
		14		(SW)		
		16				
				Boring terminated at 16 ft bls - 6-16 screen - 4-16 filter - 2-4 bentonite seal - DTW 13.12		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/2/2015

HDR

Boring Log

Page 1 of

Project Name	Project No.	Drilling Company
JBWC Rio Grande	21502	GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
CCB-MW-3		AMS-9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-1 silty sand (SP) 1-4 silty clay (CL)		
		4		4-8 same CL		
		6				
		8		Brown fine sand poorly graded (SP)		
		10				
		12		(SP)		
		14				
		16		Boring terminated at 16 ft bgs 6-16 screen 4-16 filter 2-4 bentonite seal DTW 7.89		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

HDR

Boring Log

Page ___ of ___

Project Name	Project No.	Drilling Company

Boring No	Location	Drilling Rig Type and Drilling Method
RS-MW-1	Rincon Spha	

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 tan gray s.lt (SC) 2-4 gray-brown fine well graded sand (SW)		
		4				
		5				
		6		Same - brown-gray (SW)		
		8		GW @ 8.5		
		10				
		12		Same (SW)		
		14				
		15				
		16		TD - 15 ft bls Screen 6-16 Filter 4-16 Sand 2-4		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

HDR

Boring Log

Page 1 of

Project Name	Project No.	Drilling Company
IBWC		GSI

Boring No	Location	Drilling Rig Type and Drilling Method
RS-MW-#2	Lincoln Siphon	ARS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 fine sandy s.H (SM-ML)		
		4		2-5 - Brown well grad fine sand (SW)		
		5				
		6		5-10 same (SW)		
		8				
		10				
		12		10-15 same (SW)		
		14				
		15				
		16		- TD 16 ft bgs - Screen 6-16 - ~~Sal 4-6~~ DNA - Filter 4-16 - Seal 2-4		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/24

HDR

Boring Log

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Project Name	Project No.	Drilling Company
IBWC	21502	

Boring No	Location	Drilling Rig Type and Drilling Method
RS-MW-3	Rincon Siphon	AMS 7100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		Gray silt (ML) 0-2		
		4		2-4 silty sandy gravel & sand (GP-GP)		
		6				
		8				
		10				
		12		Boring abandon Refusal at 4ft bgs in 3 separate borings		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

HDR

Boring Log

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Project Name	Project No.	Drilling Company
EBMC		GSI

Boring No	Location	Drilling Rig Type and Drilling Method
RS-MW-4	Rincon Siphon	AMS 9100 Power probe

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
				0-4 gray-brown, poorly graded fine silty sand (SP) SW - 3-4 ft bls		
		5		4-8 gray brown well graded fine sand SW		
		10		Same		
		15		Same		
				Boring Terminated at 16ft bls DTW @ 8.89 ft b TOC 6-16 1.5 in schedule 40 PVC 0.010 in slotted screen 4-16 Colorado silica 8-12 filter sand 2-4 Bentonite powder seal		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

HDR

Boring Log

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Project Name	Project No.	Drilling Company
IBWC		

Boring No	Location	Drilling Rig Type and Drilling Method
RS-MW-5	Rincon Siphon	

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 Sandy s.lt SM/ML		
		4		2-5 gray-brown fine grain well ~~sort~~ graded sand (SW)		
		6		Same (SW)		
		8				
		10		Same (SW)		
		12				
		14				
		16		TD- 16 ft bls Screen 6'-16 ft bls filter 4'-16 filter Seal 2-4 Seal		

Water Level			Logged By:	Drilled/Sampled By:
While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

HDR

Boring Log

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Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
RS-MW-6	Rincon Siphon	AMS 9100 Power Probe

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
				0-4 gray-brown fine well graded sand (SW) concrete w/ debris		
		5		4-8 gray brown medium-coarse well graded sand (SW)		
		10		8-12 gray brown medium-coarse well graded sand (SW)		
		15		2-12 ft bls 10 ft of schedule 40 PVC, 0.010 inch slotted screen 0-2 8-12 filter sand 0-1 bentonite chips Boring terminated at 12 ft bls DTW 9.39 ft bls		

Logged By: | Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

HDR

Boring Log

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Project Name	Project No.	Drilling Company
IBWC		GSI

Boring No	Location	Drilling Rig Type and Drilling Method
RS-MW-7	Rincon Siphon, NM	

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 gray sandy silt (ML)		
		4		2-5 Fine - well graded sand (SW)		
		6		Same - gray fine well graded sand (SW)		
		8		~~GW~~ GW at 8.5 ft bgs		
		10				
		12		Same gray-brown fine well graded sand		
		14				
		16		- Boring terminated @ 16 ft bgs - Screen 6-16 - filter 4-16 - seal 2-4		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

HDR

Boring Log

Project Name	Project No.	Drilling Company
JBWC Rio Gavilan	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
BCA-MW-1	Broad Canyon Arroyo	AMS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		0	0-2	Poorly graded sandy gravel (GP)		
		2				
		4		2-4 silty brown poorly graded sand (SP)		
		6		same (SP)		
		8		same (SP)		
		10				
		12		- Boring terminated at 12 ft bls - 2-12 screen 1-12 filter 0-1 bentonite seal - DTW 6.13 ft bls		

Logged By:	Drilled/Sampled By:

Water Level				
While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed: 6/3/2013

HDR

Boring Log

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Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
BCA-MW-2	Broad Canyon Arroyo	AMS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-1 Brown sand - detritus 1-3 brown soft silty clay (CL)		
		4				
		6		Same to 4.5. 4.5-8 fine - silty poorly grad sand (SP)		
		8				
		10		Same (SP)		
		12				
				Boring terminated at 12 ft bls 2-12 screen 1-12 filter 0-1 bentonite seal DTW 2.71 ft bls		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/3/201

HDR

Boring Log

Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSJ
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
BCA-MW-3		AMS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 gray silt/sand (SM) 2-4 Brown silty clay (CL)		
		4				
		6		CL to 6 6-8 fine silty sand SP		
		8				
		10		(SP) same		
		12				
		14		(SP) same		
		16				
				- boring terminated at 16 ft bgs - 6-16 screen - 4-6 filter - 2-4 bentonite seal		

Water Level			Logged By:	Drilled/Sampled By:
While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed: 8/2/2019

HDR

Boring Log

Page 1 of

Project Name	Project No.	Drilling Company
IBWC	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
LEL-mw-1		AMS 9100 DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 brown gray silty fine sand (SM)		
		4		2-4 brown fine sand well graded (SW)		
		6		Same (SW)		
		8				
		10				
		12				
		14				
		16		Boring terminated at 16 ft bls - screen 6-16 - filter 4-16 - seal 2-4 DTW - 12.97 ft bls		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/3

HDR

Boring Log

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Project Name	Project No.	Drilling Company
FBWC	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
LE-MW-2	Leasburg Estates	AMS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 gray sandy silt (SM) 2-4 brown fine silty poorly graded sand SP		
		4				
		6		Same (SP)		
		8				
		10		Brown - medium coarse poorly graded gravelly sand (SP)		
		12		Same SP		
		14				
		16		- Boring terminated at 16 ft bls - 6-16 screen - 4-6 filter - 2-4 seal DTW - 13.04		

Water Level			Logged By:	Drilled/Sampled By:
While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed: 6/3/15

HDR

Boring Log

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Project Name	Project No.	Drilling Company
IBWC	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
LE-MW-3	Leasburg Extension	AMS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		Gray fine silty SW poorly sorted (SP)		
		4		Same (SP)		
		6				
		8		Brown medium well graded sand (SW)		
		10				
		12		Same (SW)		
		14				
		16		- Boring completed at 16 ft bls - 6-16 screen - 4-16 filter - 2-4 seal DTW - 12.85		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/3/13

HDR

Boring Log

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Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
LL-MW-1	Clarke	AMS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		Brown gray silty fine sand (SP) 0-2		
		4		2-4 Brown medium - fine well graded sand (SW)		
		6		Same (SW)		
		8		Same (SW)		
		10				
		12		-TD 12 ft bls - Screen 2-12 - Filter 1-12 - Seal 0-1 - DTW 9.97 ft bls		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/3

HDR

Boring Log

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Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
CL-MW-2	Clark	AMS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 gray silt (ML)		
		4		2-4 brown fine silty poorly graded sand (SP)		
		6		same (SP)		
		8				
		10		Brown medium - fine well graded sand (SW)		
		12		(SW) same		
		14				
		16		-BD 16 ft BLS - Screen 6-16 - Filter 4-16 - Seal 2-4 - DTW 10.61 ft BLS		

Logged By:	Drilled/Sampled By:
-	

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/3

HDR

Boring Log

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Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
ME-MW-1	Mesilla East	

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 gray-brown sandy silt (ML)		
		4		2-4 Brown fine well graded sand (SW)		
		6		Same (SW)		
		8		same (SW)		
		10				
		12		Same grading into coarse poorly graded SW (SP)		
		14				
		16		- Boring terminated at 16 ft b/s - 6-16 screen - 4-16 filter - 2-4 bentonite seal - DTW 12.84		

Water Level			Logged By:	Drilled/Sampled By:
While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed: 6/3/2022

HDR

Boring Log

Page ___ of ___

Project Name	Project No.	Drilling Company
IBWC	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
ME-MW-2	Mesilla East	AMS 9100

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 gray silty fine sand (SP)		
		4		2-4 brown fine well grad sand (SW)		
		6		same (SW)		
		8				
		10		same (SW)		
		12				
		14		same (SW)		
		16				
				- Boring terminated at 16 ft bls - 6-16 screen - 4-16 filter - 2-4 seal - DTW 11.50 ft bls		

Water Level			Logged By:	Drilled/Sampled By:
While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

HDR

Boring Log

Page 1 of

Project Name	Project No.	Drilling Company
IBWC Rio Grande	21502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
ME-MW-3	Mesilla East	AMS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 gray silty poorly graded sand (SP)		
		4		~~B1000~~ 2-4 Brown well graded sand (SW)		
		6		same (SW)		
		8		same (SW)		
		10				
		12		same (SW)		
		14				
		16		Boring terminated at 16 ft b/s - 6-16 screen - 4-16 filter - 2-4 seal		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/3/2015

HDR

Boring Log

Page 1 of

Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
BE-MW1	Berino East	AMS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 gray-brown - silty fine sand (SP) 2-4 well graded brown fine sand (SW)		
		4				
		6		same (SW)		
		8				
		10		same (SW)		
		12				
		14		same (SW)		
		16		TD - 16 ft bgs 6-16 screen 4-16 filter 2-4 seal		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
			6/4	6/6

HDR

Boring Log

Page ___ of ___

Project Name	Project No.	Drilling Company
IBWL		GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
BE-mw-2	Bering East	

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		Brown-gray sandy silt (ML) 0-2		
		4		2-5 - gray fine well graded sand (SW)		
		5				
		6		Same (SW)		
		8				
		10				
		12		Same (SW)		
		14				
		15				
		16		- TD 16 ft bgs - Screen 6-16 - filter 4-16 - Seal 2-4		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

HDR

Boring Log

Project Name	Project No.	Drilling Company
IBWC Rio Grad	216502	GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
BH-MW-2		Ams 9100

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 gray silt (ML)		
		4		2-4 gray brown - fine silty poorly graded sand (SP)		
		6		(Same (SP)		
		8				
		10		Brown - gray fine and graded sand (SW)		
		12				
		14		Same (SW)		
		16		TD - 16 ft bls 6-16 screen 4-16 filter 2-4 sand		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/6

HDR

Boring Log

Page 1 of

Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
BW-MW-2	Berino West NM	

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		0		0-2 silty fine poorly graded SAND (SP)		
		2		2-4 brown - fine well graded SAND (SW)		
		4		Same (SW)		
		6				
		8		Same (SW)		
		10				
		12		Same (SW)		
		14				
		16		- TD - 16 ft bgs - 6-16 screen - 4-16 filter - 2-4 seal		

Water Level			Logged By:	Drilled/Sampled By:
While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

HDR

Boring Log

Page ___ of ___

Project Name	Project No.	Drilling Company
IBWC Rio Grande	271502	GSI / Tierra
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
VA-mw-1	Victor A, TX	AMS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		Gray-tan s.lt (0-2) ML 2-4 Brown fine s.lty poorly graded sand (SP)		
		4				
		6		(SP) sand		
		8				
		10		Sand (SP) GW @ 10.5 ft bls		
		12				
		14		Sand		
		16		TD-16 - Screen 6-16 - 4-16 filter - 2-4 sand		

Water Level			Logged By:	Drilled/Sampled By:
While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

HDR

Boring Log

Page 1 of

Project Name	Project No.	Drilling Company
IBWC	221504	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
VA-MW-2	Vinton TX	AMS 9100 / PPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 brown fine silty sand (SM)		
		4		2-5 brown silty fine poorly sorted sand (SP)		
		5				
		6		Brown-gray silty fine poorly graded sand (SP)		
		8				
		10				
		12		Gray- fine silty poorly graded sand (SP)		
		14				
		15				
		16		TD- 16 Screen - 6-16 Filter 4-16 Seal 2-4		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/26

HDR

Boring Log

Project Name	Project No.	Drilling Company
IBWC Rio Grande	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
VB-MW-1	Vinton B, TX	Ams 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-1 silty fine sand (SP)		
		4		1-4 brown fine well graded sand (SW)		
		6		same (SW)		
		8		same (SW) no. 3 at 11 ft bgs		
		10				
		12				
		14				
		16		TD - 16		
				6-16 - sand		
				2-4 ~~sediment~~ fill		
				0-2 soil		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/7

HDR

Boring Log

Page ___ of ___

Project Name	Project No.	Drilling Company: GSI
Boring No: VB-MW-2	Location: Union B	Drilling Rig Type and Drilling Method

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 silty sand (SM) 2-5 brown silty fine poorly graded sand (SP)		
		4				
		5				
		6		Same - gray SP		
		8				
		10				
		12				
		14				
		15				
		16		TD-16 Screen 2-12 filter 1-12 seal 0-1		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed: 6/26

HDR

Boring Log

Page ___ of ___

Project Name	Project No.	Drilling Company
IBWC		

Boring No	Location	Drilling Rig Type and Drilling Method
VC-MW-1	Valley Creek	

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		0		0-2 silty SW (SP)		
		2		2-5 gray brown fine well graded SW (SW)		
		4				
		5				
		6		5-10 same (SW)		
		8				
		10				
				10-~~15~~ same (SW)		
		12				
		14				
		15				
		16		TD- ~~15~~ 16		
				Screen ~~2-12~~ 6-16		
				Filter ~~1-12~~ 4-16		
				Seal ~~0-1~~ 2-4		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/25

HDR

Boring Log

Page ___ of ___

Project Name	Project No.	Drilling Company
IBWC	211504	
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
VC-MW-2	Valley Cor 1	

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		0		0-2 Sandy silt SM/ML		
		2		2-5 gray-brown fine well graded sand SW		
		4				
		5				
		6		Same to 6-5		
				6.5-7.5 gray soft clay (CL)		
		8		7.5-10 gray fine well graded sand		
		10				
				Same - some silt 10-12		
		12				
		14				
		15				
		16		TD - 12		
				Screen - 10-12		
				filter ~~0-12~~ 1-12		
				Seal 0-1		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

HDR

Boring Log

Page ___ of ___

Project Name	Project No.	Drilling Company
IBWC Rio Grande	21150[illegible]4	GSI - Tierra
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
CCE-MW-2	Country Club E. TX	AMS/9100 DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		(0-3) Tan - gray sandy silt (ML)		
		4		3-4 brown fine poorly graded silty sand (SP)		
		6		Same to 6. 6-8 Gray fine silty sand & silt (SP/ML)		
		8				
		10		gray fine poorly graded sand SP		
		12				
		14		Same		
		16				
				TD = 16		
				6-16 screen		
				4-16 filter		
				2-4 seal		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:
				6/6

HDR

Boring Log

Page ___ of ___

Project Name	Project No.	Drilling Company
IBWC		

Boring No	Location	Drilling Rig Type and Drilling Method
CLE-MW-2	Country Club East	AMS 9100 IDPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		Sandy-silt SM/ML 0-2		
		4		2-5 gray-brown fine well graded sand (SW)		
		6		5-10 same (SW)		
		8				
		10				
		12		10-12 same		
		14				
		15				
		16		TD-12 ft bls Screen 2-12 ft bls Filter 0-12 ft bls Seal 0-1 ft bls		

Water Level			Logged By:	Drilled/Sampled By:
While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed: 6/25

HDR

Boring Log

Page 1 of

Project Name	Project No.	Drilling Company
IBWC	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
CCE-MW-3	Country Club Eco3	AMS 9100 / DPT

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 gray - tan sandy silt ML 2-4 fine poorly graded clayey sand (SW)		
		4		same to 5.5 5.5 - 8 - Gray silty sandy clay (ML)(CL).		
		8		same to 7.5. 7.5-8 Gray Fine well graded sand (SW)		
		10				
		12		same (SW)		
		14				
		16		- Boring terminated at 16 ft bls & 6-16 screen 4-16 filter 2-4 bentonite seal		

Water Level			Logged By:	Drilled/Sampled By:
While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed: 6/6

HDR

Boring Log

Page ___ of ___

Project Name	Project No.	Drilling Company
IBWC	211502	GSI
Boring No	**Location**	**Drilling Rig Type and Drilling Method**
SP-MW-1	Sunland Park	

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		0		gray s.-lt- fine sand (mL) [SM]		
		0-2		2-5 gray brown fine well graded sand (SW)		
		2				
		4				
		5		Same (SW)		
		6				
		8				
		10		Same (SW)		
		12				
		14				
		15		TD - 12		
		16		Screen - 2-12		
				Filter 1-12		
				Seal 0-1		

Water Level			Logged By:	Drilled/Sampled By:
While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

HDR

Boring Log

Page ___ of ___

Project Name	Project No.	Drilling Company
IBWC		

Boring No	Location	Drilling Rig Type and Drilling Method
SP-MW-2		

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		Silt 0-2		
		4		2-5 brown silty fine poorly (SP) graded Sand -		
		5		Same (SP)		
		6				
		8				
		10		Same SP		
		12				
		14				
		15				
		6		2-12 screen 1-12 filter 0-1 seal 12 ft bls - TD		

Logged By:	Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

2

HDR

Boring Log

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Project Name	Project No.	Drilling Company
IBWL	211502	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
SP-MW-3	Sunlaw Park	AMS 9100 IDW

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		Brown silt (ML)		
		4		Brown silty sand 2-4 (SM)		
		5		4-5 brown silty clay ML-CL		
		6		Brown-grey silty fine poorly graded sand (SP)		
		8				
		10				
		12		Sand (SP)		
		14				
		15				
		16		TD - 12 ft bgs Screen 2-12 filter 1-12 seal 0-1		

Logged By: | Drilled/Sampled By:

Water Level

While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed: 6/27

HDR

Boring Log

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Project Name	Project No.	Drilling Company
I Bus		

Boring No	Location	Drilling Rig Type and Drilling Method
AB-MW-1	Acequia Bridge	

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 silty sand (SM) 2-5 gray-brown fine well graded sand SW		
		4				
		5				
		6		5-10 Sand (SW)		
		8				
		10				
		12		10-12 Sand (SW)		
		14				
		15				
		16		TD- 12 ft bls Screen- 2-12 ~~Sand~~ Filter 1-12 Seal 0-1		

Water Level			Logged By:	Drilled/Sampled By:
While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

HDR

Boring Log

Page ___ of ___

Project Name	Project No.	Drilling Company
IBWC	21150C	GSI

Boring No	Location	Drilling Rig Type and Drilling Method
AP-MW-2	Ampora Park Blvd	

Sample No.	PID Reading (ppm)	Depth (feet)	Completion	Description (USCS)	Elevation (feet)	Remarks
		2		0-2 gray sandy s.lt es.lty SW (SM/ML)		
		4		2-5 brown-gray s.lty ~~sand~~ f.ne gr.nd - poorly grad SP		
		5				
		6		5-10 20% recovery gray - fine well grad sand (SW)		
		8				
		10				
		12		Same (SW) 10-12		
		14				
		15				
		16		TD - 12 Screen 2-12 Filter 1-12 Seal 0-1		

Logged By:	Drilled/Sampled By:

Water Level

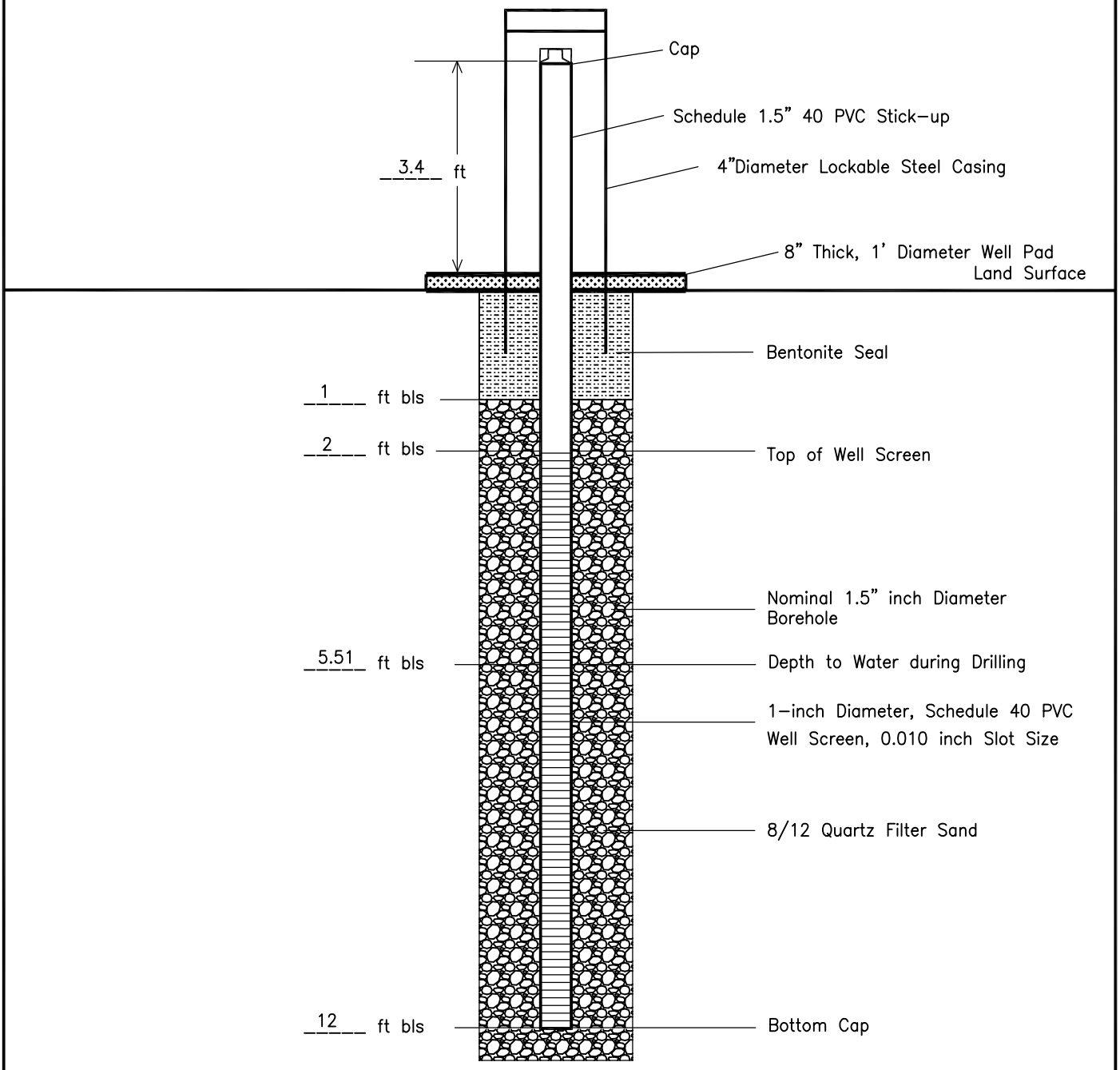
While Drilling:	After Drilling:	Hours After:	Date Started:	Date Completed:

APPENDIX F

GROUNDWATER MONITORING WELL CONSTRUCTION DIAGRAMS

MONITORING WELL

PROJECT NAME: ANAPRA BRIDGE	**Well ID No.**	**TOP OF CASING ELEVATION:** 3737.62
LOCATION: EL PASO COUNTY, TEXAS		**SURFACE ELEVATION:** 3734.21
INSTALLATION DATE: 6/25/2013	AB–MW–1	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 351269.412, 352196.443



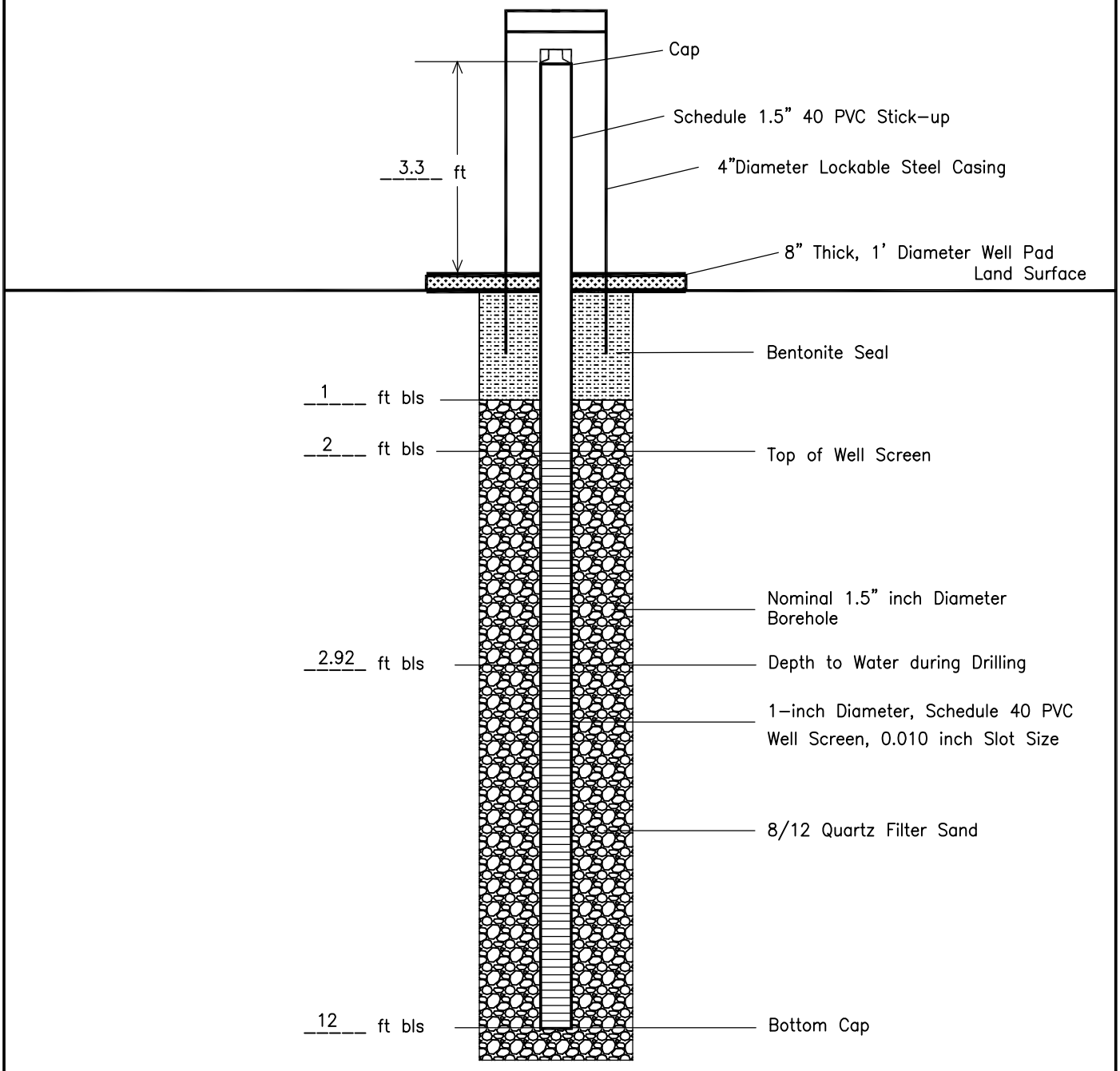
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: ANAPRA BRIDGE	***Well ID No.***	***TOP OF CASING ELEVATION:*** 3738.49
LOCATION: EL PASO COUNTY, TEXAS		***SURFACE ELEVATION:*** 3735.14
INSTALLATION DATE: 6/25/2013	AB–MW–2	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3519306.24, 351773.152



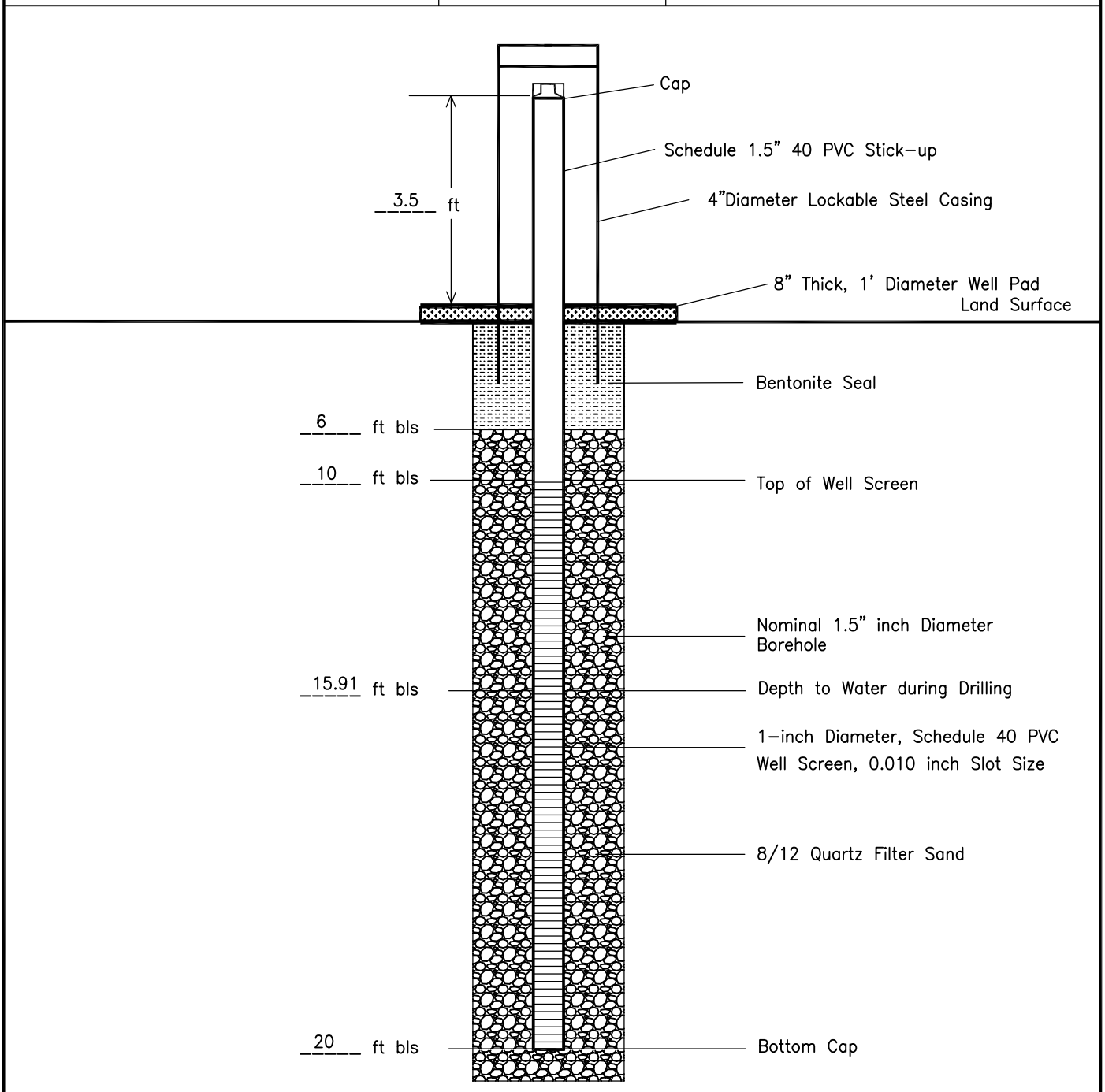
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: BELOW MESILLA DAM	**Well ID No.**	**TOP OF CASING ELEVATION:** 3859.50
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 3856.00
INSTALLATION DATE: 5/7/2014	BMD–MW–1	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** HOLLOW STEM AUGER
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3565175.597,333078.7943



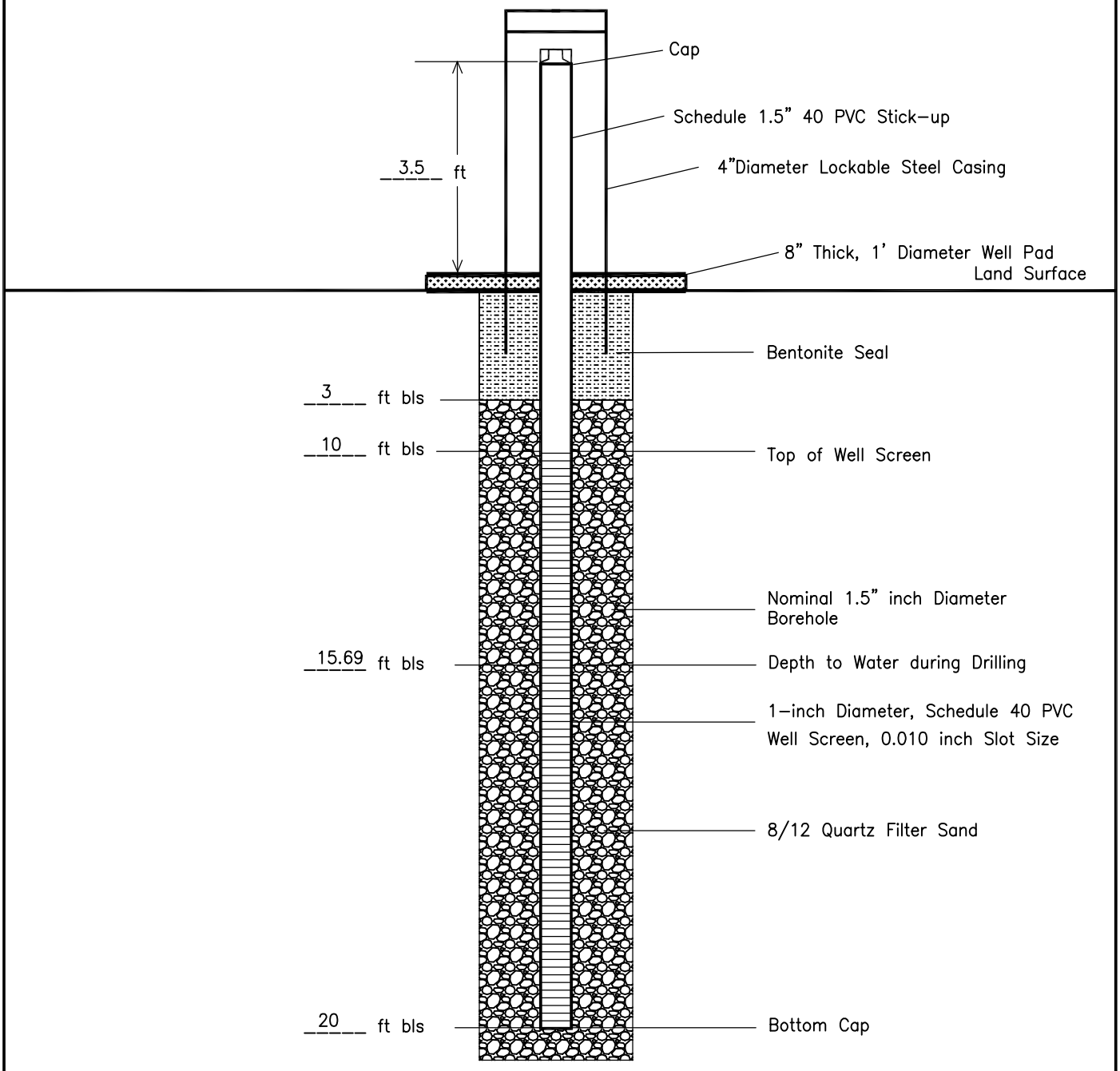
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: BELOW MESILLA DAM	***Well ID No.***	***TOP OF CASING ELEVATION:*** 3859.0
LOCATION: DONA ANA COUNTY, NEW MEXICO		***SURFACE ELEVATION:*** 3856.0
INSTALLATION DATE: 5/7/2014	BMD–MW–2	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** HOLLOW STEM AUGER
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3565158.362,333067.8517



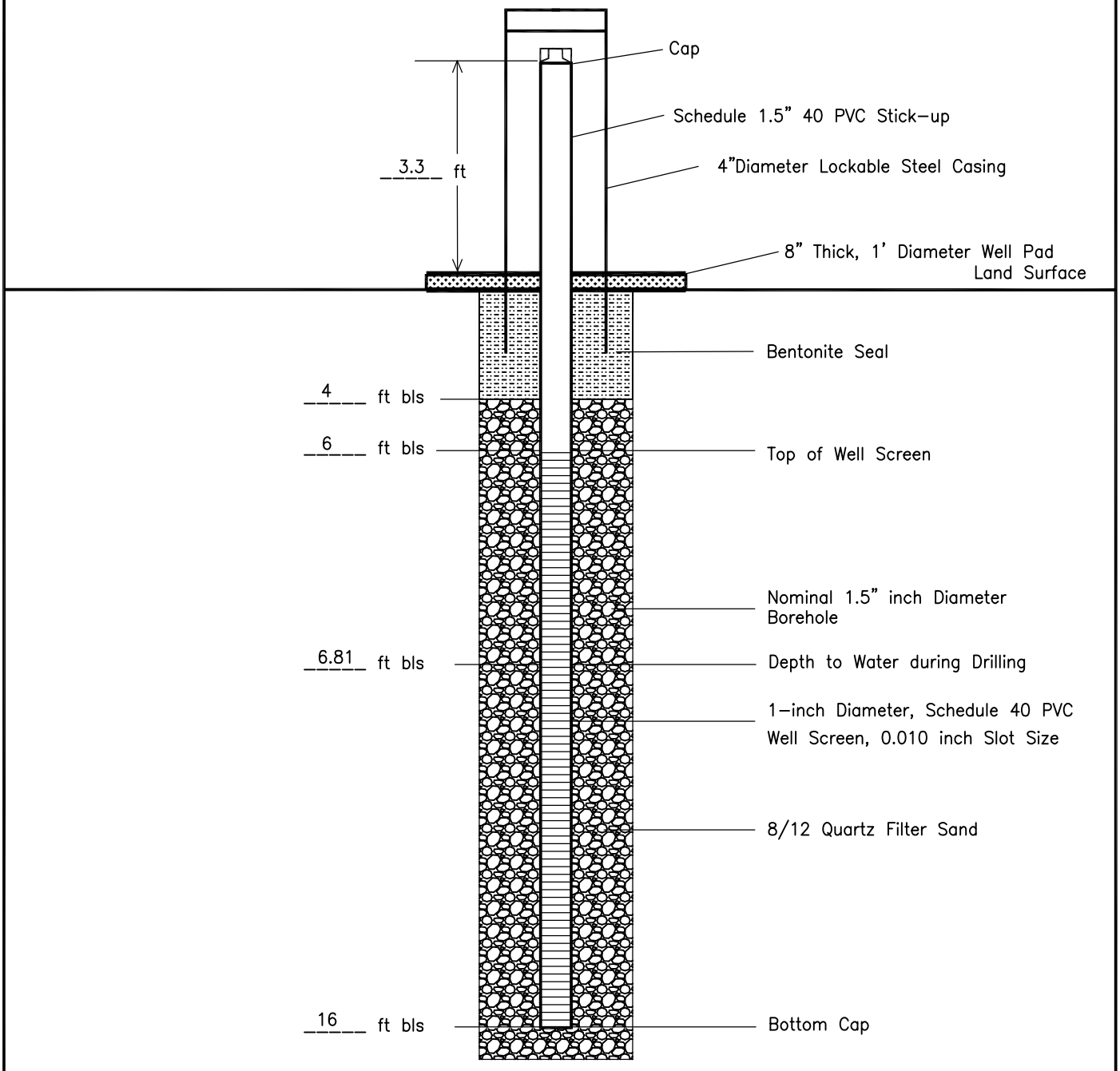
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: BERINO EAST	**Well ID No.**	**TOP OF CASING ELEVATION:** 3810.06
LOCATION: DONA ANA COUNTY, NEW MEXICO	BE–MW–1	**SURFACE ELEVATION:** 3806.77
INSTALLATION DATE: 6/6/2013		**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3549980.88, 343266.923



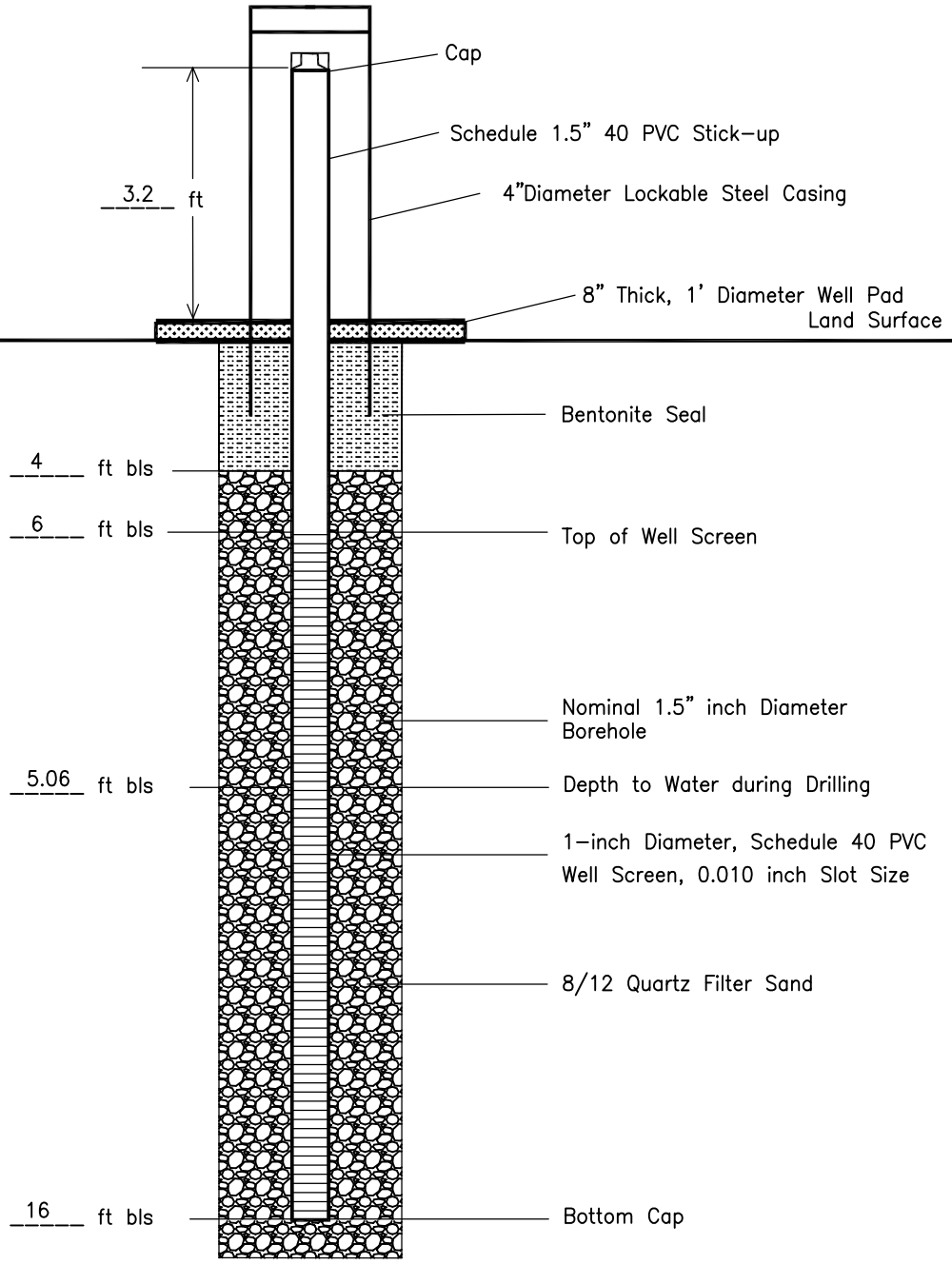
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: BERINO EAST	**Well ID No.**	**TOP OF CASING ELEVATION:** 3811.13
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 3807.92
INSTALLATION DATE: 6/25/2013	BE–MW–2	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3550347.823, 343189.254



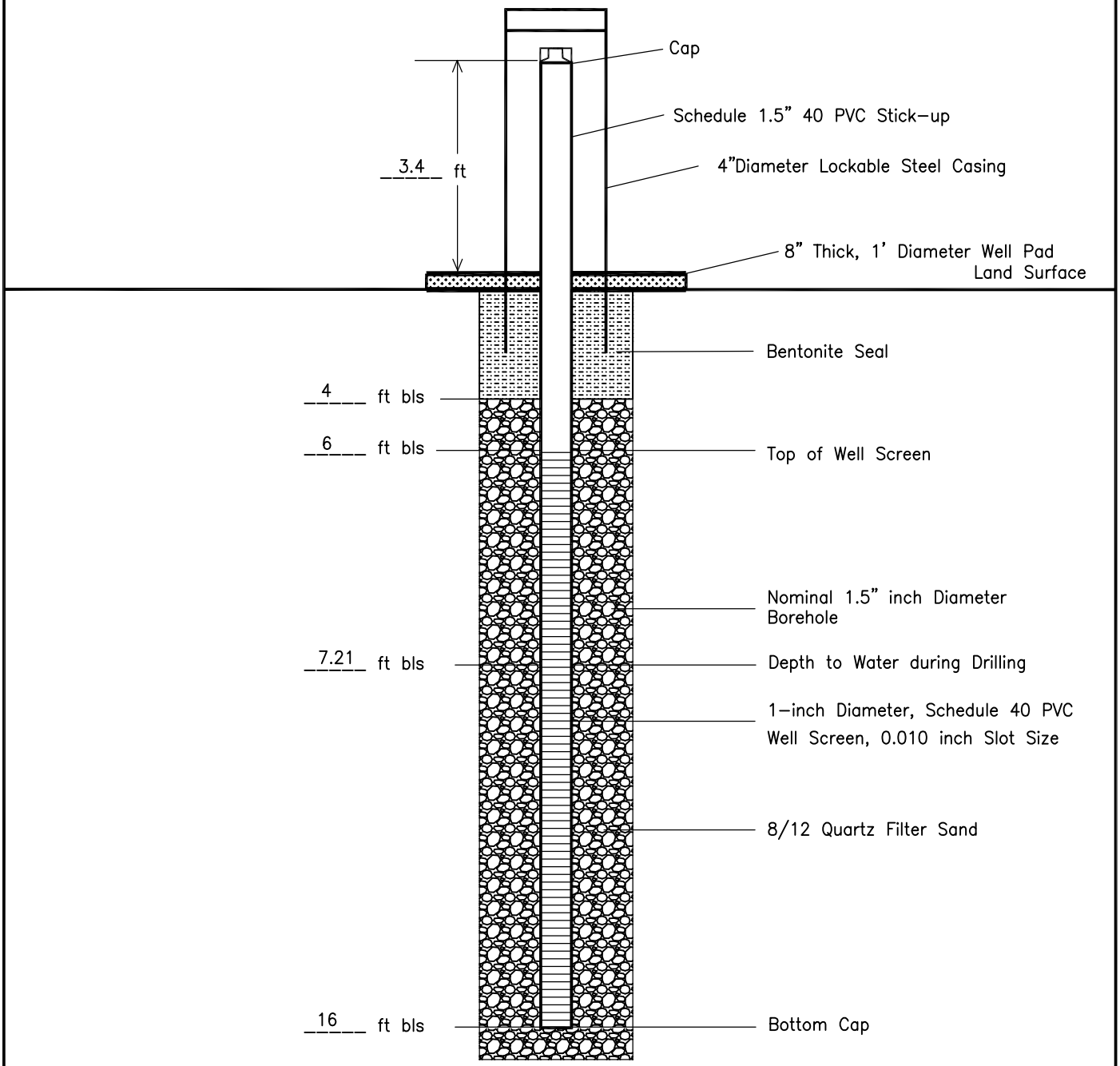
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: BERINO EAST	***Well ID No.***	***TOP OF CASING ELEVATION:*** 3812.60
LOCATION: DONA ANA COUNTY, NEW MEXICO		***SURFACE ELEVATION:*** 3809.21
INSTALLATION DATE: 6/6/2013	BW–MW–1	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3550915.124, 342861.374



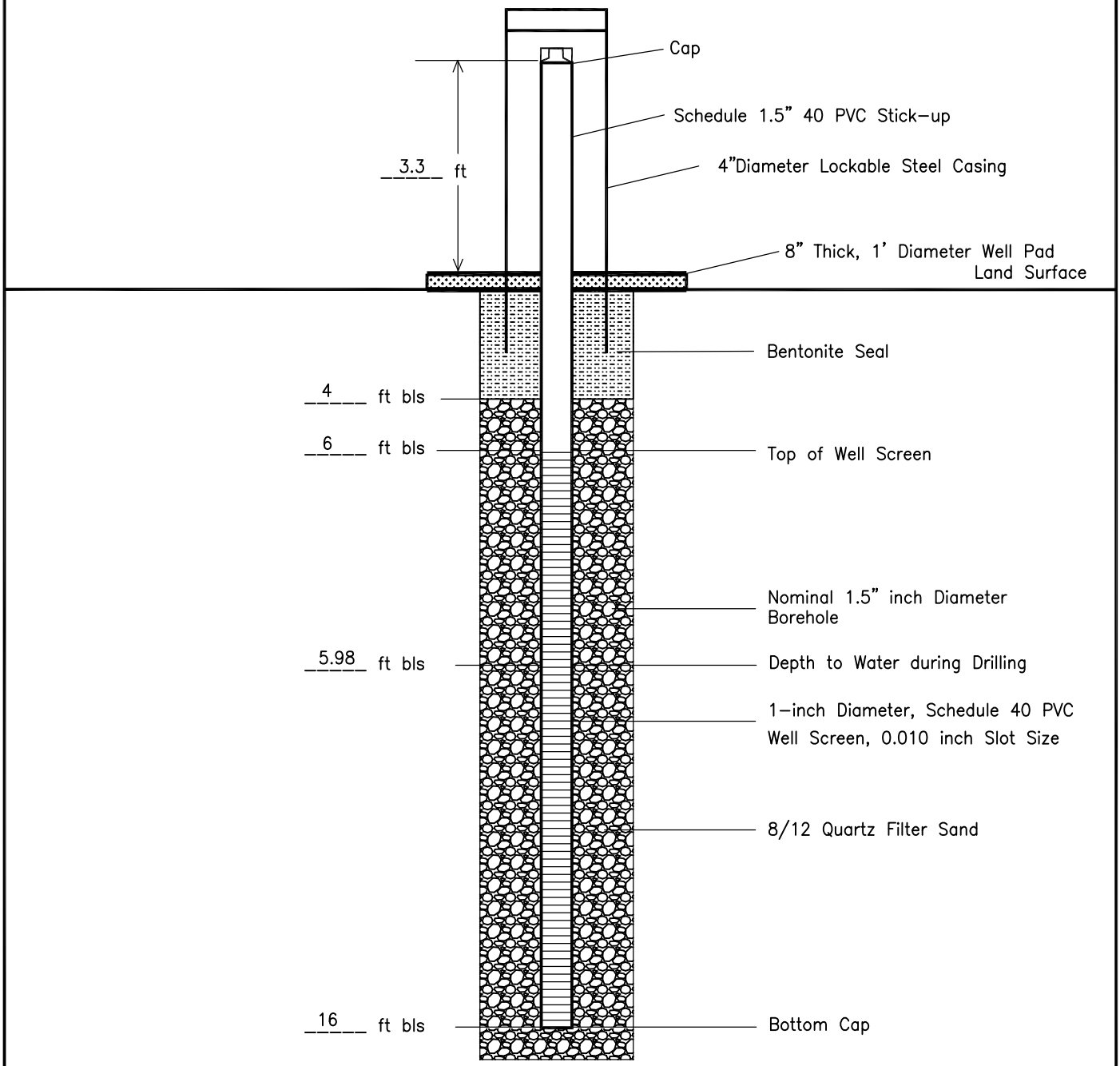
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: BERINO EAST	***Well ID No.***	***TOP OF CASING ELEVATION:*** 3812.58
LOCATION: DONA ANA COUNTY, NEW MEXICO		***SURFACE ELEVATION:*** 3809.28
INSTALLATION DATE: 6/6/2013	BW–MW–2	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3551131.717, 342953.217



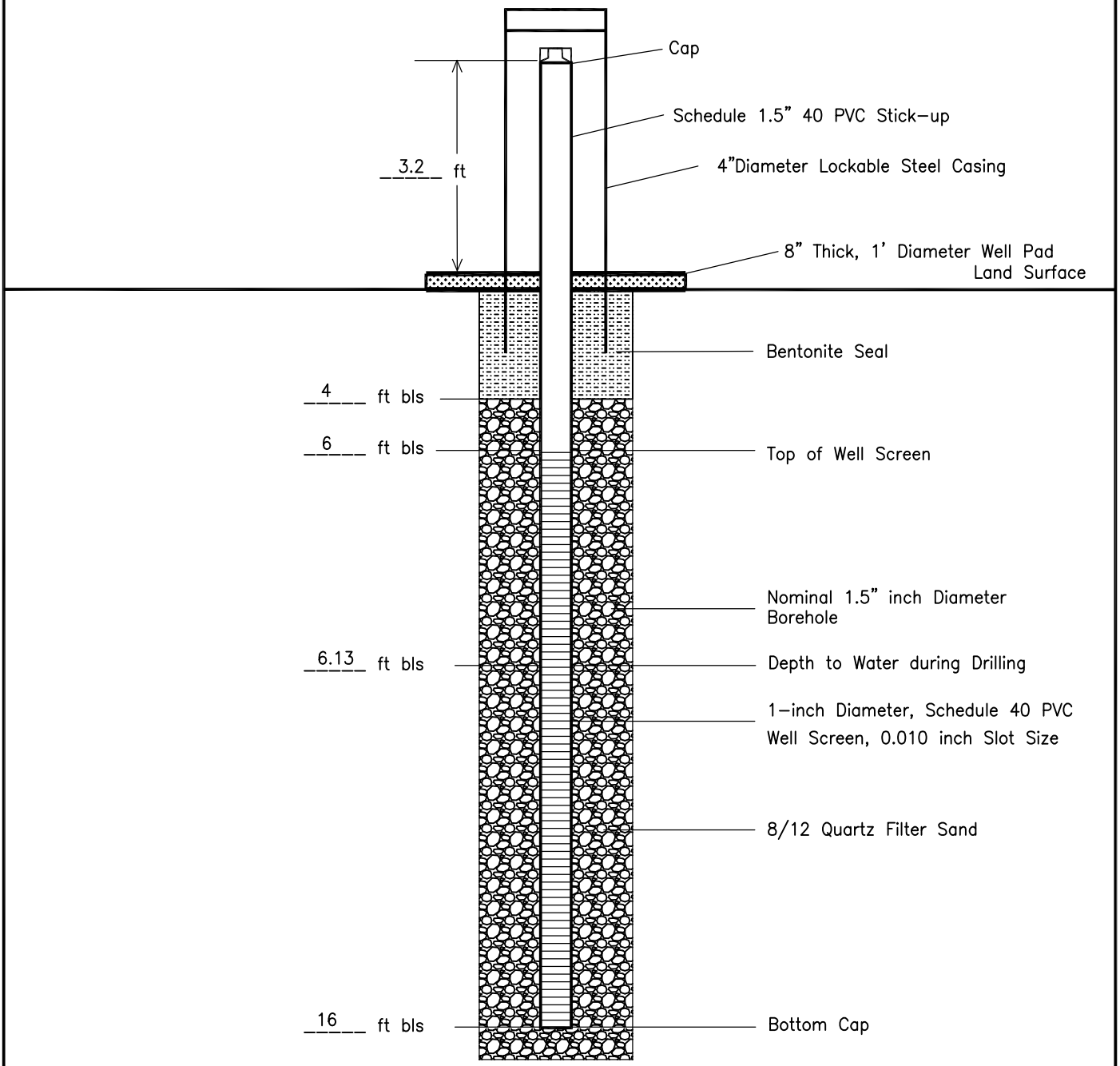
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: BROAD CANYON ARROYO	***Well ID No.***	***TOP OF CASING ELEVATION:*** 3991.41
LOCATION: DONA ANA COUNTY, NEW MEXICO		***SURFACE ELEVATION:*** 3988.22
INSTALLATION DATE: 6/2/2013	BCA–MW–1	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3601667.238, 313593.283



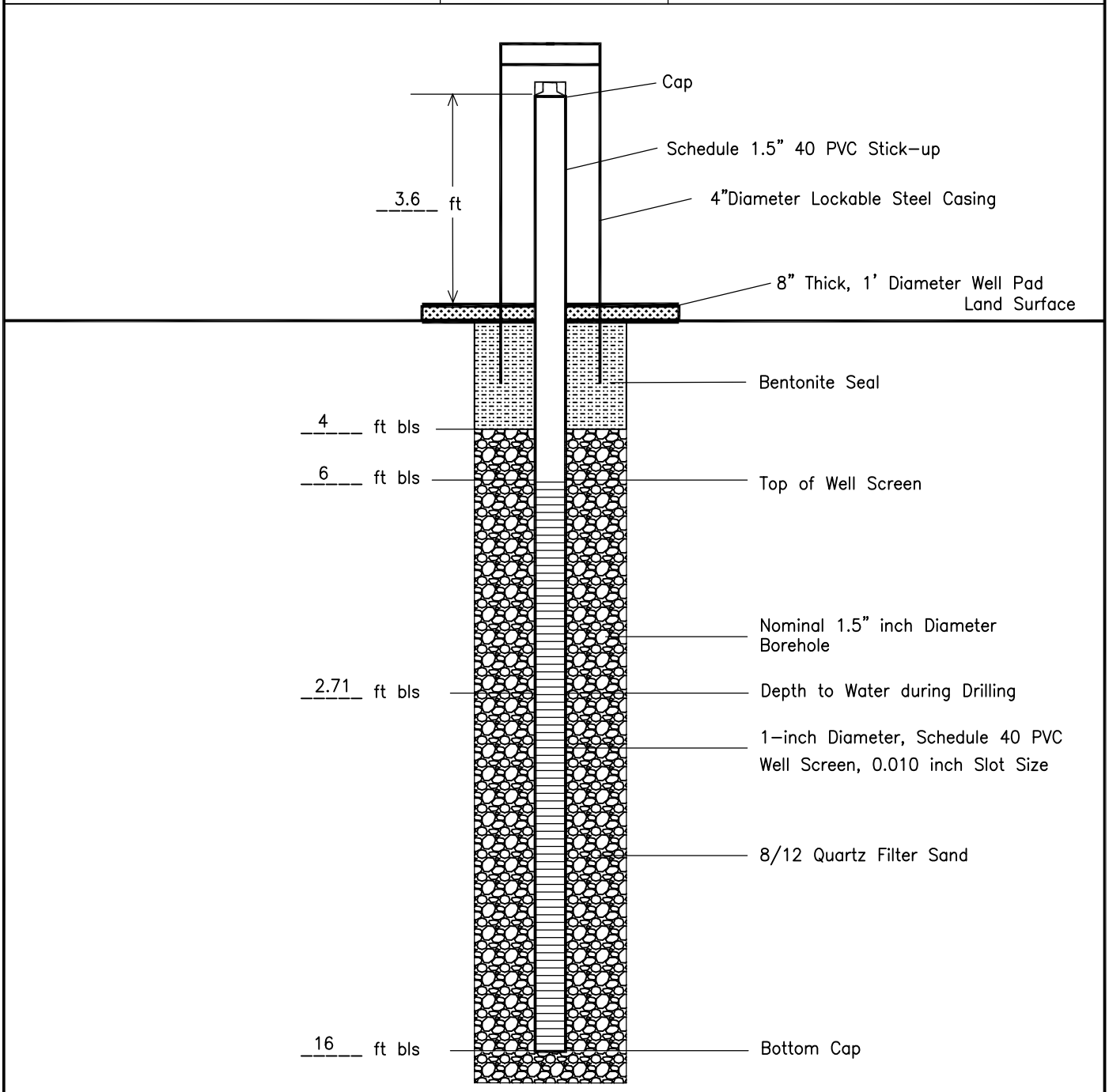
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: BROAD CANYON ARROYO	***Well ID No.***	***TOP OF CASING ELEVATION:*** 3991.51
LOCATION: DONA ANA COUNTY, NEW MEXICO		***SURFACE ELEVATION:*** 3987.89
INSTALLATION DATE: 7/2/2014	BCA–MW–2	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: GREGG MITCHELL		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3601897.190, 313407.670



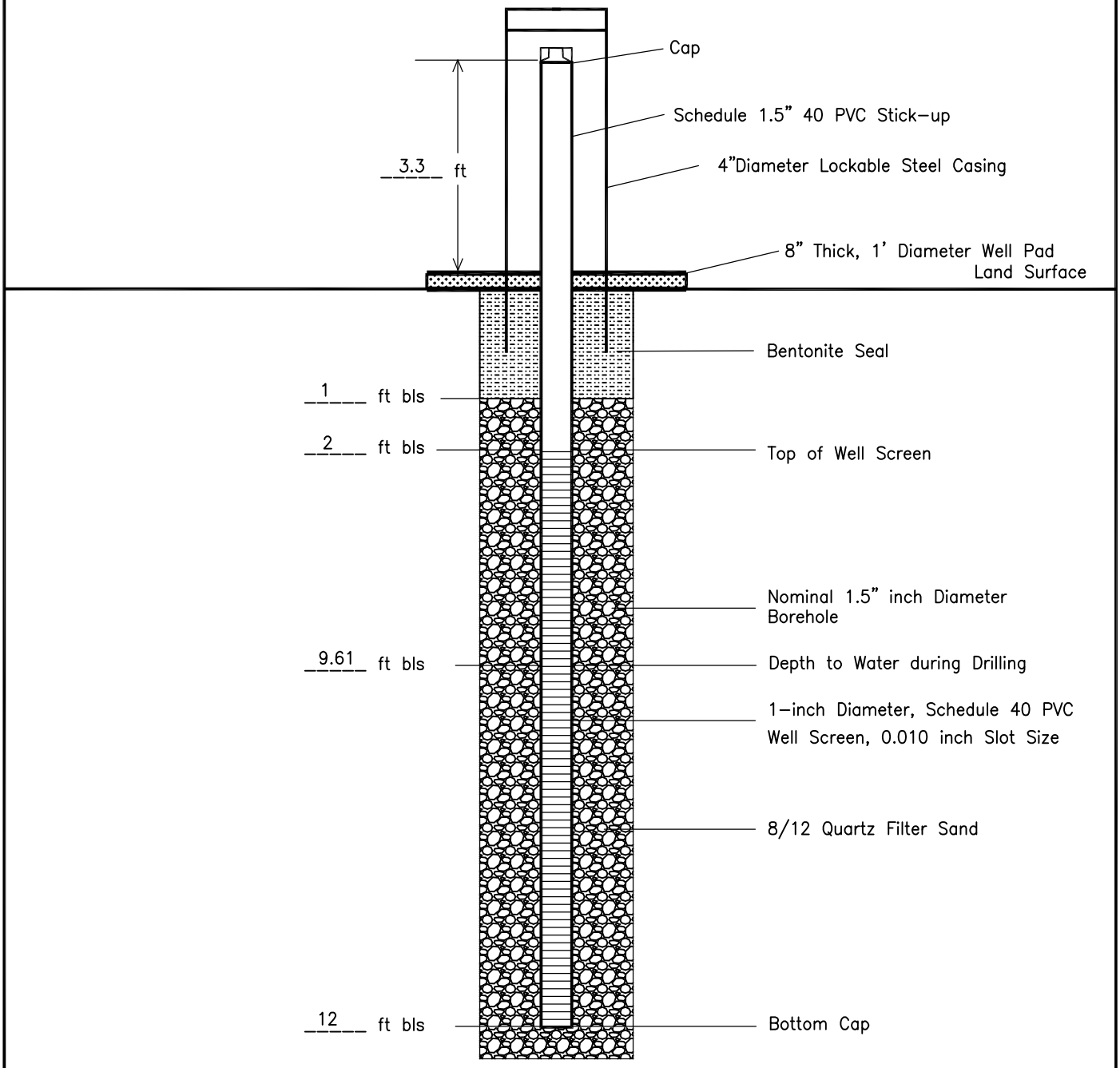
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: BROAD CANYON ARROYO	**Well ID No.**	**TOP OF CASING ELEVATION:** 3996.14
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 3992.79
INSTALLATION DATE: 6/3/2013	BCA–MW–3	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3601749.387, 313474.116



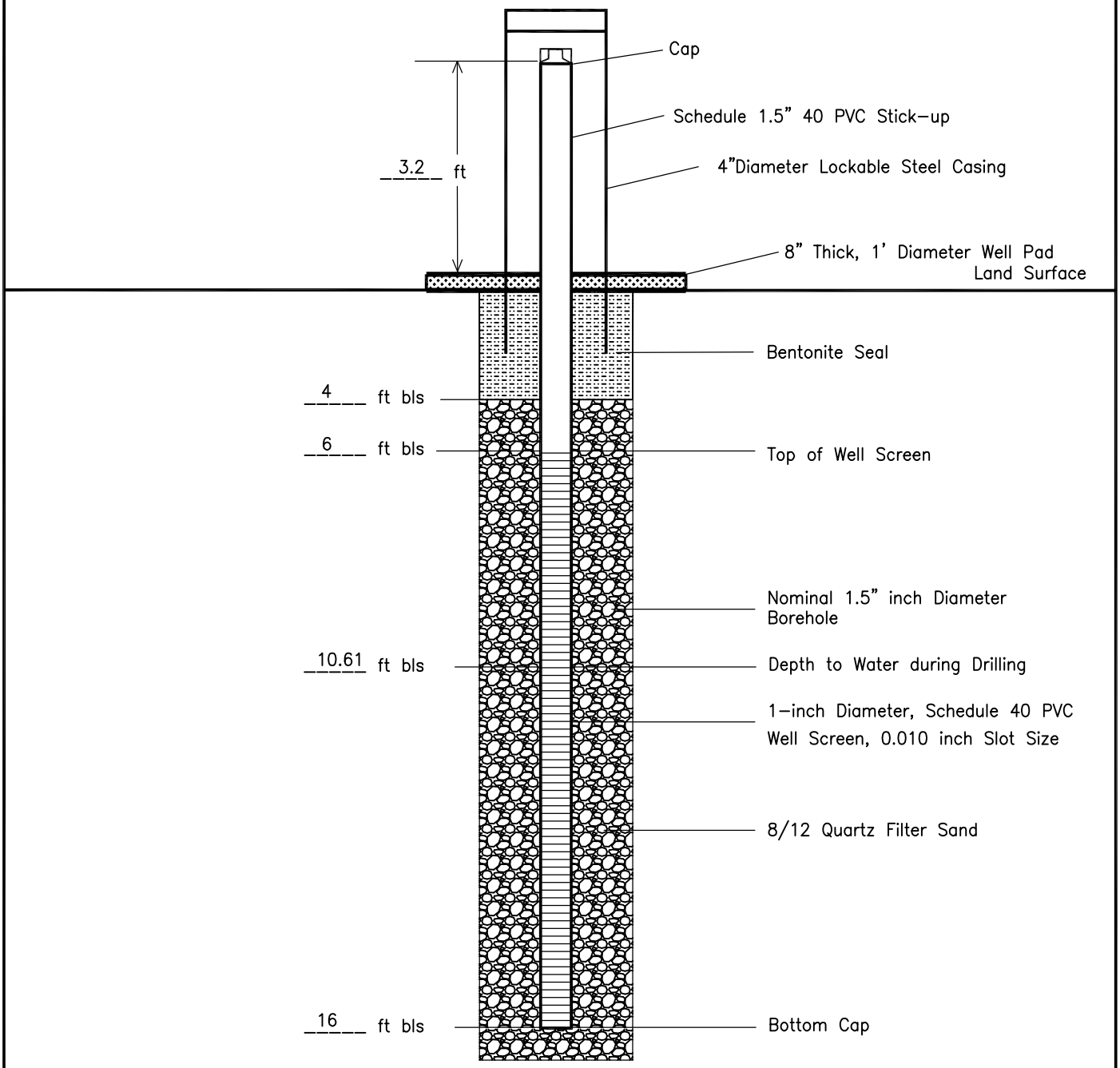
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: CLARK LATERAL	***Well ID No.***	***TOP OF CASING ELEVATION:*** 3887.76
LOCATION: DONA ANA COUNTY, NEW MEXICO		***SURFACE ELEVATION:*** 3884.56
INSTALLATION DATE: 6/3/2013	CL–MW–1	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3572595.355 328032.067



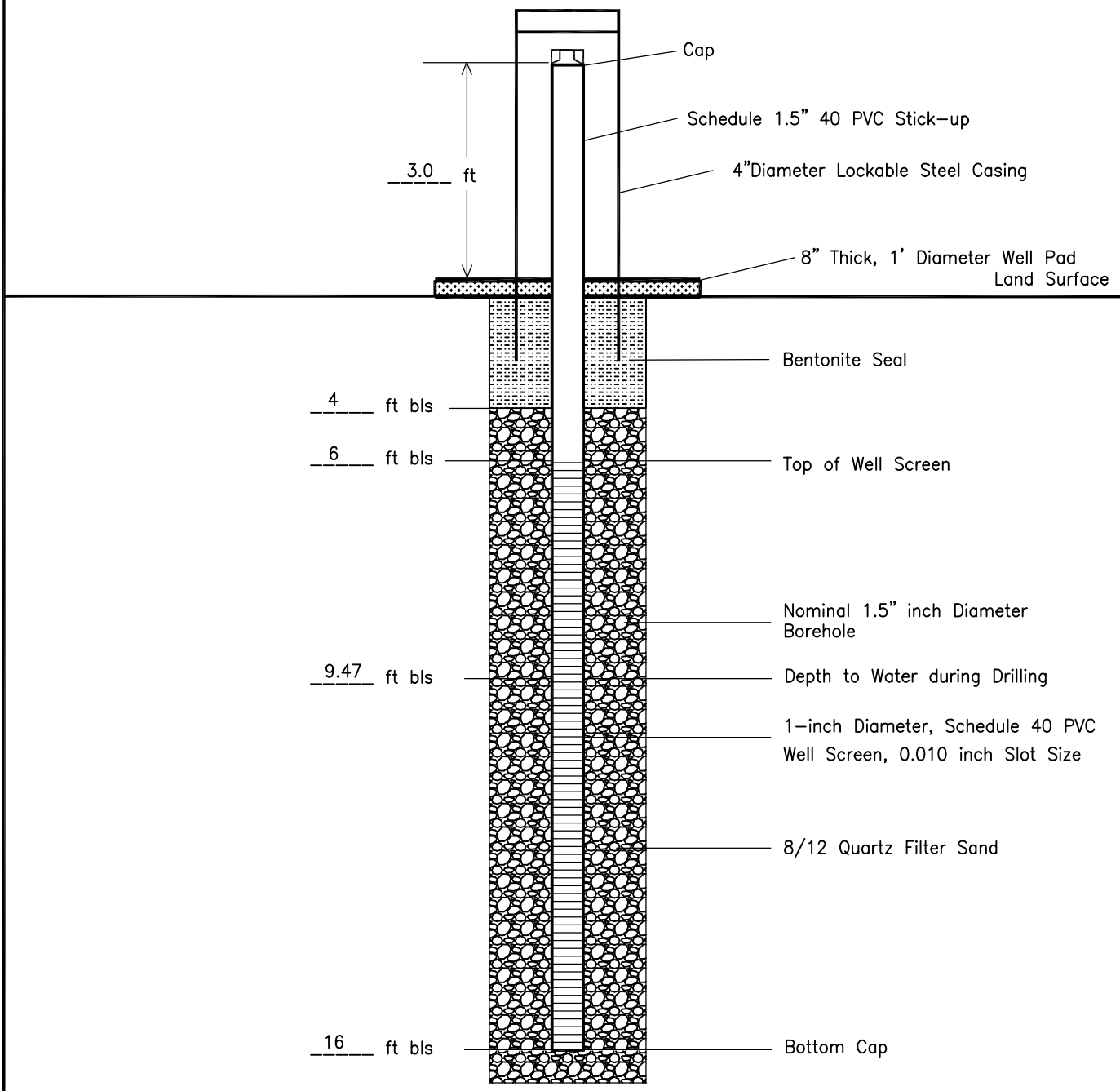
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: CLARK LATERAL	**Well ID No.**	**TOP OF CASING ELEVATION:** 3887.88
LOCATION: DONA ANA COUNTY, NEW MEXICO	CL–MW–2	**SURFACE ELEVATION:** 3884.84
INSTALLATION DATE: 6/3/2013		**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3572524.709 328055.588



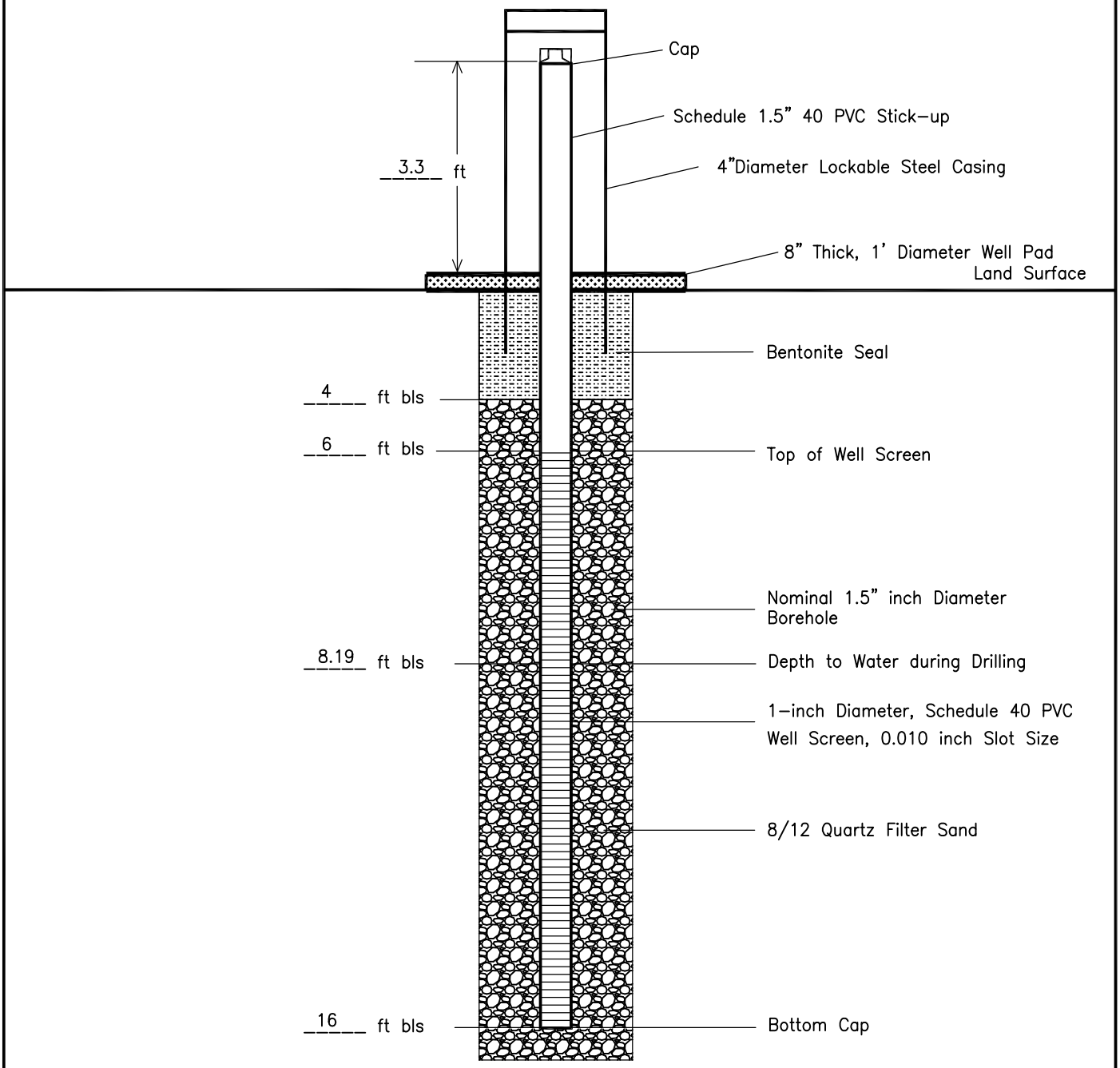
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: COUNTRY CLUB EAST	**Well ID No.**	**TOP OF CASING ELEVATION:** 3746.76
LOCATION: EL PASO COUNTY, TEXAS		**SURFACE ELEVATION:** 3743.48
INSTALLATION DATE: 6/6/2013	CCE–MW–1	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3522109.712, 348409.926



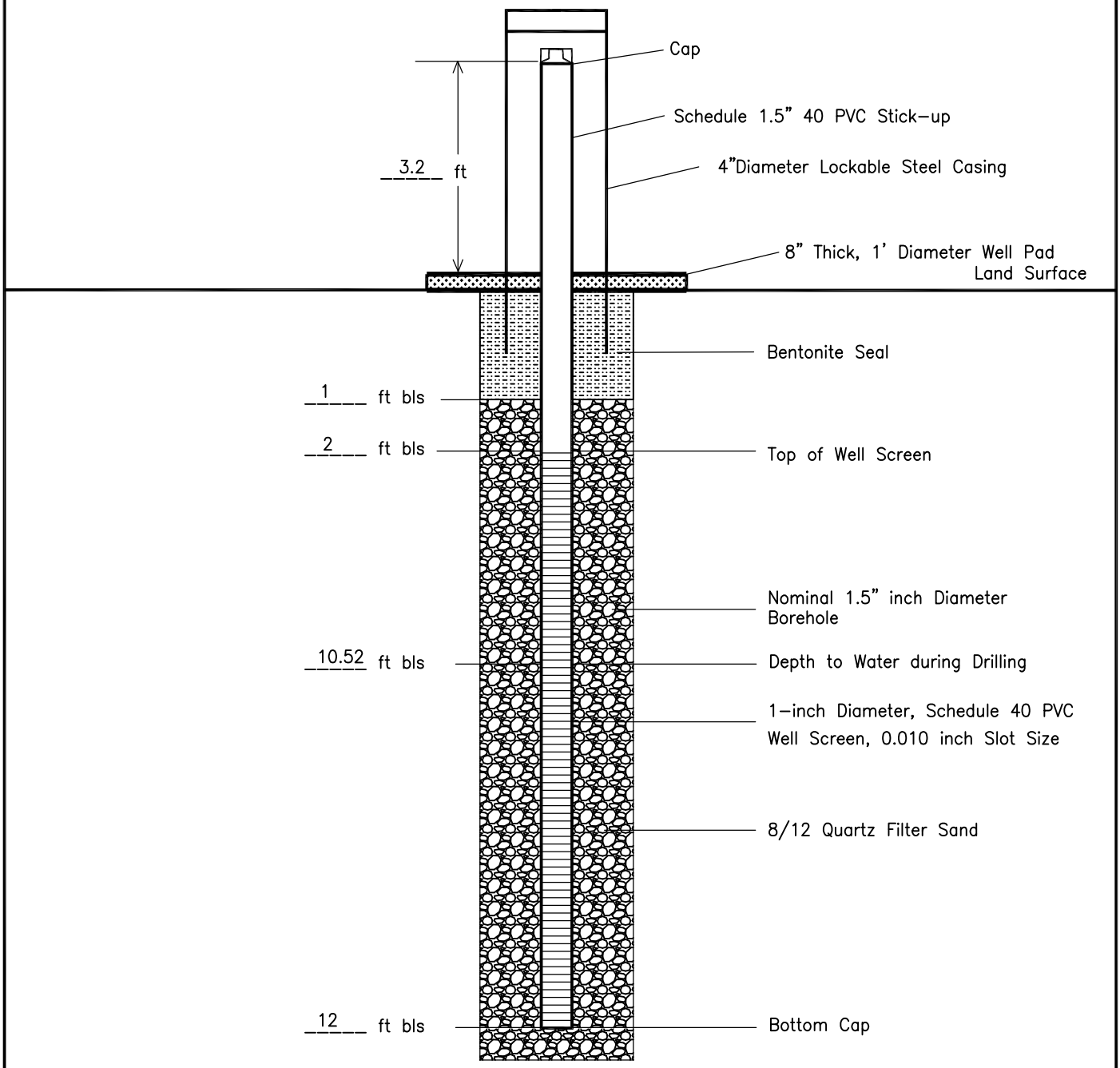
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: COUNTRY CLUB EAST	**Well ID No.**	**TOP OF CASING ELEVATION:** 3748.67
LOCATION: EL PASO COUNTY, TEXAS		**SURFACE ELEVATION:** 3745.48
INSTALLATION DATE: 6/25/2013	CCE–MW–2	**RIG TYPE:** AMS 9100
ON–SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3522991.219 347881.117



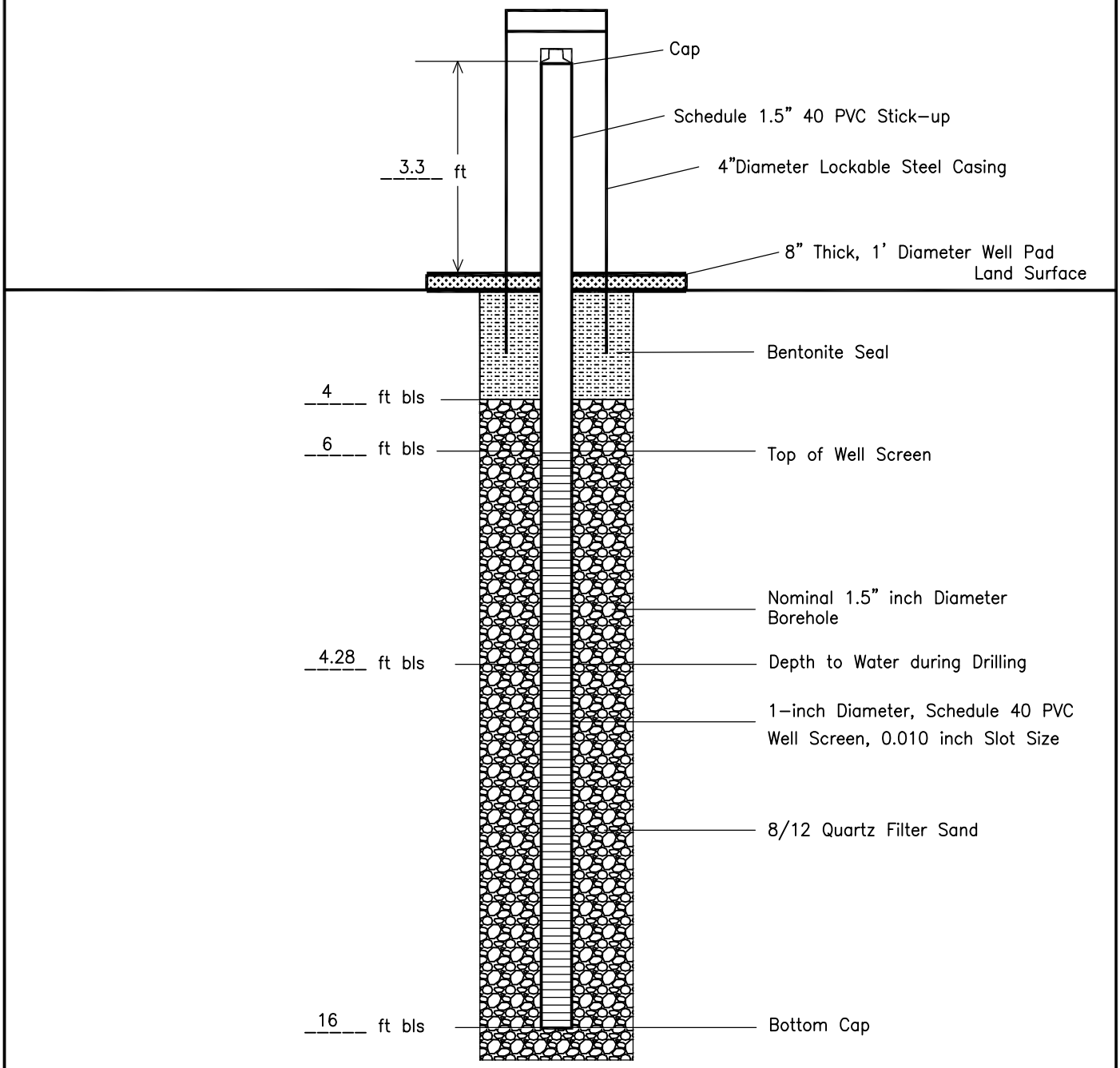
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: COUNTRY CLUB EAST	**Well ID No.**	**TOP OF CASING ELEVATION:** 3747.23
LOCATION: EL PASO COUNTY, TEXAS		**SURFACE ELEVATION:** 3743.96
INSTALLATION DATE: 6/6/2013	CCE–MW–3	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3522991.219, 347881.117



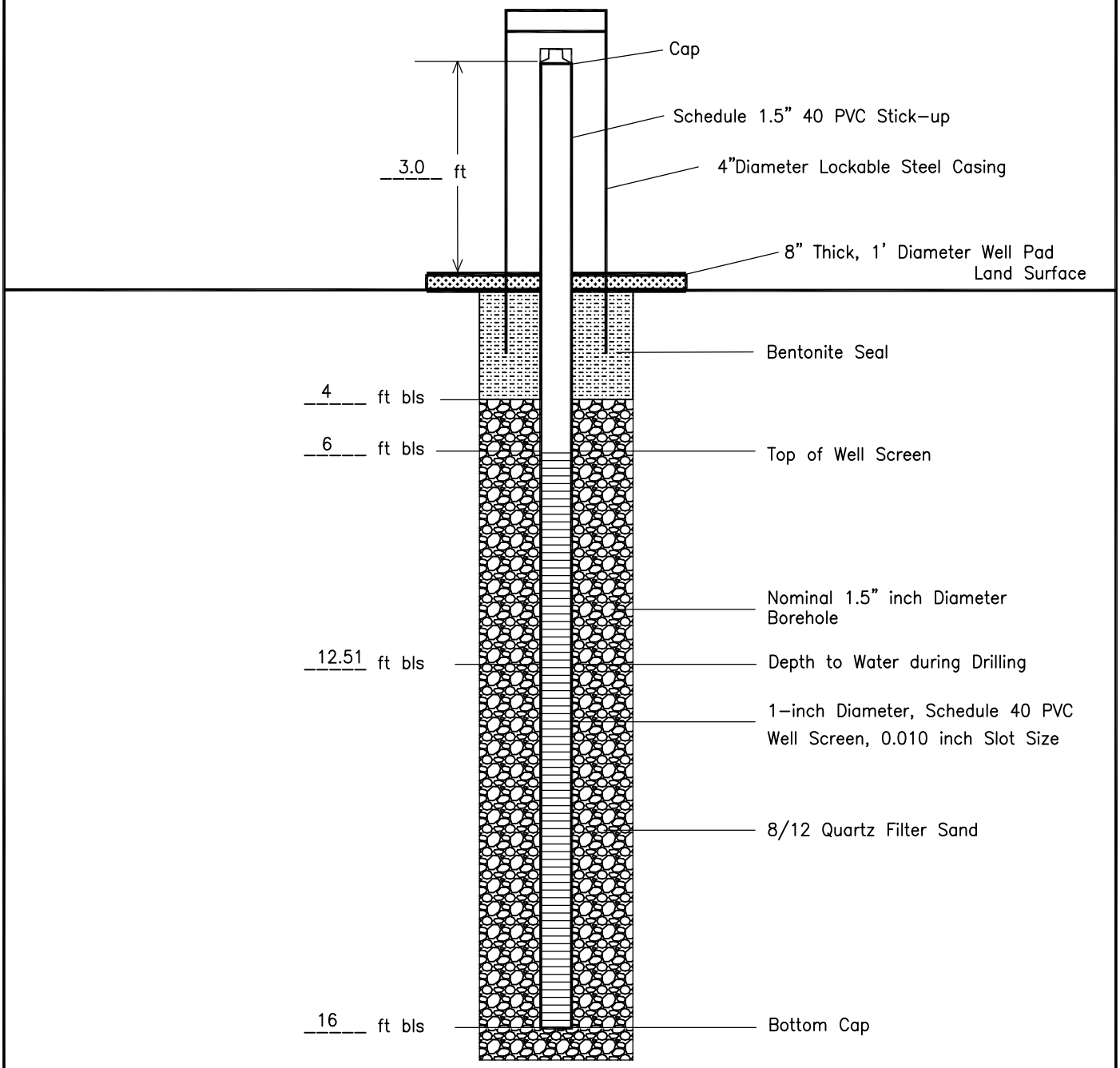
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: CROW CANYON A	**Well ID No.**	**TOP OF CASING ELEVATION:** 4086.32
LOCATION: EL PASO COUNTY, TEXAS	CCA–MW–1	**SURFACE ELEVATION:** 4083.29
INSTALLATION DATE: 6/2/2013		**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3621822.205, 288822.067



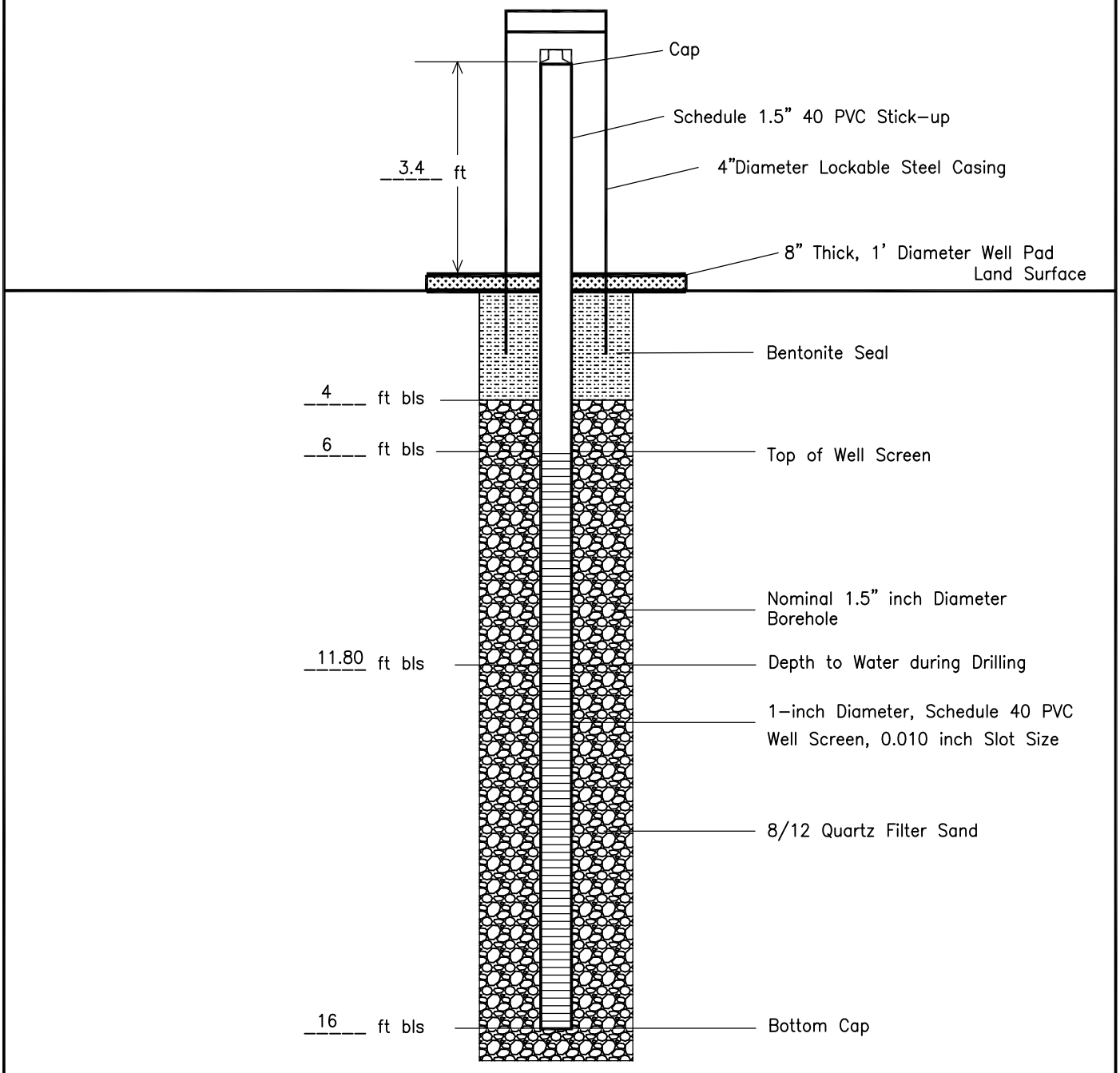
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: CROW CANYON A	***Well ID No.***	***TOP OF CASING ELEVATION:*** 4087.10
LOCATION: EL PASO COUNTY, TEXAS		***SURFACE ELEVATION:*** 4083.67
INSTALLATION DATE: 6/2/2013	CCA–MW–2	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3622698,149 288873.055



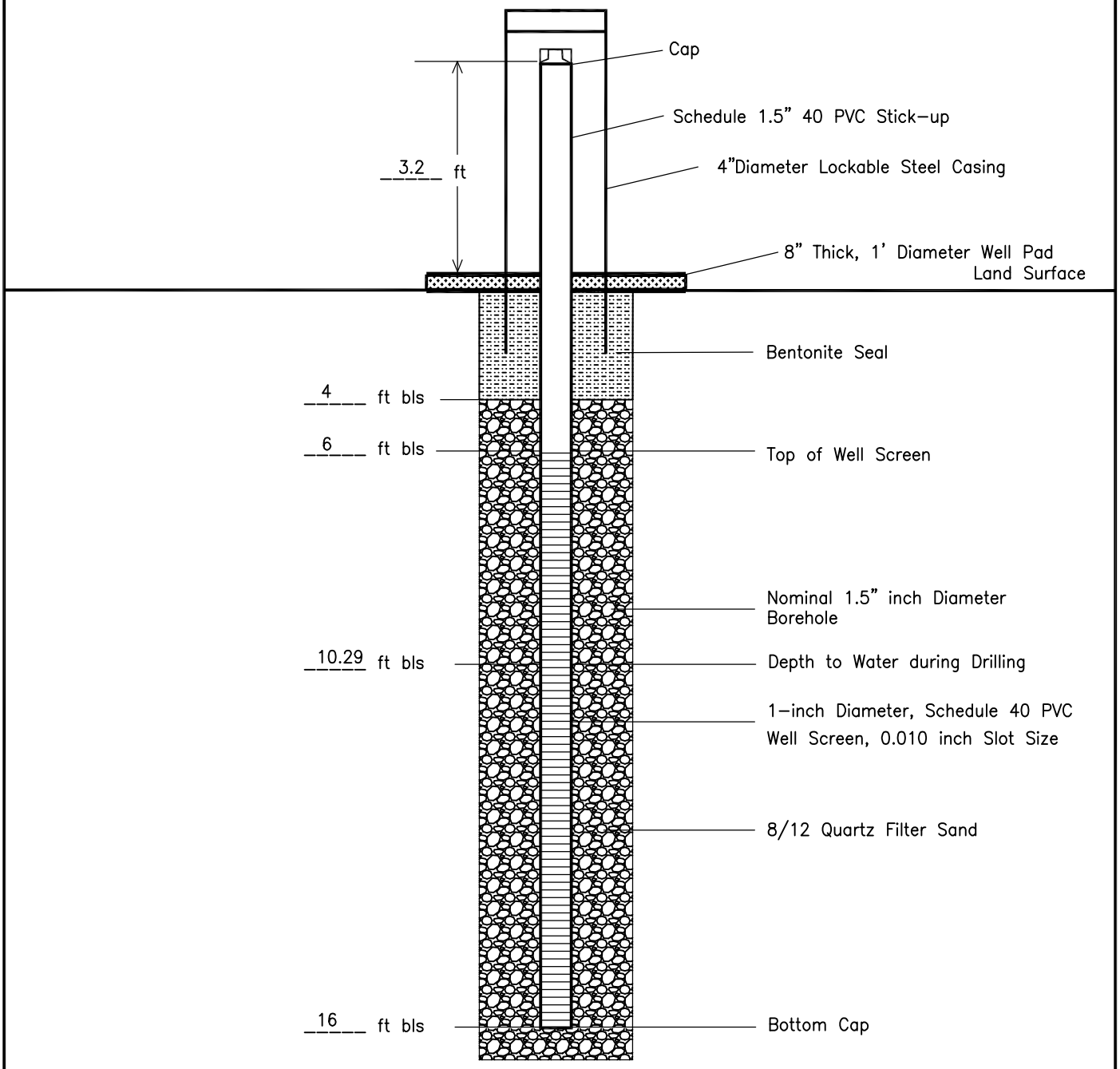
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: CROW CANYON A	**Well ID No.**	**TOP OF CASING ELEVATION:** 4088.44
LOCATION: EL PASO COUNTY, TEXAS		**SURFACE ELEVATION:** 4085.20
INSTALLATION DATE: 6/2/2013	CCA–MW–3	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3622762,109 288419.485



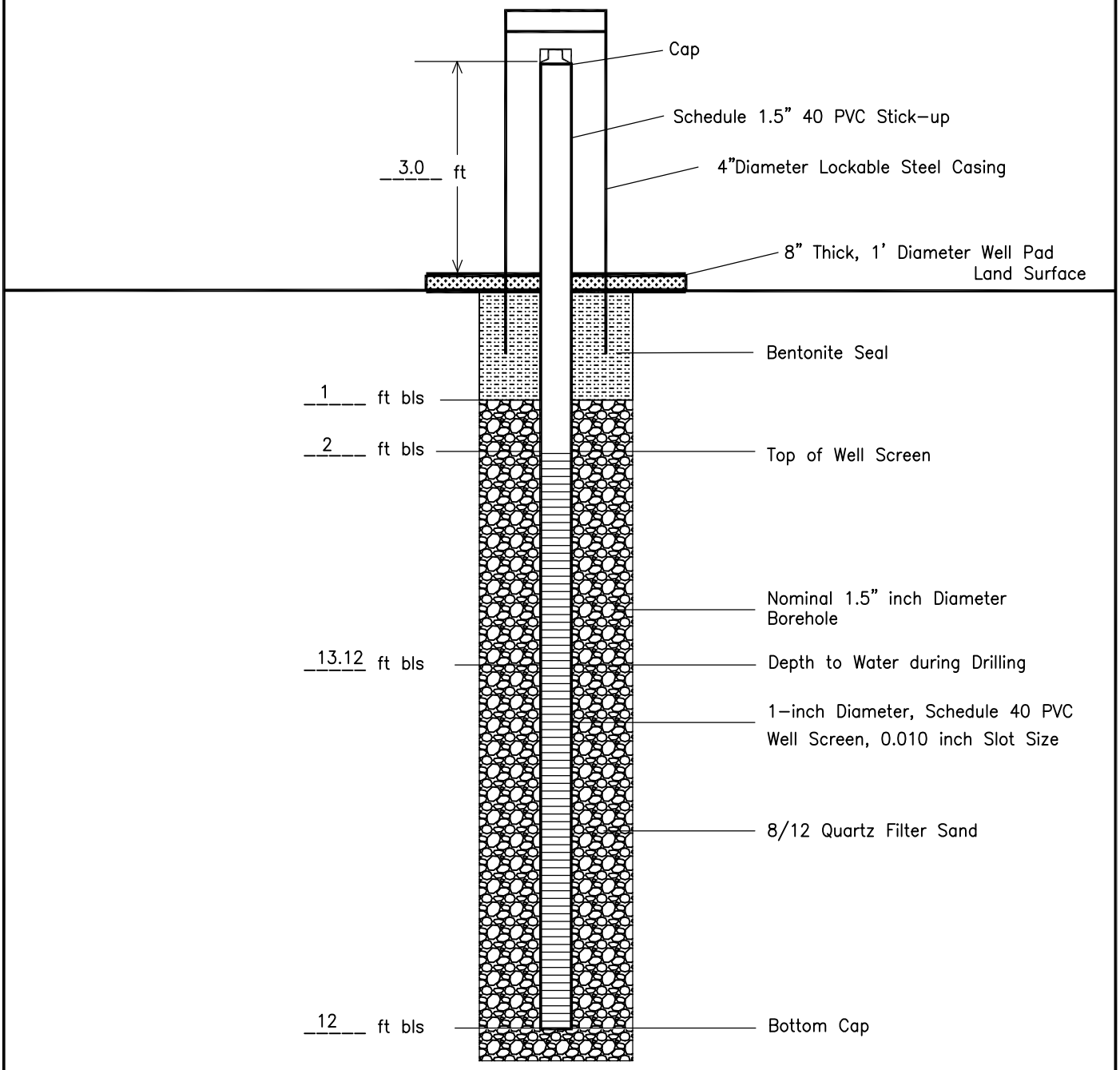
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: CROW CANYON B	**Well ID No.**	**TOP OF CASING ELEVATION:** 4082.18
LOCATION: EL PASO COUNTY, TEXAS		**SURFACE ELEVATION:** 4079.22
INSTALLATION DATE: 6/2/2013	CCB–MW–1	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3620638.847, 289075.228



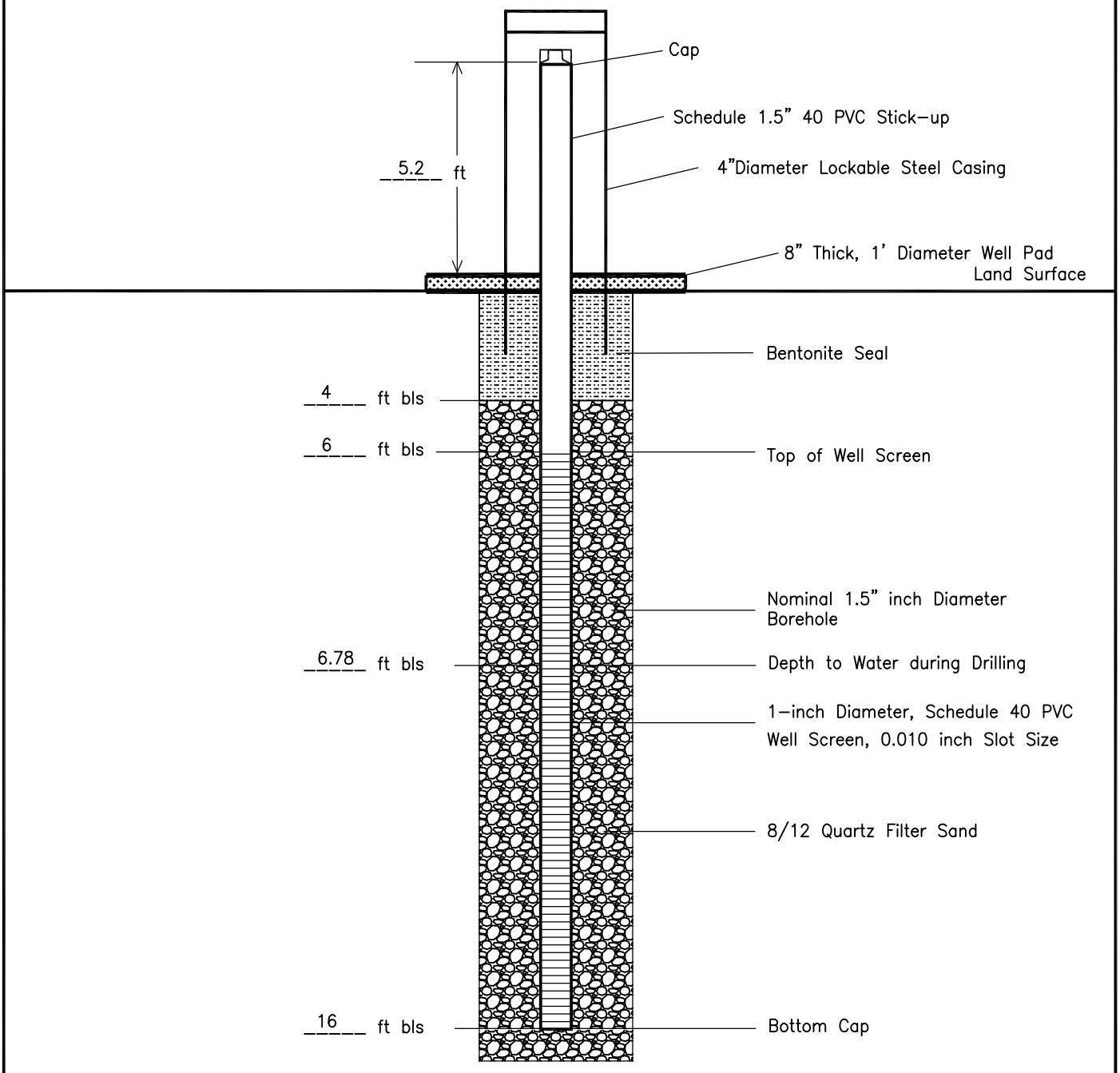
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: CROW CANYON B	***Well ID No.***	***TOP OF CASING ELEVATION:*** 4086.58
LOCATION: EL PASO COUNTY, TEXAS		***SURFACE ELEVATION:*** 4081.43
INSTALLATION DATE: 6/2/2013	CCB–MW–2	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3621016.333, 288628.142



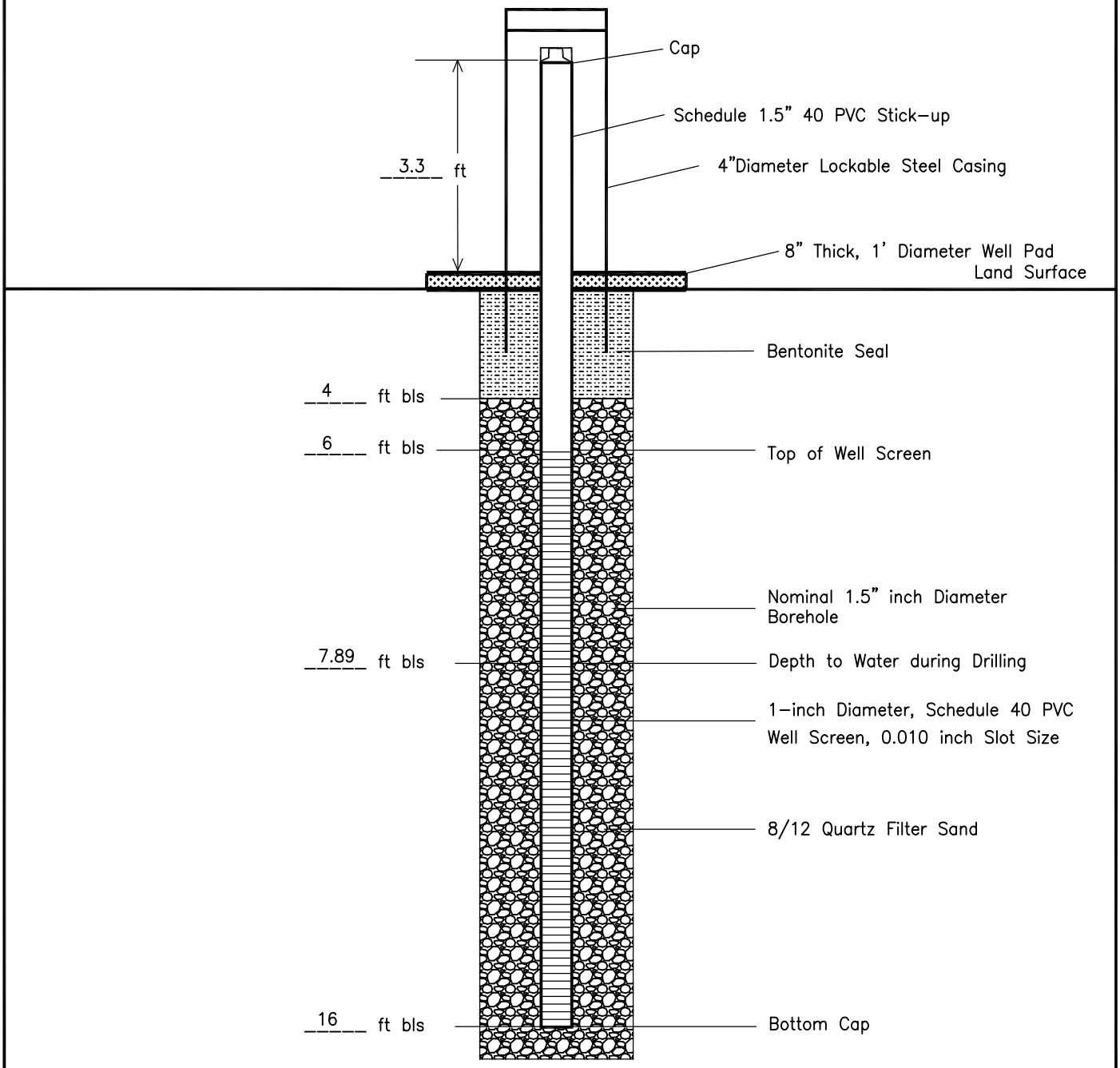
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: CROW CANYON B	***Well ID No.***	***TOP OF CASING ELEVATION:*** 4074.22
LOCATION: EL PASO COUNTY, TEXAS		***SURFACE ELEVATION:*** 4070.92
INSTALLATION DATE: 6/2/2013	CCB–MW–3	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3620335.008, 289595.733



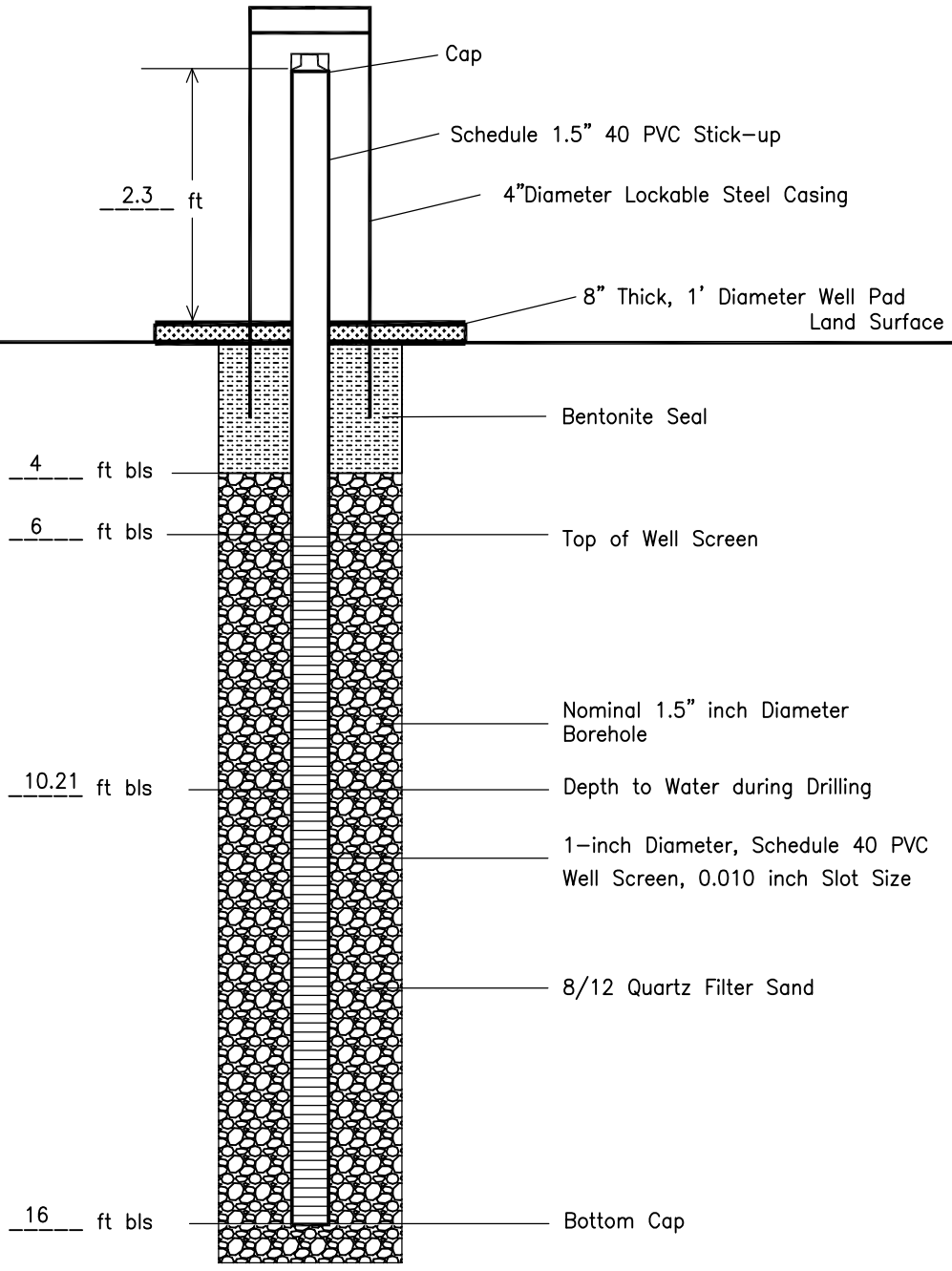
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: JARALOSA	**Well ID No.** JAR–MW–1	**TOP OF CASING ELEVATION:** 4095.74
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 4093.43
INSTALLATION DATE: 6/1/2013		**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3625552.017, 286059.14



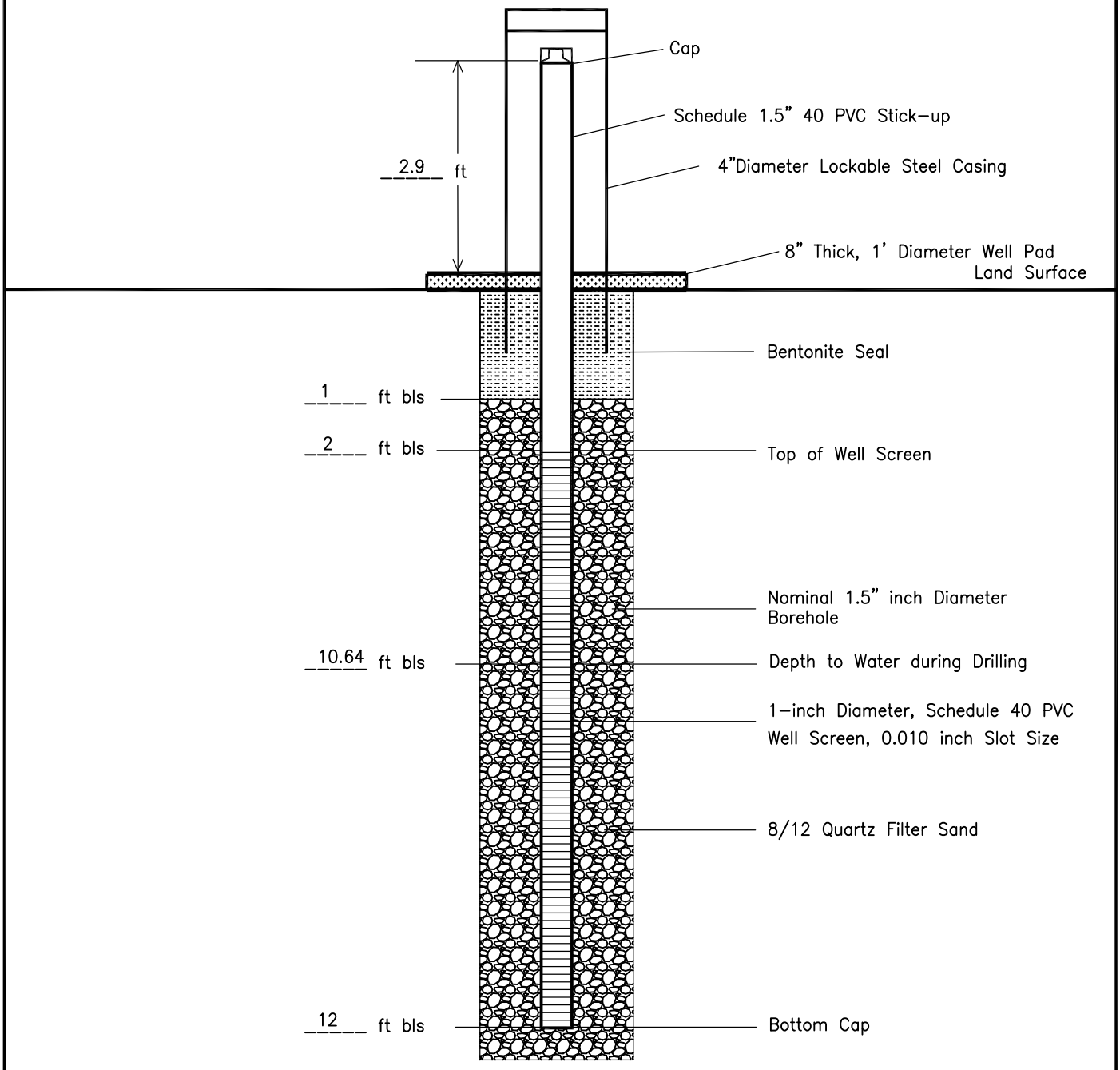
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: JARALOSA	**Well ID No.** JAR–MW–2	**TOP OF CASING ELEVATION:** 4097.23
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 4094.32
INSTALLATION DATE: 6/1/2013		**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3625804.542, 285970.943



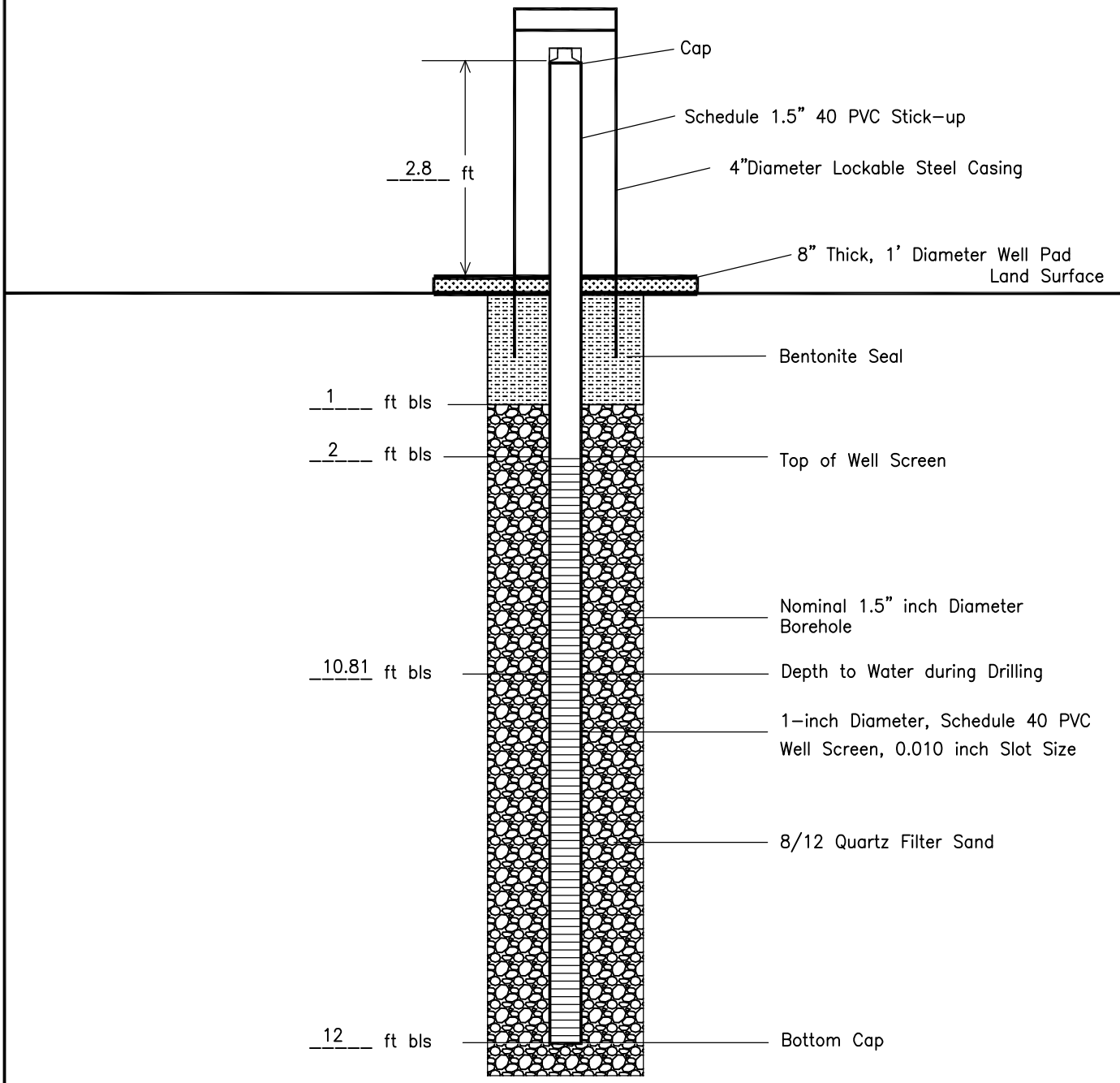
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: JARALOSA	**Well ID No.** JAR–MW–3	**TOP OF CASING ELEVATION:** 4095.86
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 4093.04
INSTALLATION DATE: 6/1/2013		**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3625647.653, 286062.69



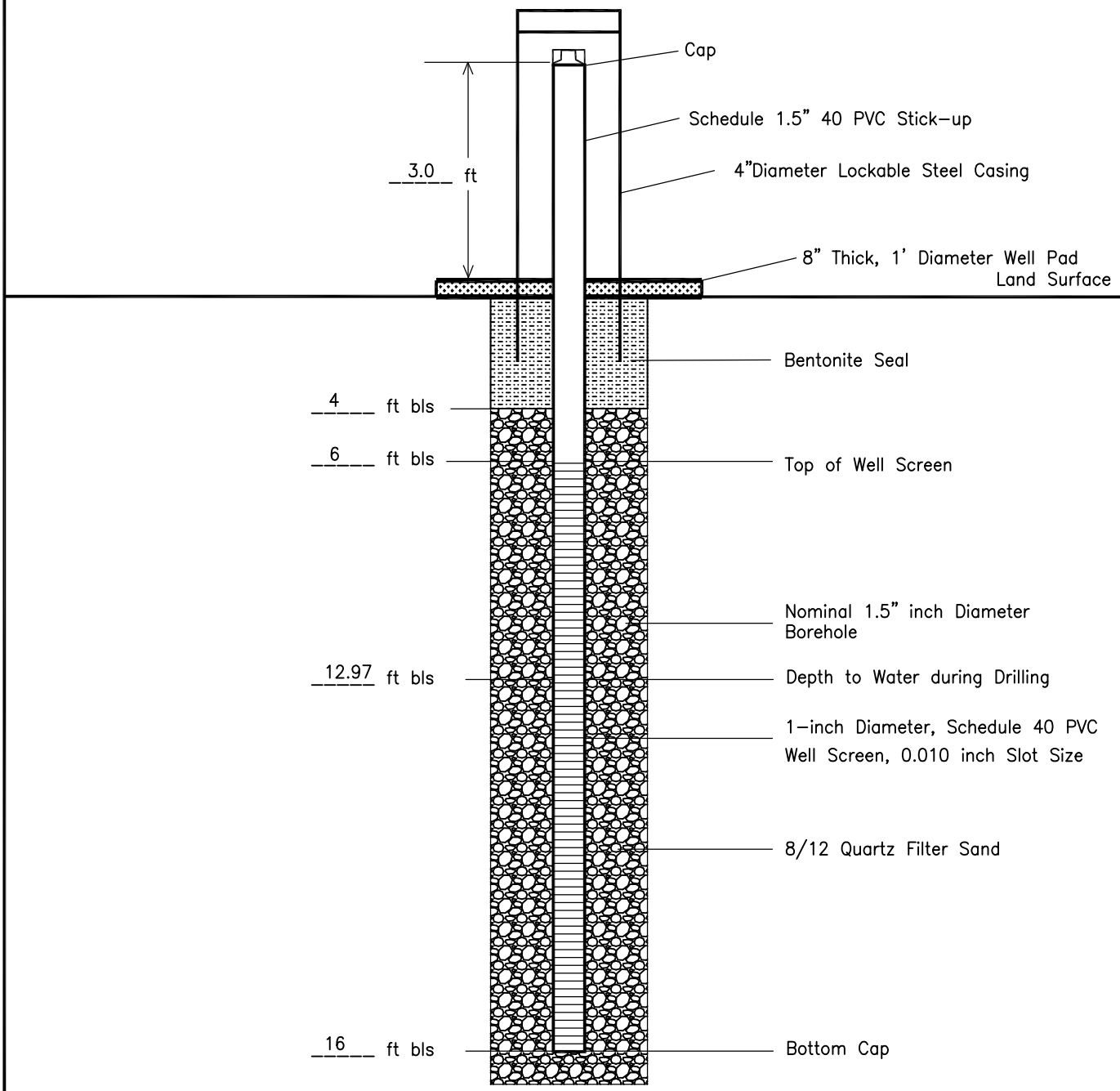
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: LEASBURG EXTENSION LATERAL	***Well ID No.***	***TOP OF CASING ELEVATION:*** 3903.13
LOCATION: DONA ANA COUNTY, NEW MEXICO		***SURFACE ELEVATION:*** 3900.12
INSTALLATION DATE: 6/3/2013	LEL–MW–1	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3579365.923, 327359.262



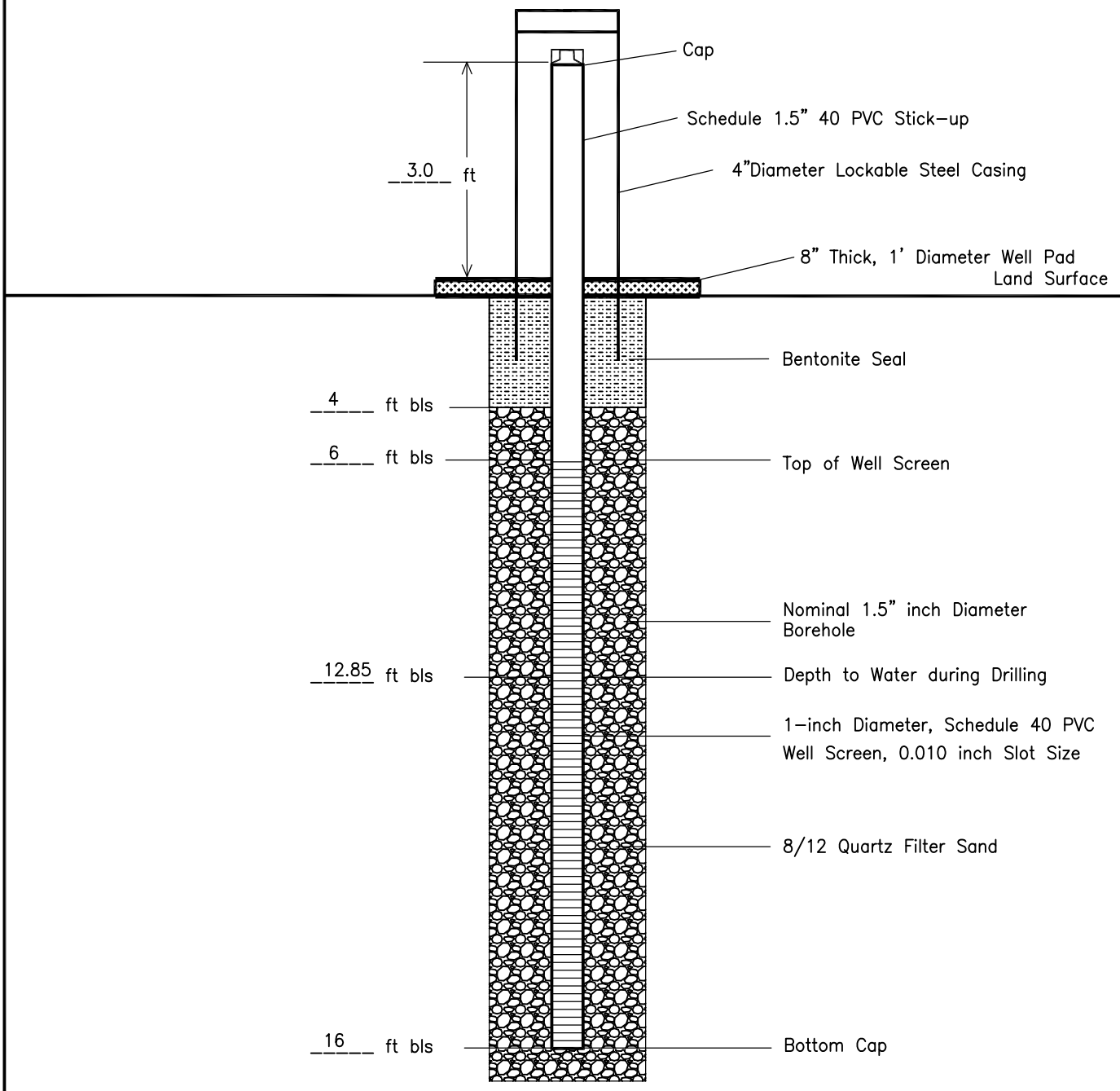
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: LEASBURG EXTENSION LATERAL	**Well ID No.**	**TOP OF CASING ELEVATION:** 3903.35
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 3900.31
INSTALLATION DATE: 6/3/2013	LEL–MW–2	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3579286.098, 327353.563



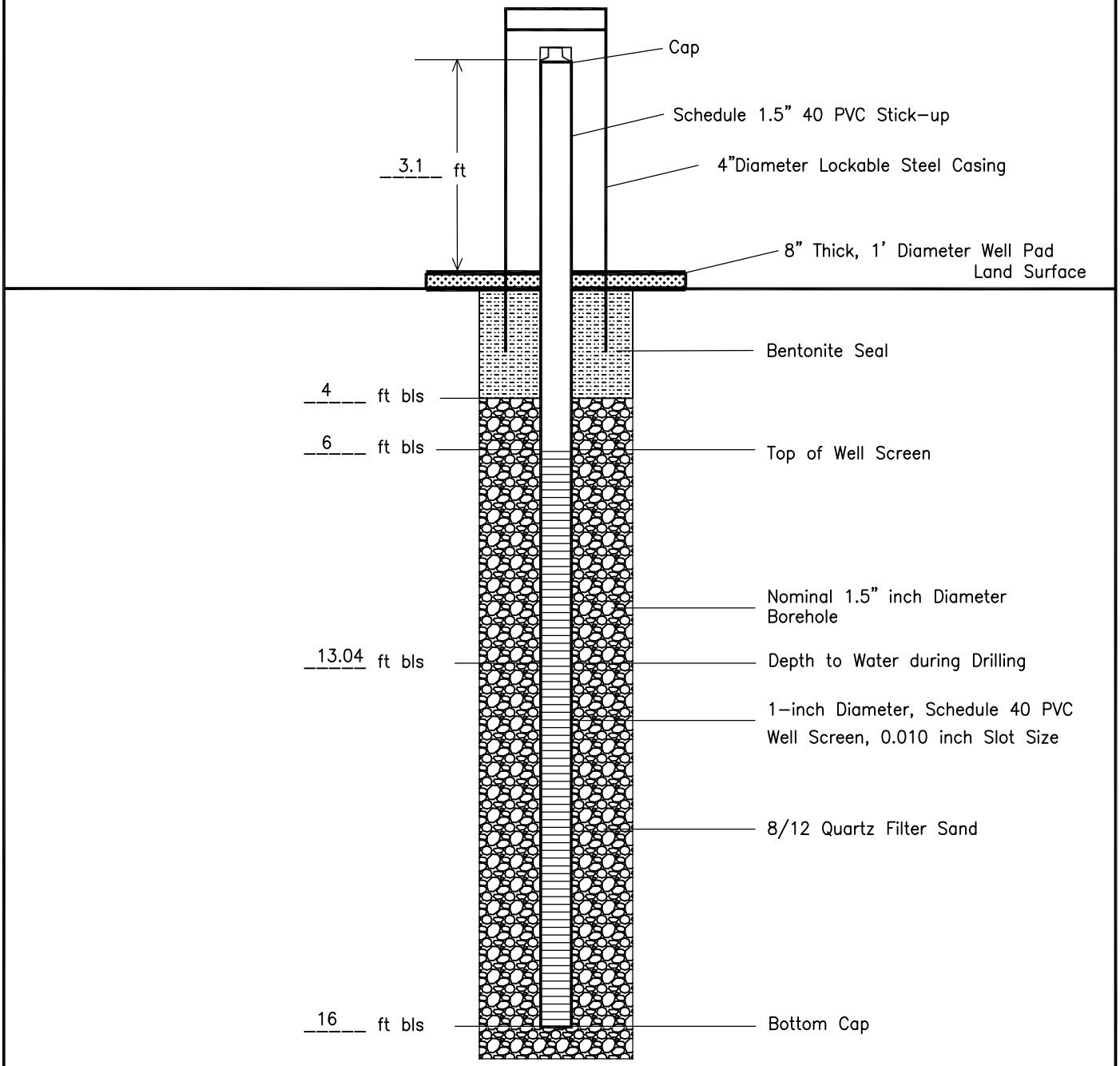
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: LEASBURG EXTENSION LATERAL	***Well ID No.***	***TOP OF CASING ELEVATION:*** 3902.42
LOCATION: DONA ANA COUNTY, NEW MEXICO		***SURFACE ELEVATION:*** 3899.31
INSTALLATION DATE: 7/2/2014	LEL–MW–3	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: GREGG MITCHELL		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3578940.790, 327454.700



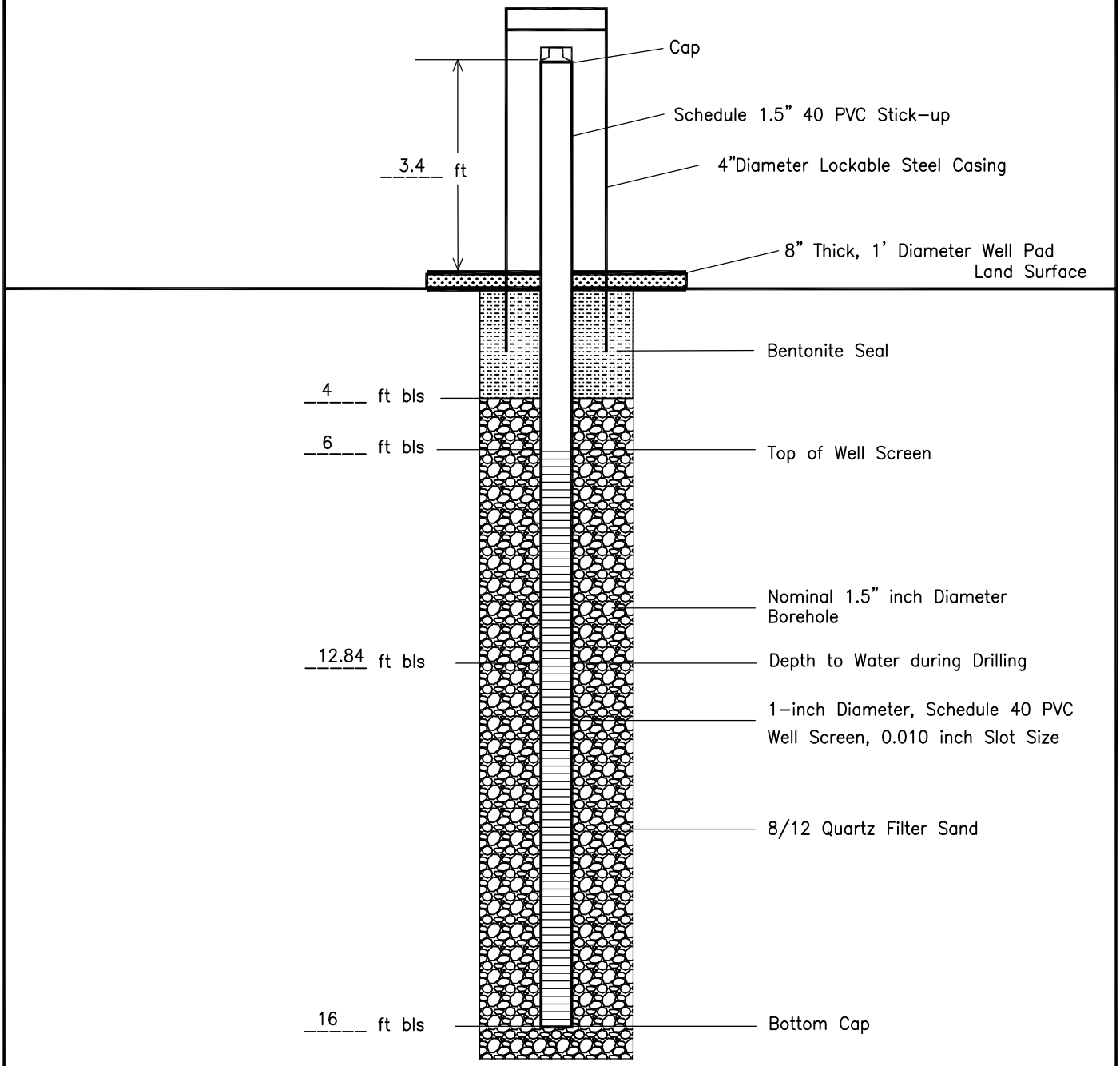
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: MESILLA EAST	**Well ID No.**	**TOP OF CASING ELEVATION:** 3881.24
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 3877.88
INSTALLATION DATE: 6/3/2013	ME–MW–1	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3569587.616, 328825.936



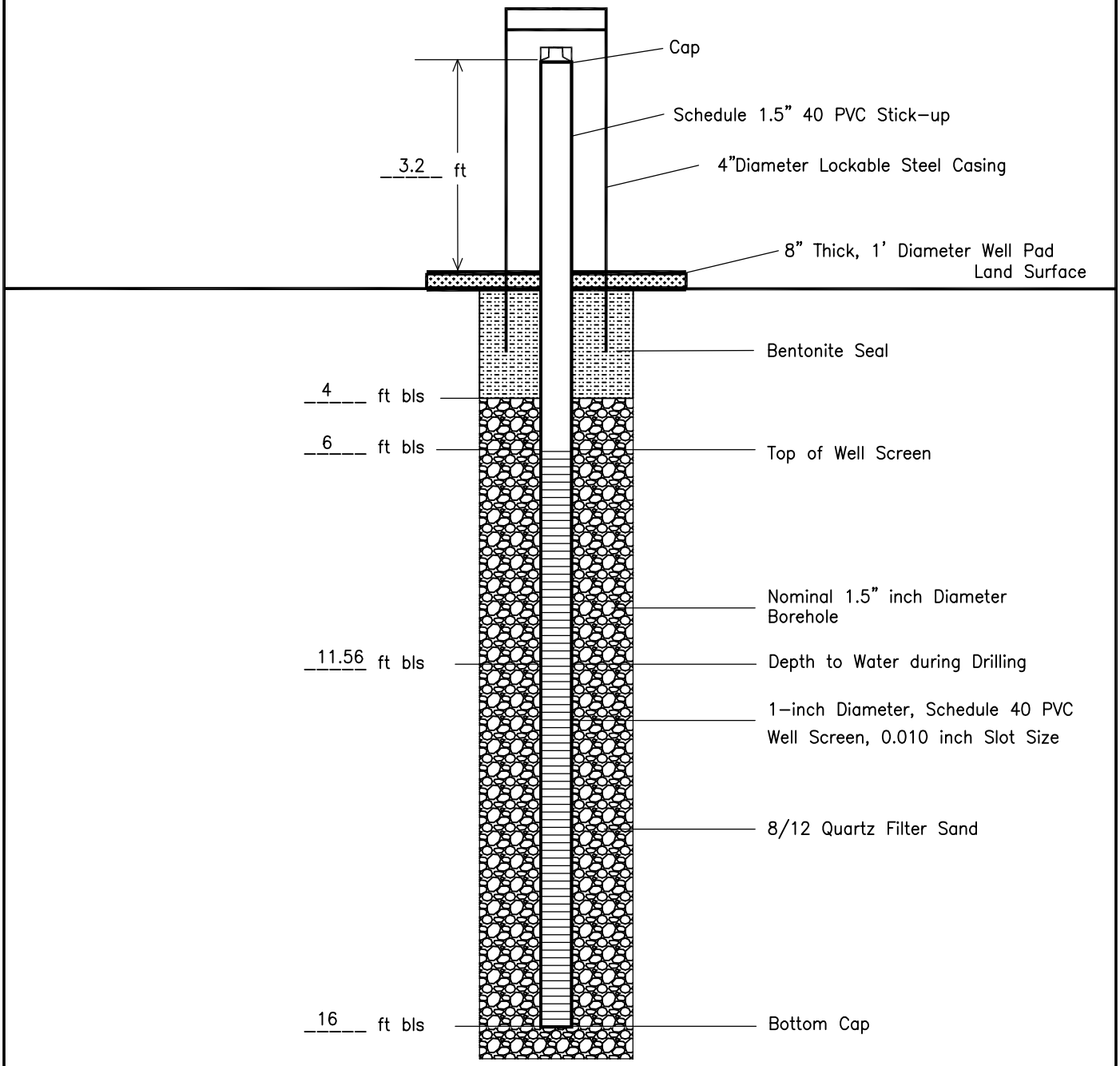
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: MESILLA EAST	***Well ID No.***	***TOP OF CASING ELEVATION:*** 3882.63
LOCATION: DONA ANA COUNTY, NEW MEXICO		***SURFACE ELEVATION:*** 3879.42
INSTALLATION DATE: 6/3/2013	ME–MW–2	***RIG TYPE:*** AMS 9100
ON–SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3570542.636, 328663.63



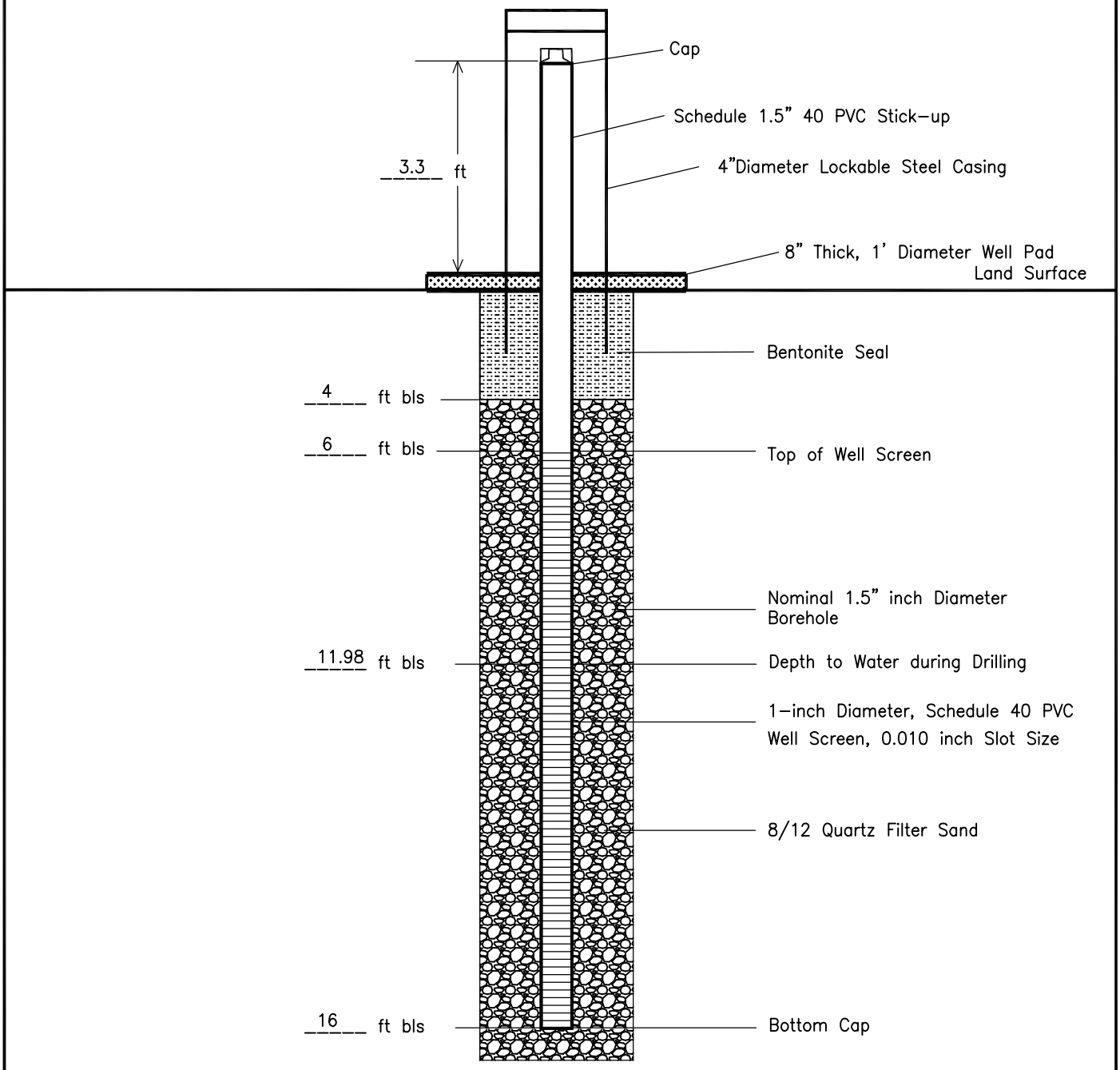
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: MESILLA EAST	**Well ID No.**	**TOP OF CASING ELEVATION:** 3878.28
LOCATION: DONA ANA COUNTY, NEW MEXICO	ME–MW–3	**SURFACE ELEVATION:** 3874.97
INSTALLATION DATE: 6/3/2013		**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3568974.307, 329035.64



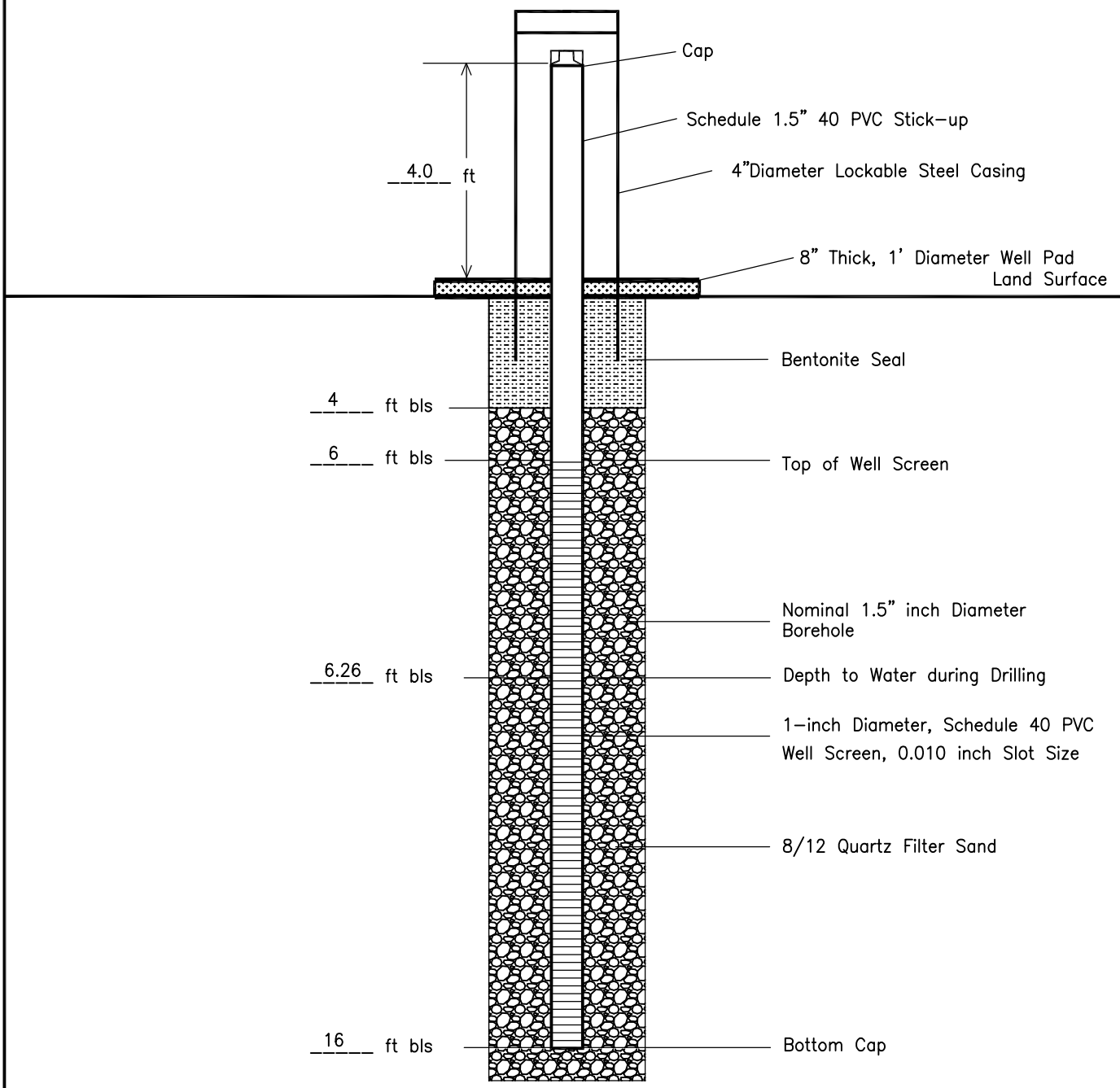
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: RINCON SIPHON	**Well ID No.**	**TOP OF CASING ELEVATION:** 4052.00
LOCATION: DONA ANA COUNTY, NEW MEXICO	RS–MW–1	**SURFACE ELEVATION:** 4048.02
INSTALLATION DATE: 6/24/2013		**RIG TYPE:** AMS 9100
ON–SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3617358.926, 300271.354



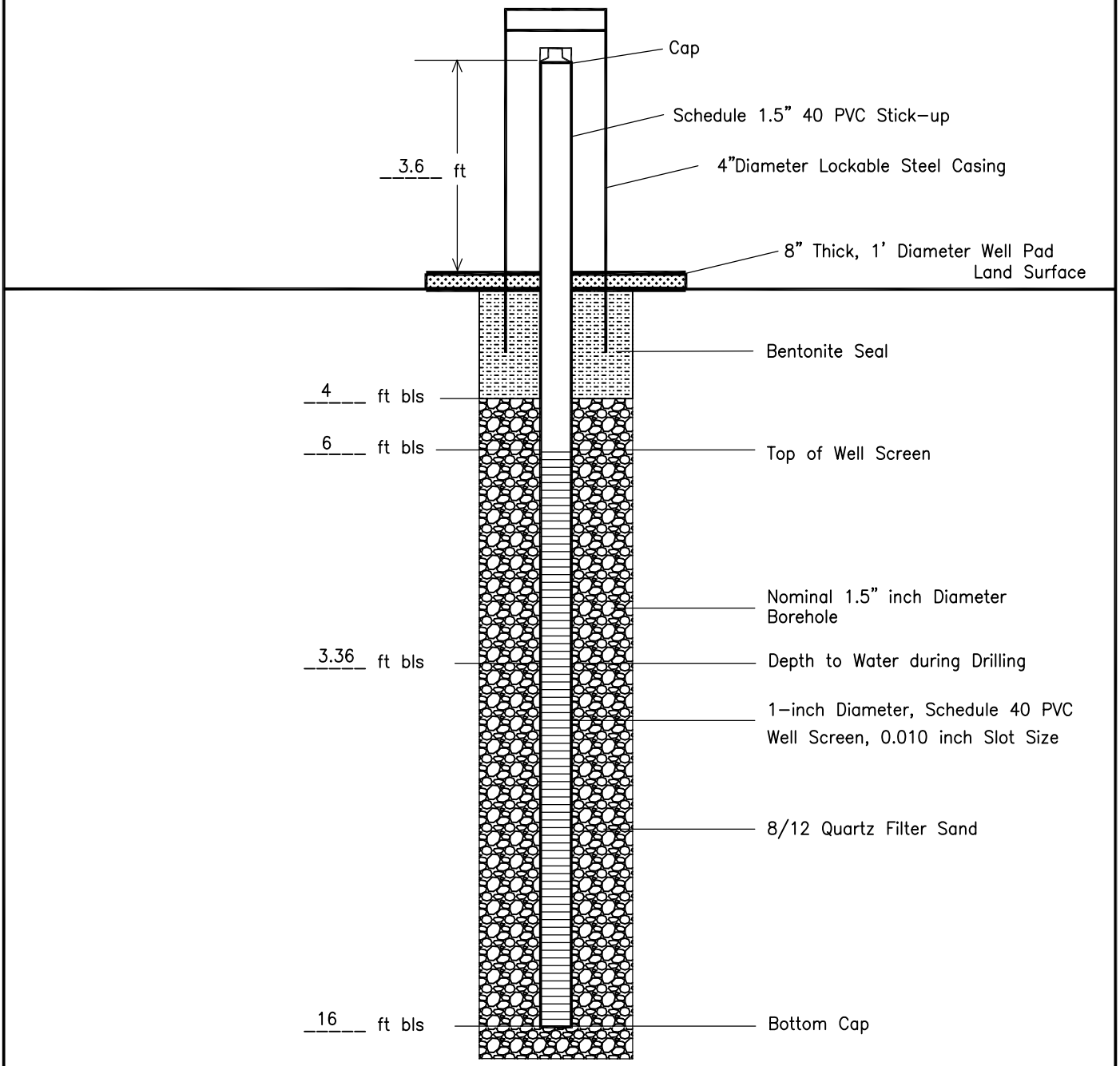
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: RINCON SIPHON	***Well ID No.***	***TOP OF CASING ELEVATION:*** 4055.44
LOCATION: DONA ANA COUNTY, NEW MEXICO		***SURFACE ELEVATION:*** 4051.89
INSTALLATION DATE: 6/24/2013	RS–MW–2	***RIG TYPE:*** AMS 9100
ON–SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3617269.54, 300470.172



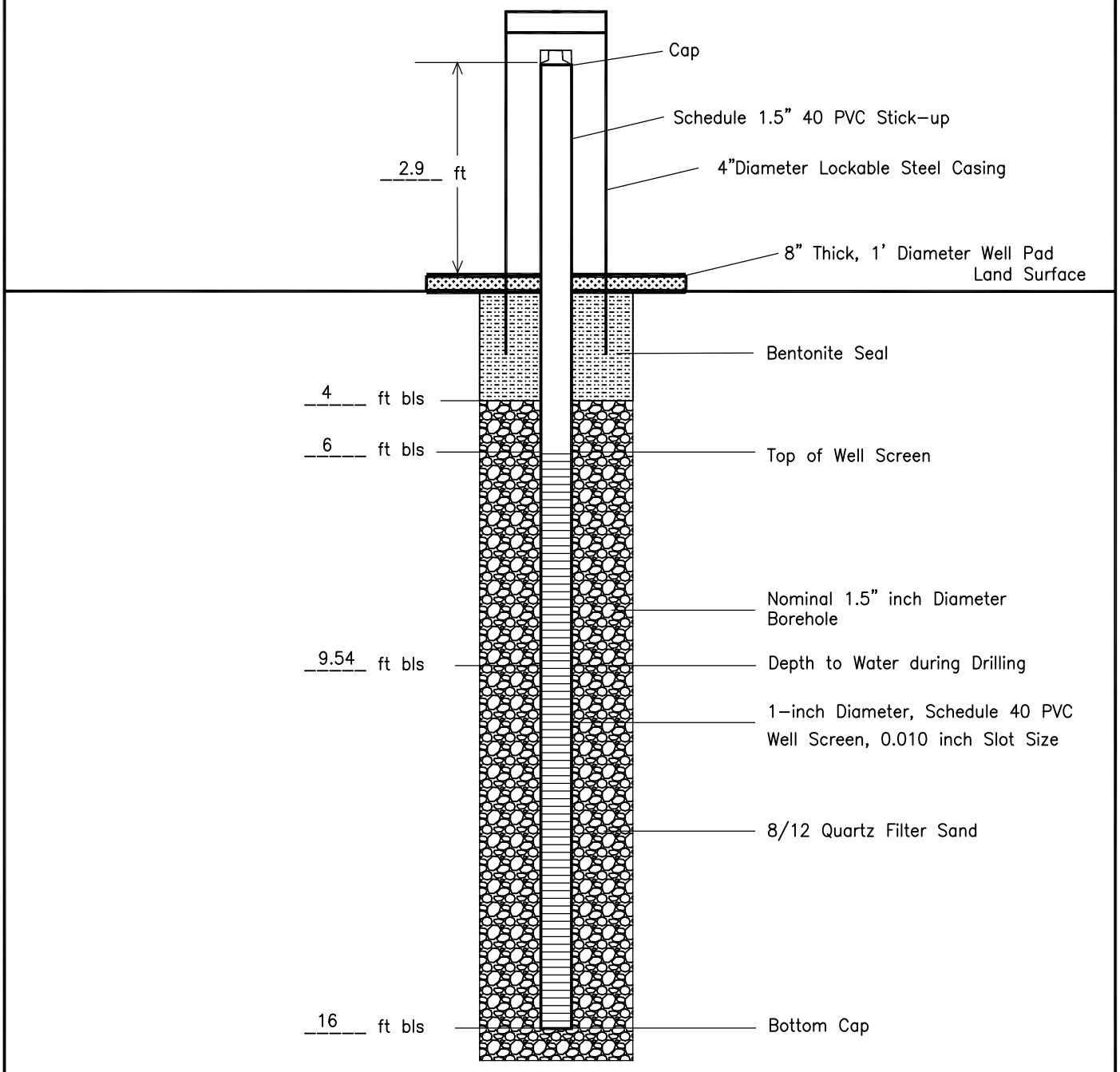
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: RINCON SIPHON	**Well ID No.**	**TOP OF CASING ELEVATION:** 4048.08
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 4045.13
INSTALLATION DATE: 5/31/2013	RS–MW–4	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3617218.341, 300188.098



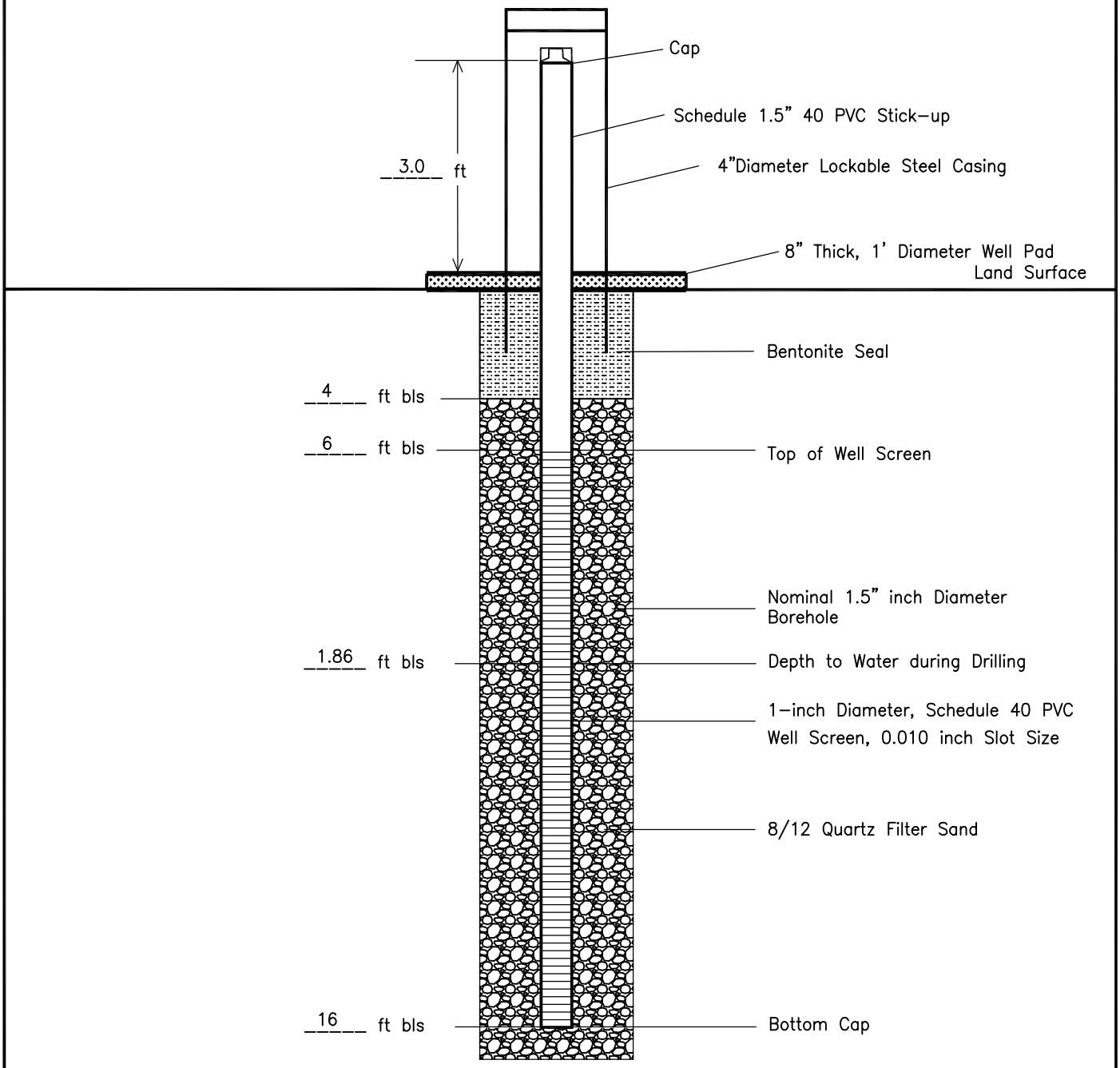
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: RINCON SIPHON	***Well ID No.***	***TOP OF CASING ELEVATION:*** 4046.11
LOCATION: DONA ANA COUNTY, NEW MEXICO		***SURFACE ELEVATION:*** 4043.14
INSTALLATION DATE: 6/24/2013	RS–MW–5	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3616879,681 300901.855



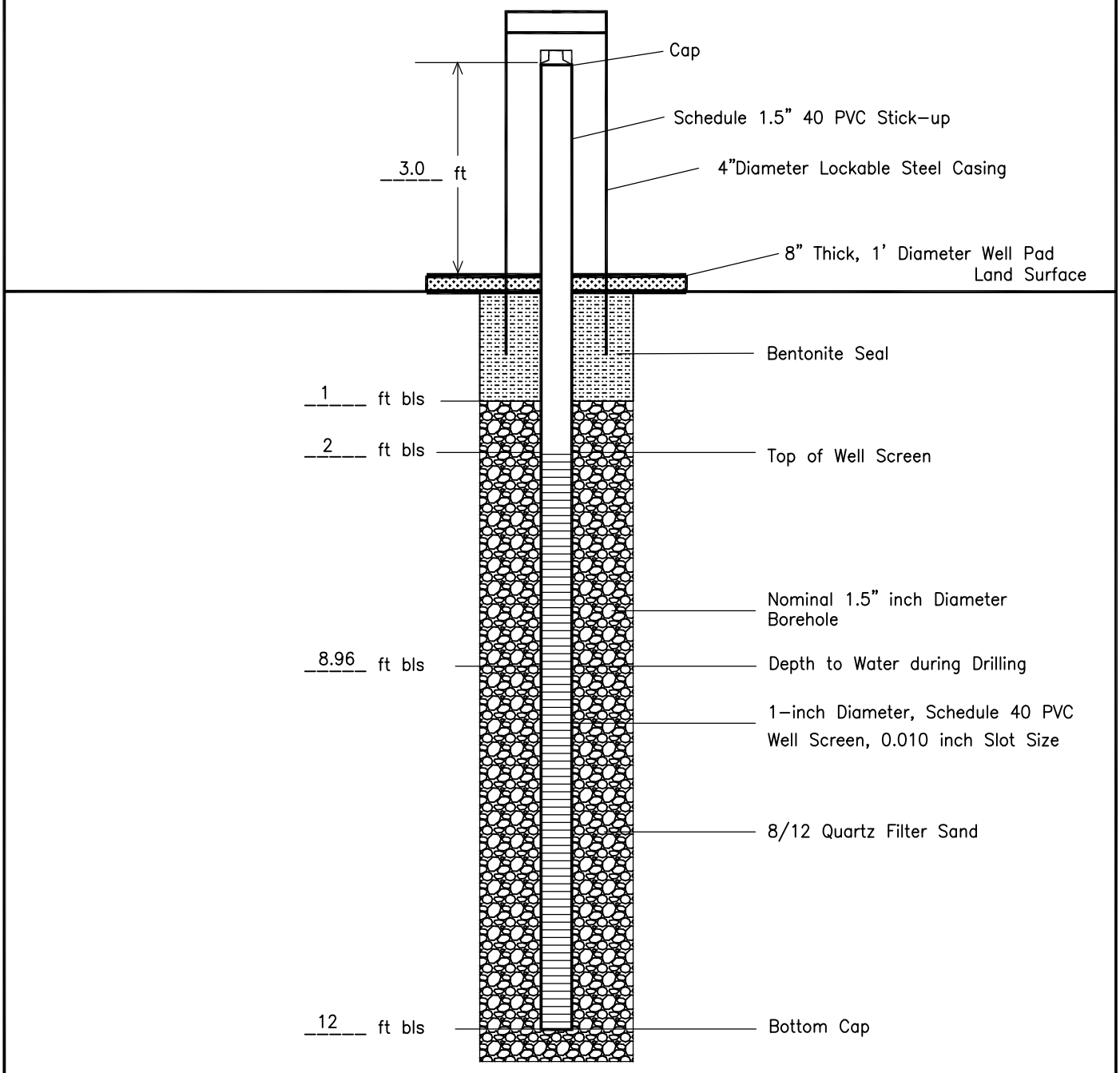
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: RINCON SIPHON	**Well ID No.**	**TOP OF CASING ELEVATION:** 4051.99
LOCATION: DONA ANA COUNTY, NEW MEXICO	RS–MW–6	**SURFACE ELEVATION:** 4048.94
INSTALLATION DATE: 6/31/2013		**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3617727.901, 298600.186



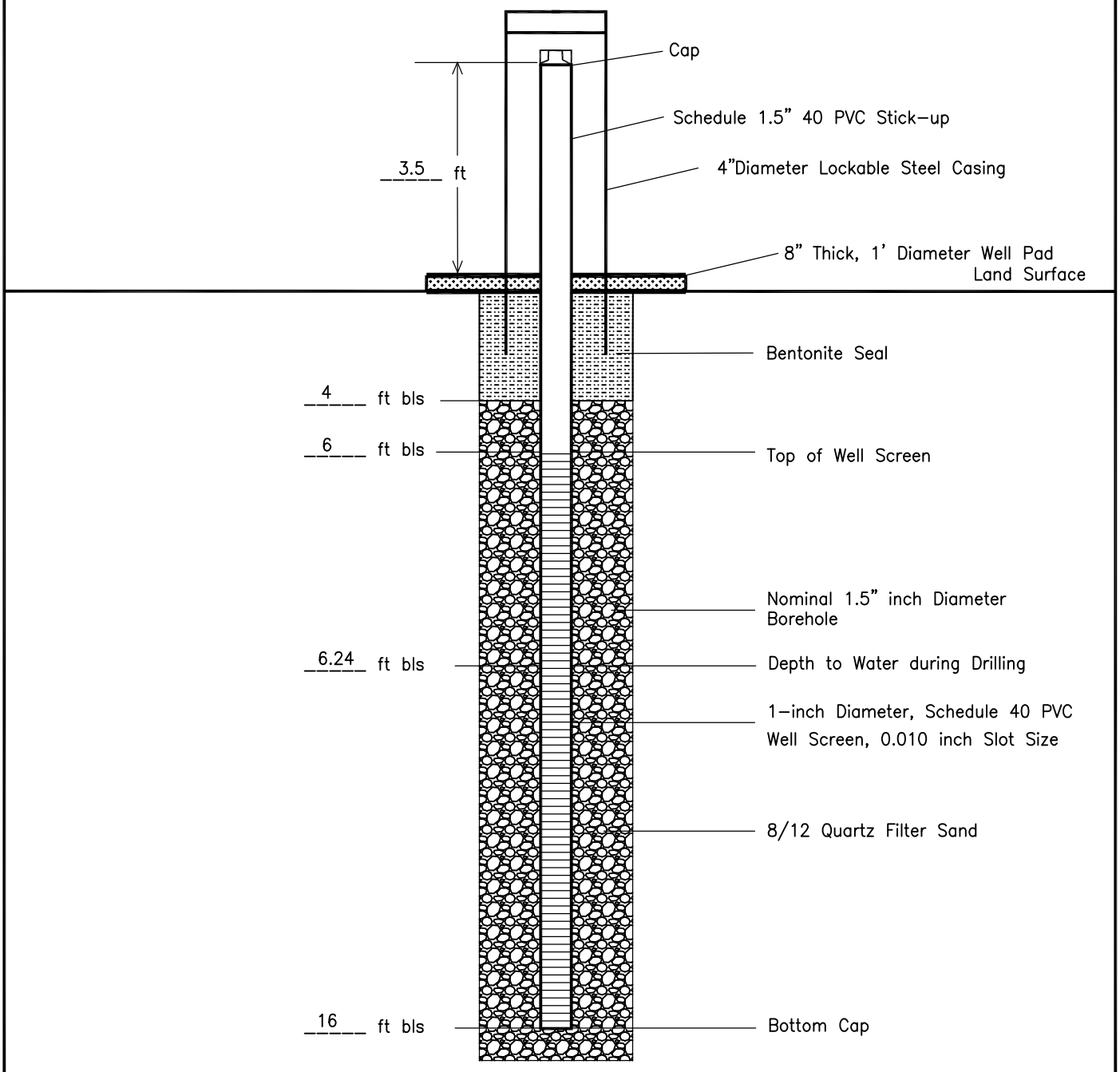
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: RINCON SIPHON	**Well ID No.**	**TOP OF CASING ELEVATION:** 4054.38
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 4050.87
INSTALLATION DATE: 6/24/2013	RS–MW–7	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3617971.857 298995.455



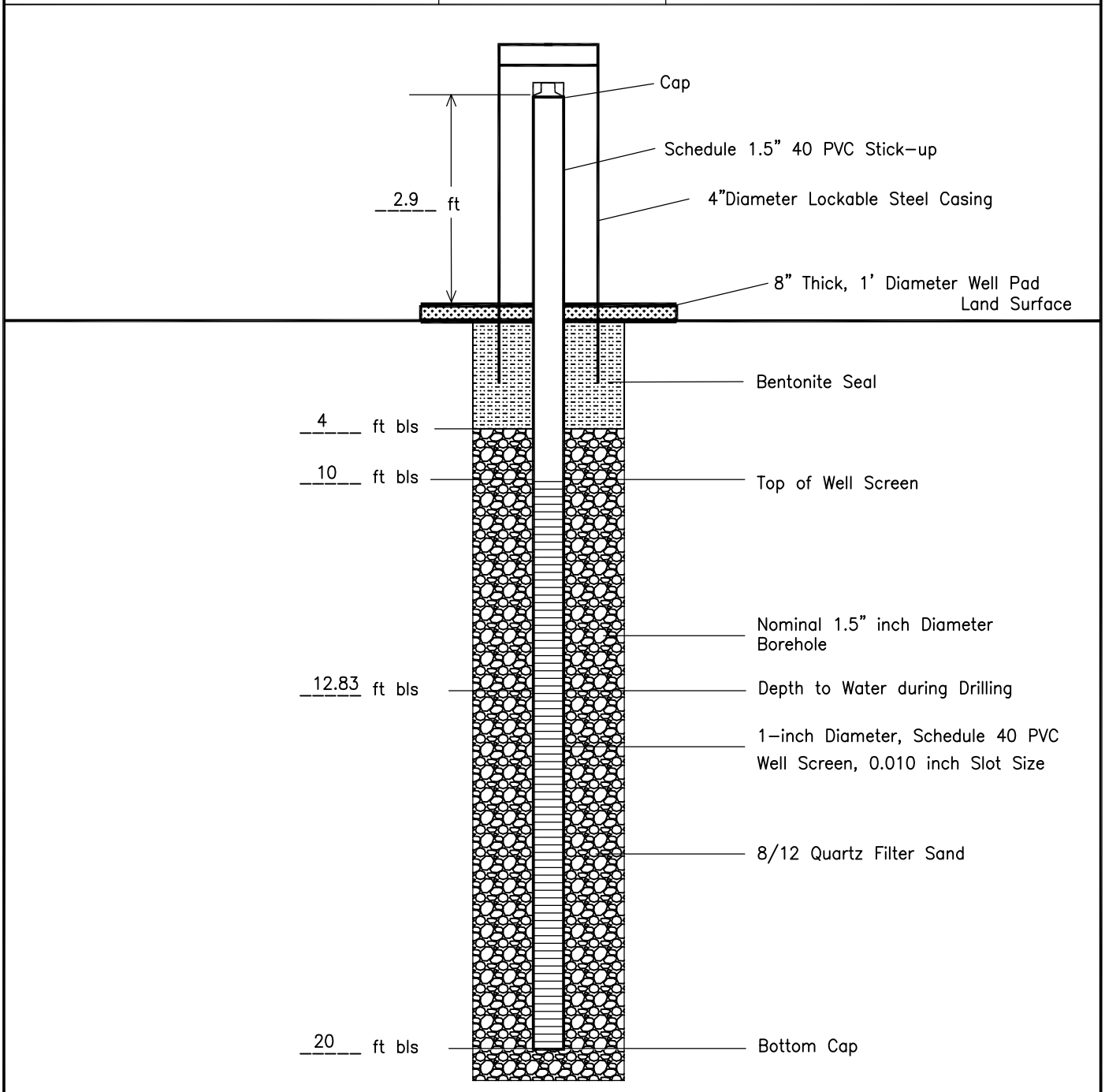
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: SELDON POINT BAR	**Well ID No.**	**TOP OF CASING ELEVATION:** 3982.45
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 3979.54
INSTALLATION DATE: 3/19/2014	SPB–MW–1	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3599583.313,315069.847



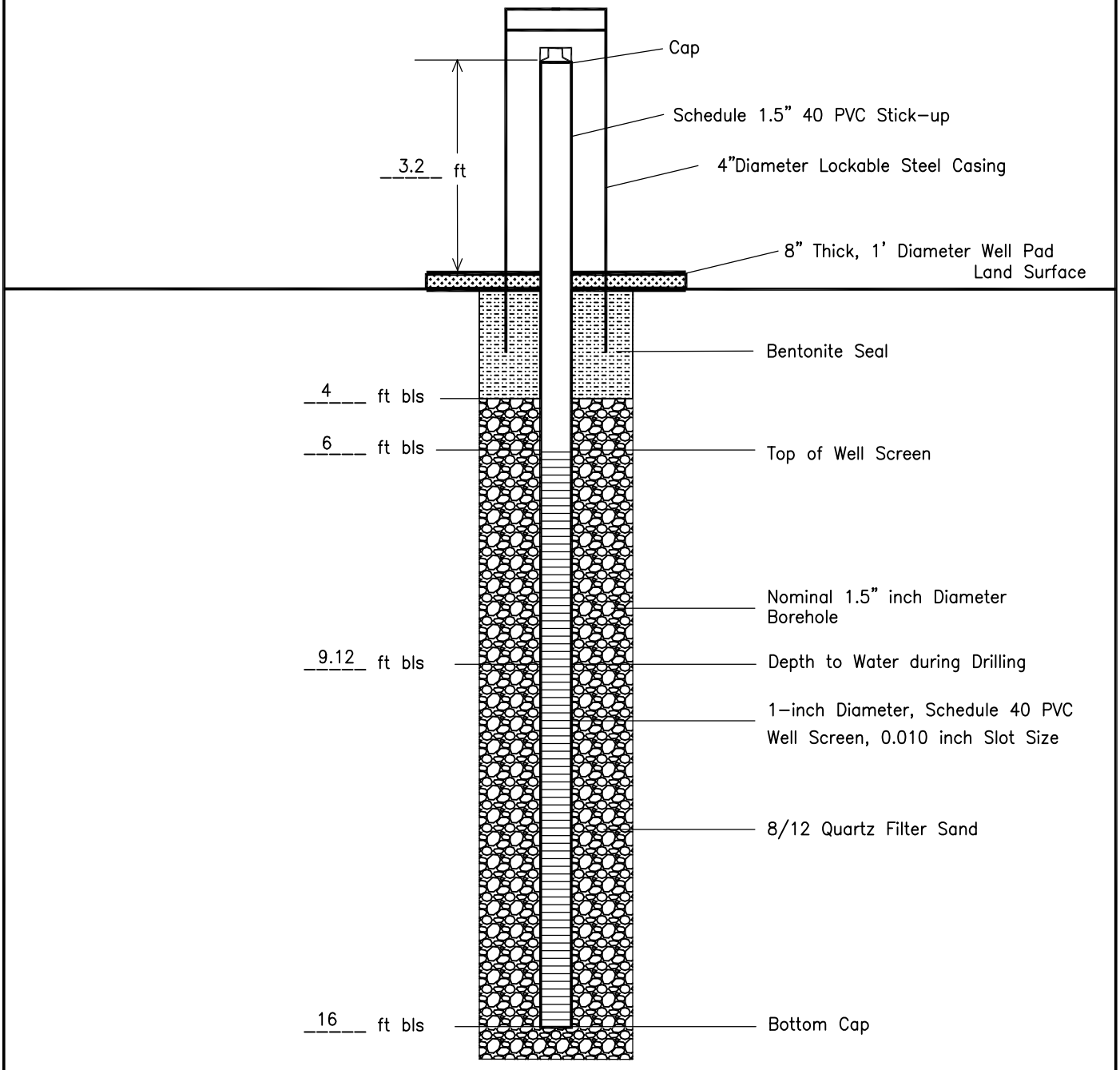
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: SELDON POINT BAR	**Well ID No.**	**TOP OF CASING ELEVATION:** 3983.07
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 3979.91
INSTALLATION DATE: 3/19/2014	SPB–MW–2	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3599486.989, 314931.232



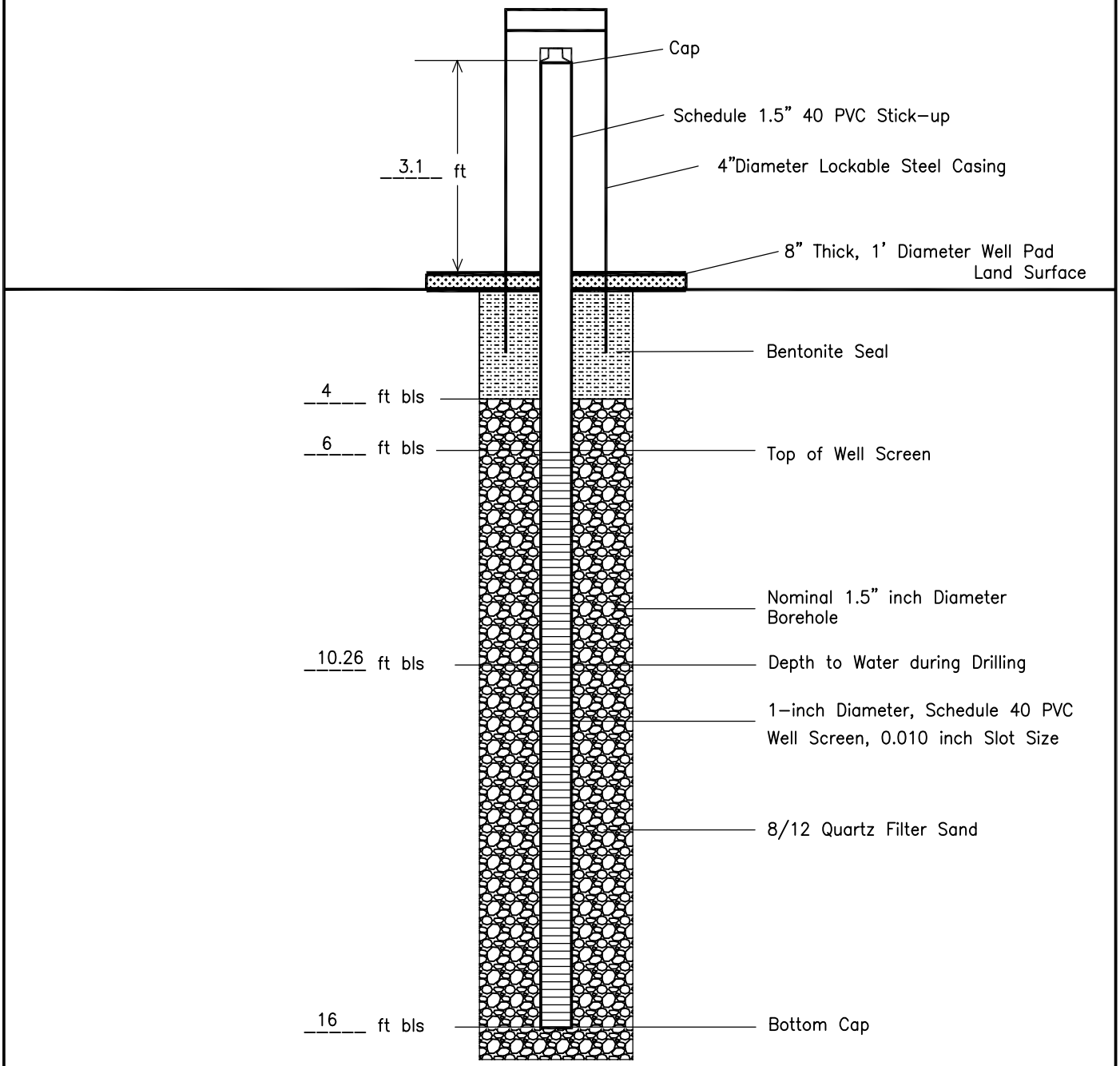
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: SELDON POINT BAR	**Well ID No.**	**TOP OF CASING ELEVATION:** 3984.52
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 3981.47
INSTALLATION DATE: 3/19/2014	SPB–MW–3	**RIG TYPE:** AMS 9100
ON–SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3599449.659, 314742.094



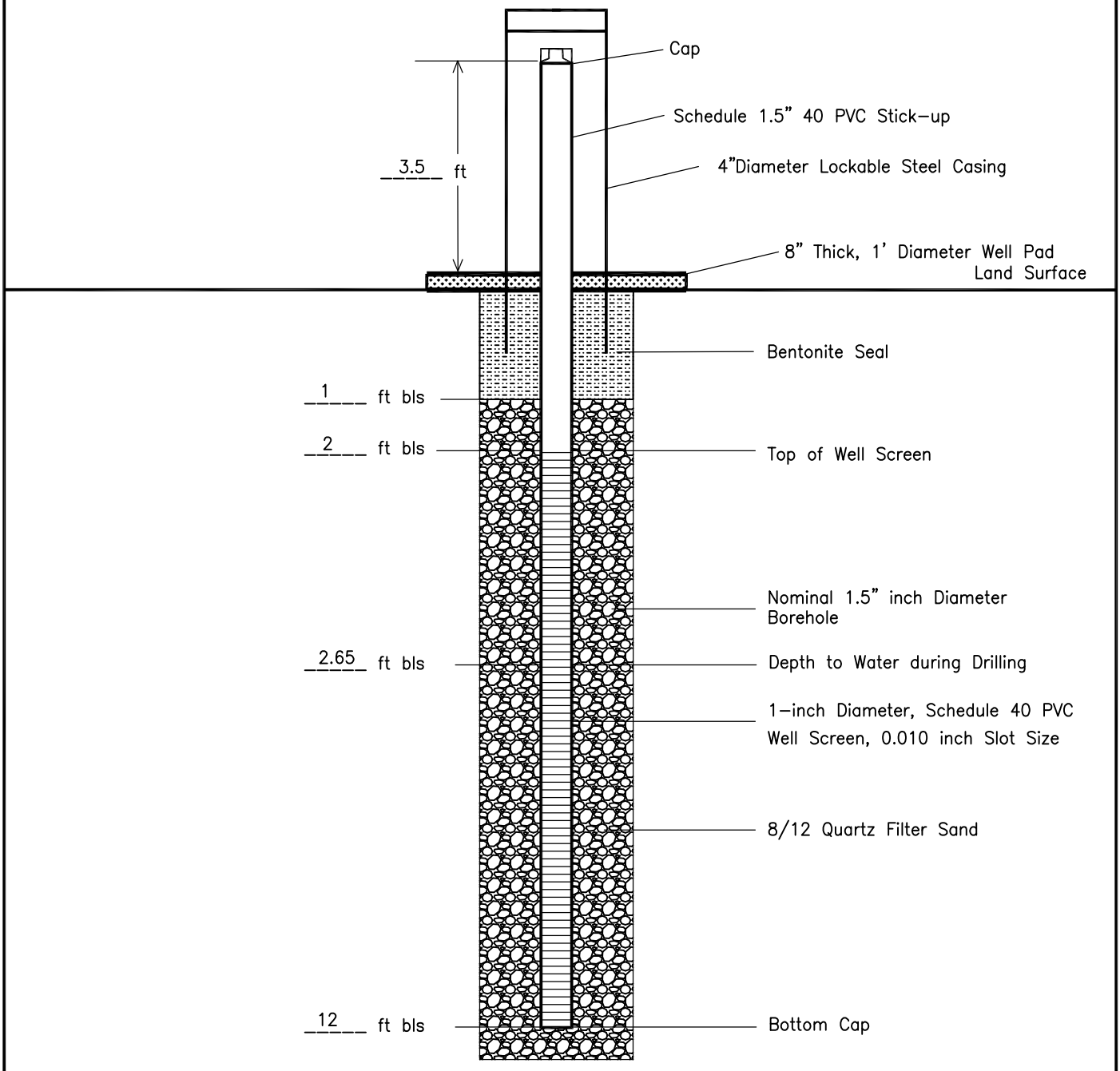
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: SUNLAND PARK	**Well ID No.**	**TOP OF CASING ELEVATION:** 3741.37
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 3737.91
INSTALLATION DATE: 6/26/2013	SP–MW–1	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3520045.962 350245.369



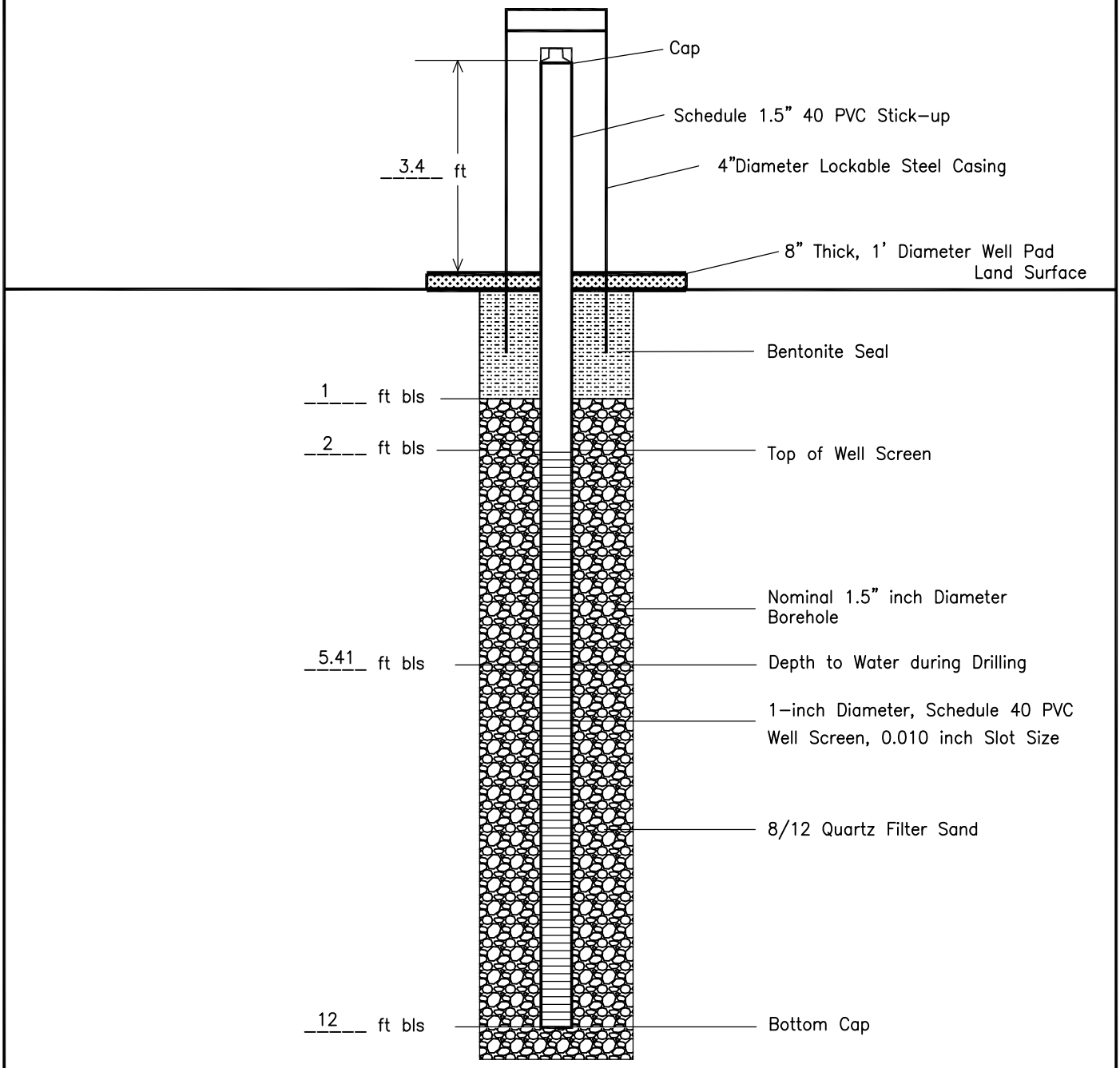
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: SUNLAND PARK	**Well ID No.**	**TOP OF CASING ELEVATION:** 3740.51
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 3737.08
INSTALLATION DATE: 6/25/2013	SP–MW–2	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3519632.106 350766.969



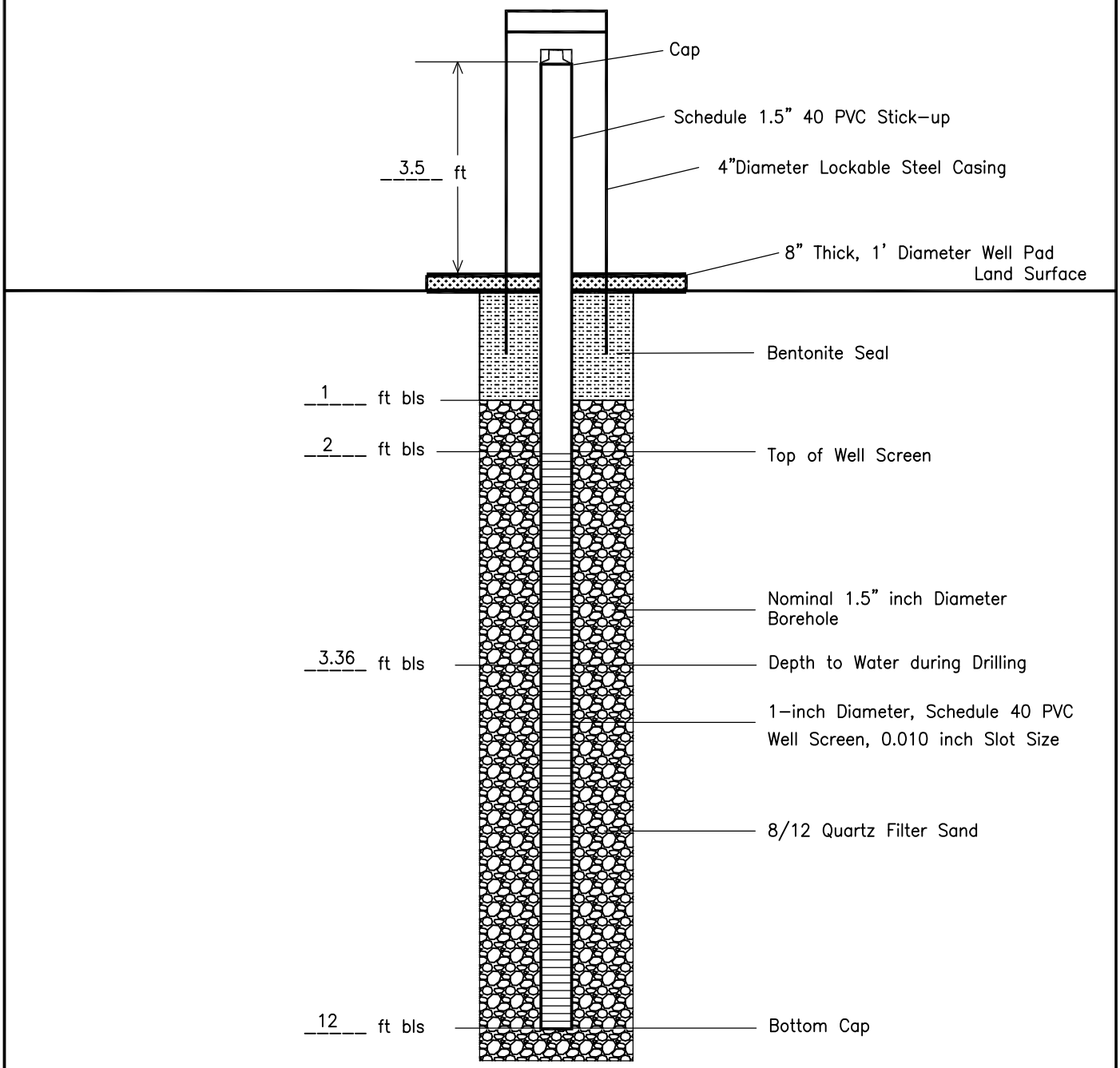
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: SUNLAND PARK	**Well ID No.** SP–MW–3	**TOP OF CASING ELEVATION:** 3740.35
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 3736.85
INSTALLATION DATE: 6/26/2013		**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3519737.688 350559.415



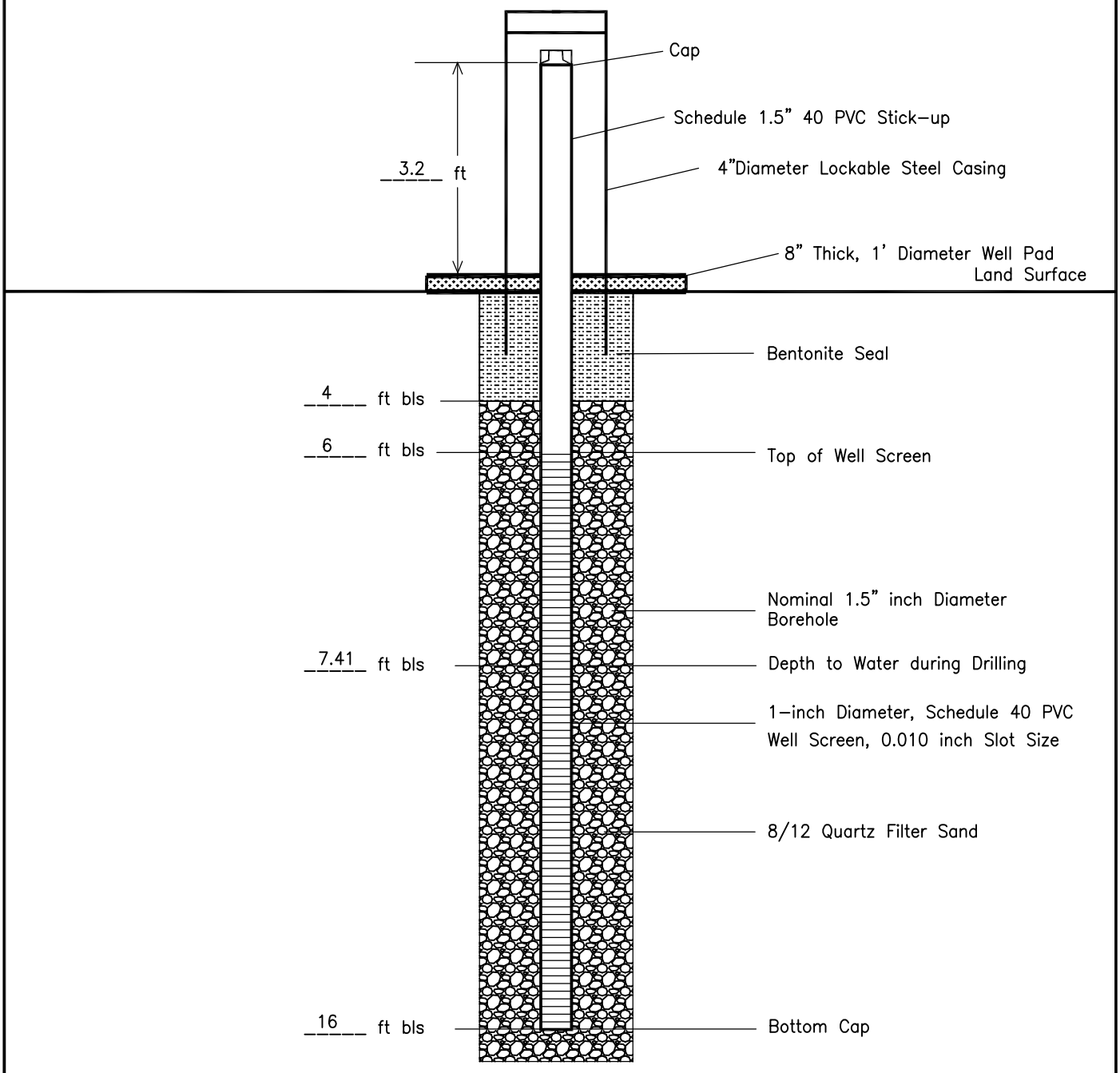
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: TRUJILLO	***Well ID No.***	***TOP OF CASING ELEVATION:*** 4130.35
LOCATION: SIERRA COUNTY, NEW MEXICO		***SURFACE ELEVATION:*** 4127.16
INSTALLATION DATE: 6/1/2013	TRU–MW–1	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3635904.691 284967.189



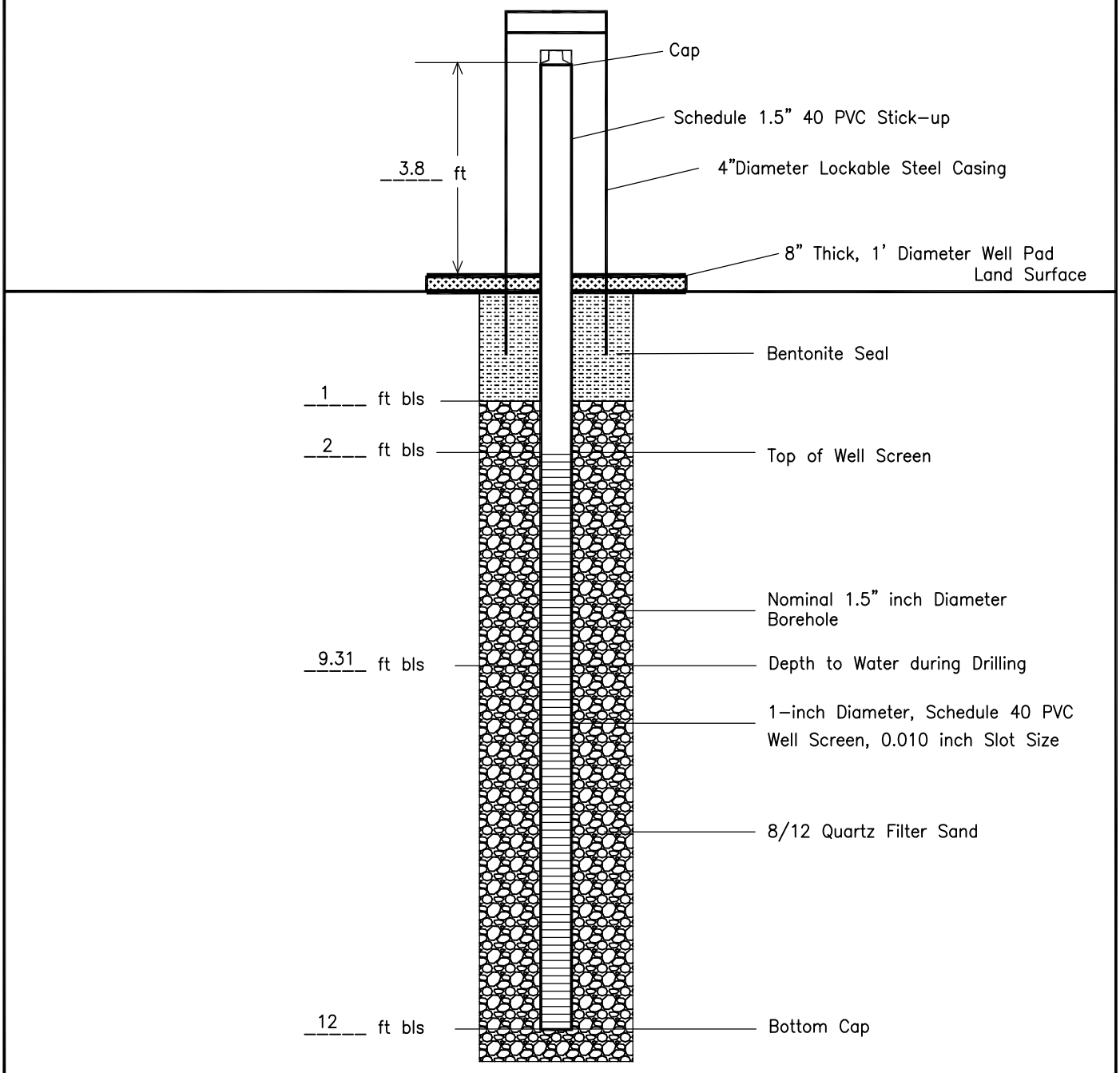
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: TRUJILLO	***Well ID No.***	***TOP OF CASING ELEVATION:*** 4132.71
LOCATION: SIERRA COUNTY, NEW MEXICO		***SURFACE ELEVATION:*** 4128.92
INSTALLATION DATE: 6/1/2013	TRU–MW–2	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3636204.004 284938.187



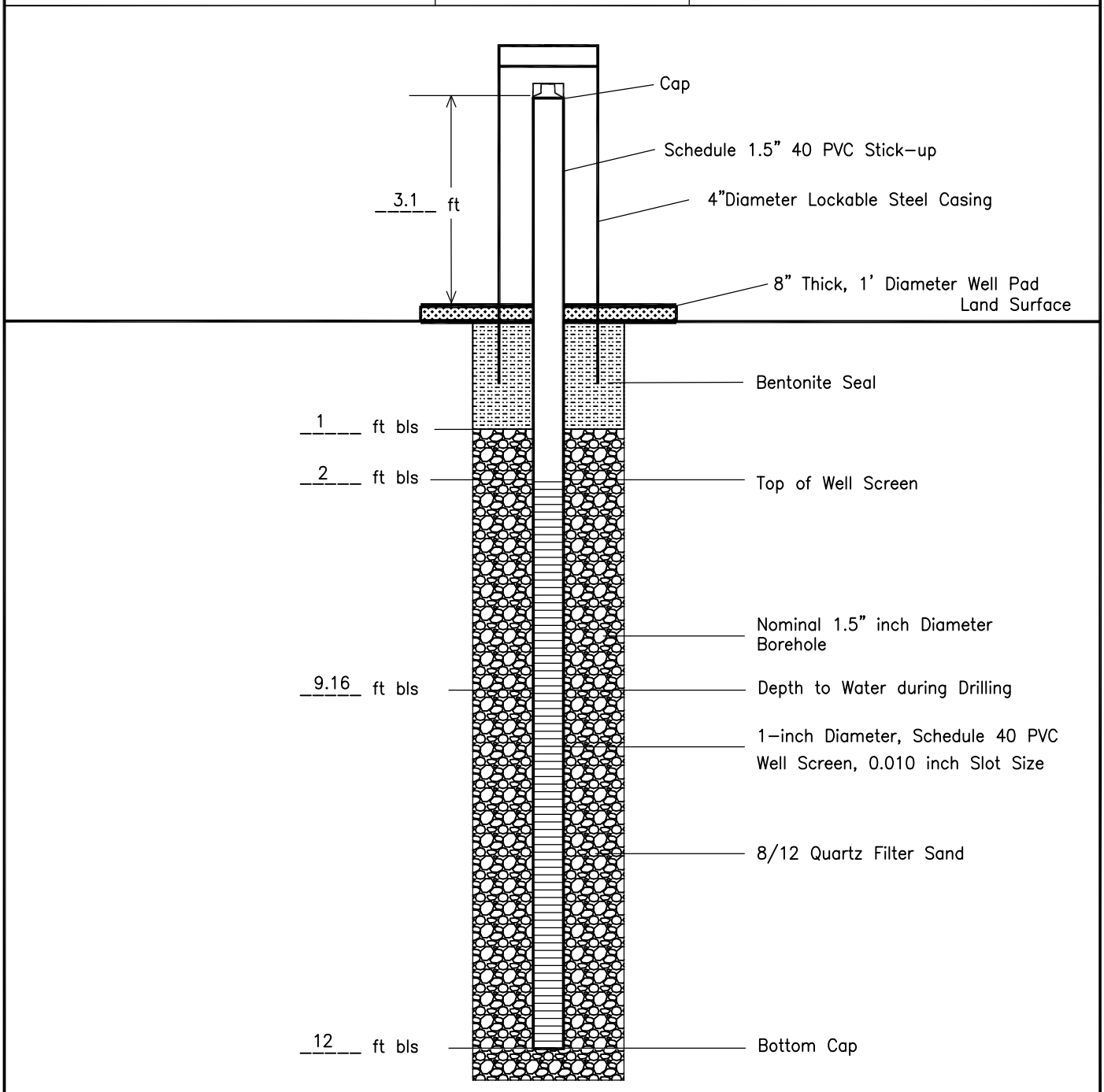
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: TRUJILLO	***Well ID No.***	***TOP OF CASING ELEVATION:*** 4131.22
LOCATION: SIERRA COUNTY, NEW MEXICO		***SURFACE ELEVATION:*** 4128.14
INSTALLATION DATE: 6/1/2013	TRU–MW–3	***RIG TYPE:*** AMS 9100
ON–SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3636026.326 284960.995



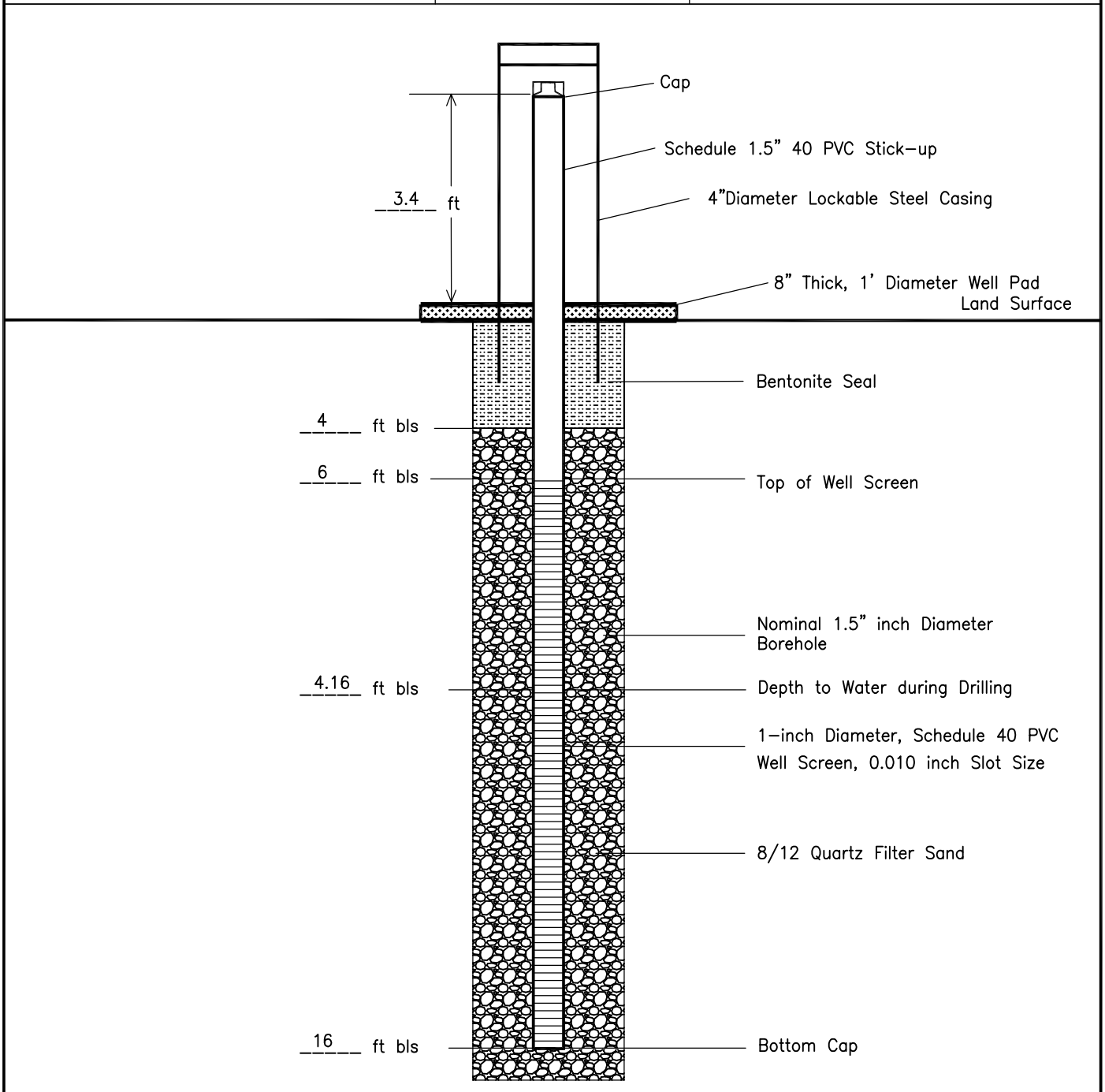
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: VALLEY CREEK	**Well ID No.**	**TOP OF CASING ELEVATION:** 3755.64
LOCATION: EL PASO COUNTY, TEXAS		**SURFACE ELEVATION:** 3752.26
INSTALLATION DATE: 7/2/2014	VC–MW–1	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: GREGG MITCHELL		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3526298.950 348165.840



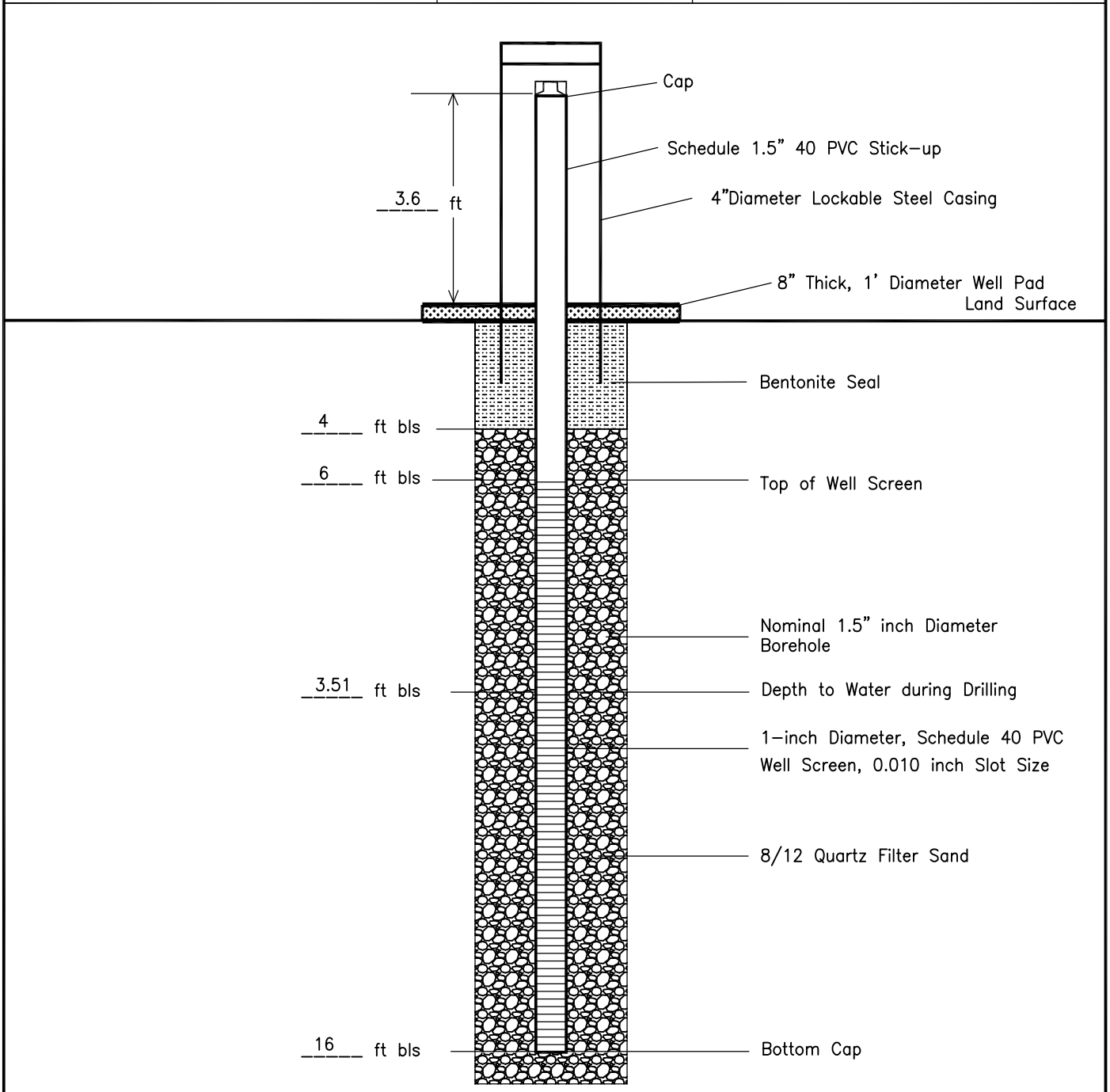
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: VALLEY CREEK	**Well ID No.**	**TOP OF CASING ELEVATION:** 3754.72
LOCATION: EL PASO COUNTY, TEXAS		**SURFACE ELEVATION:** 3751.16
INSTALLATION DATE: 7/2/2014	VC–MW–2	**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: GREGG MITCHELL		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3525732.900 348075.230



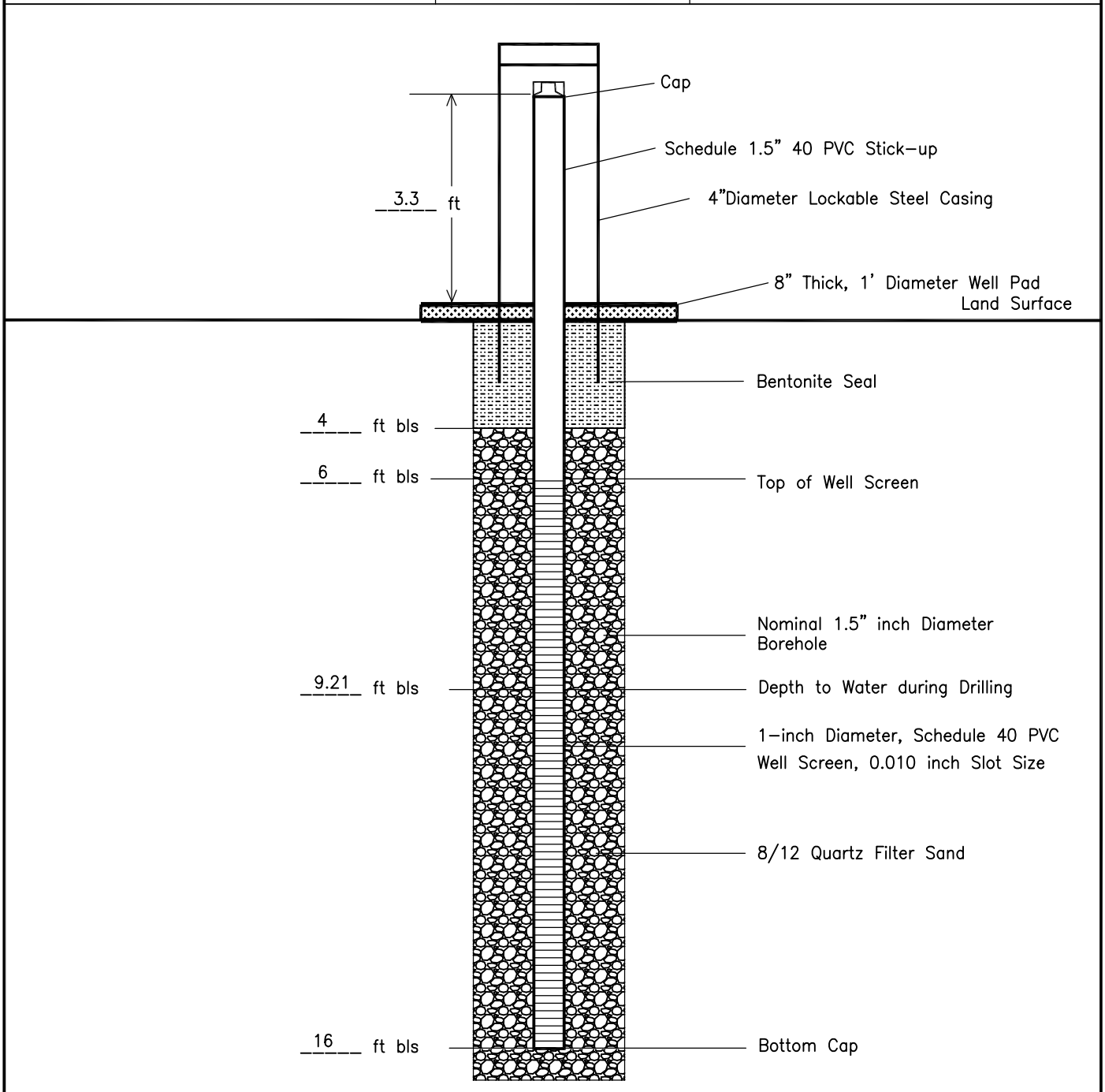
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: VINTON A	***Well ID No.***	***TOP OF CASING ELEVATION:*** 3780.70
LOCATION: EL PASO COUNTY, TEXAS		***SURFACE ELEVATION:*** 3777.44
INSTALLATION DATE: 6/7/2013	VA–MW–1	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3539048.463 347213.245



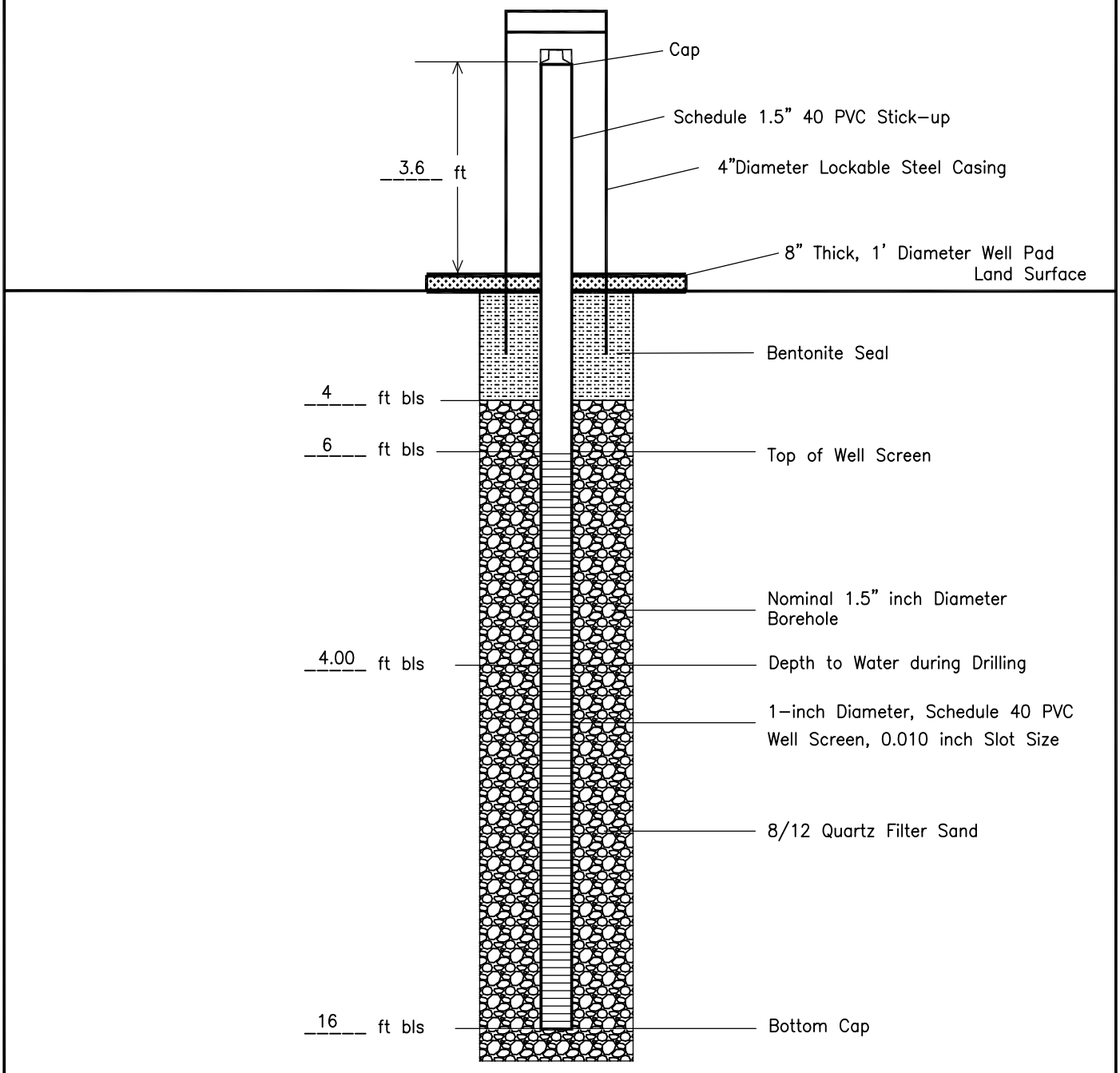
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: VINTON A	***Well ID No.***	***TOP OF CASING ELEVATION:*** 3780.41
LOCATION: EL PASO COUNTY, TEXAS		***SURFACE ELEVATION:*** 3776.76
INSTALLATION DATE: 6/25/2013	VA–MW–2	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3538860.002 347354.728



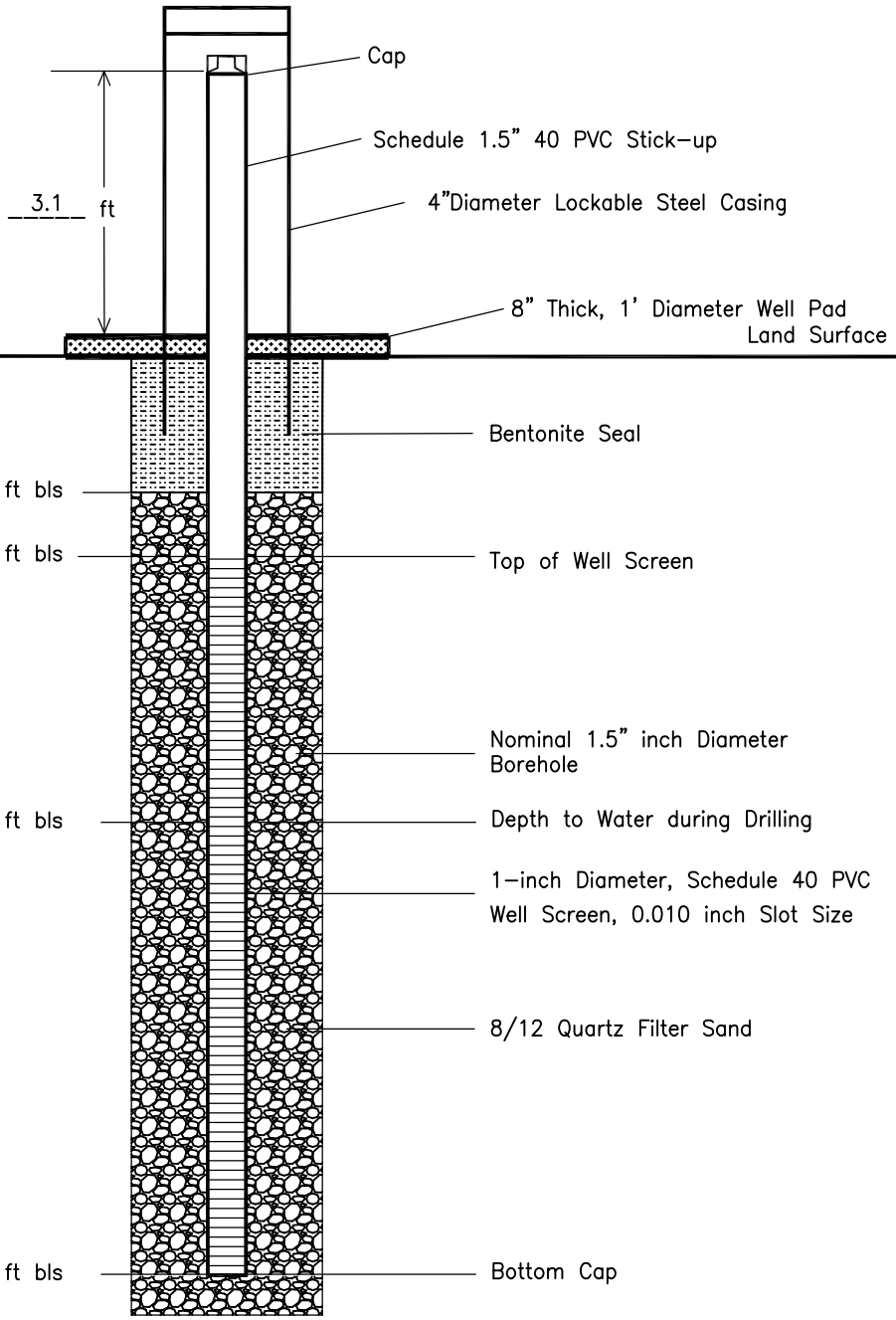
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: VINTON B	***Well ID No.***	***TOP OF CASING ELEVATION:*** 3777.12
LOCATION: EL PASO COUNTY, TEXAS		***SURFACE ELEVATION:*** 3774.04
INSTALLATION DATE: 6/7/2013	VB-MW-1	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3537905.709 348157.189



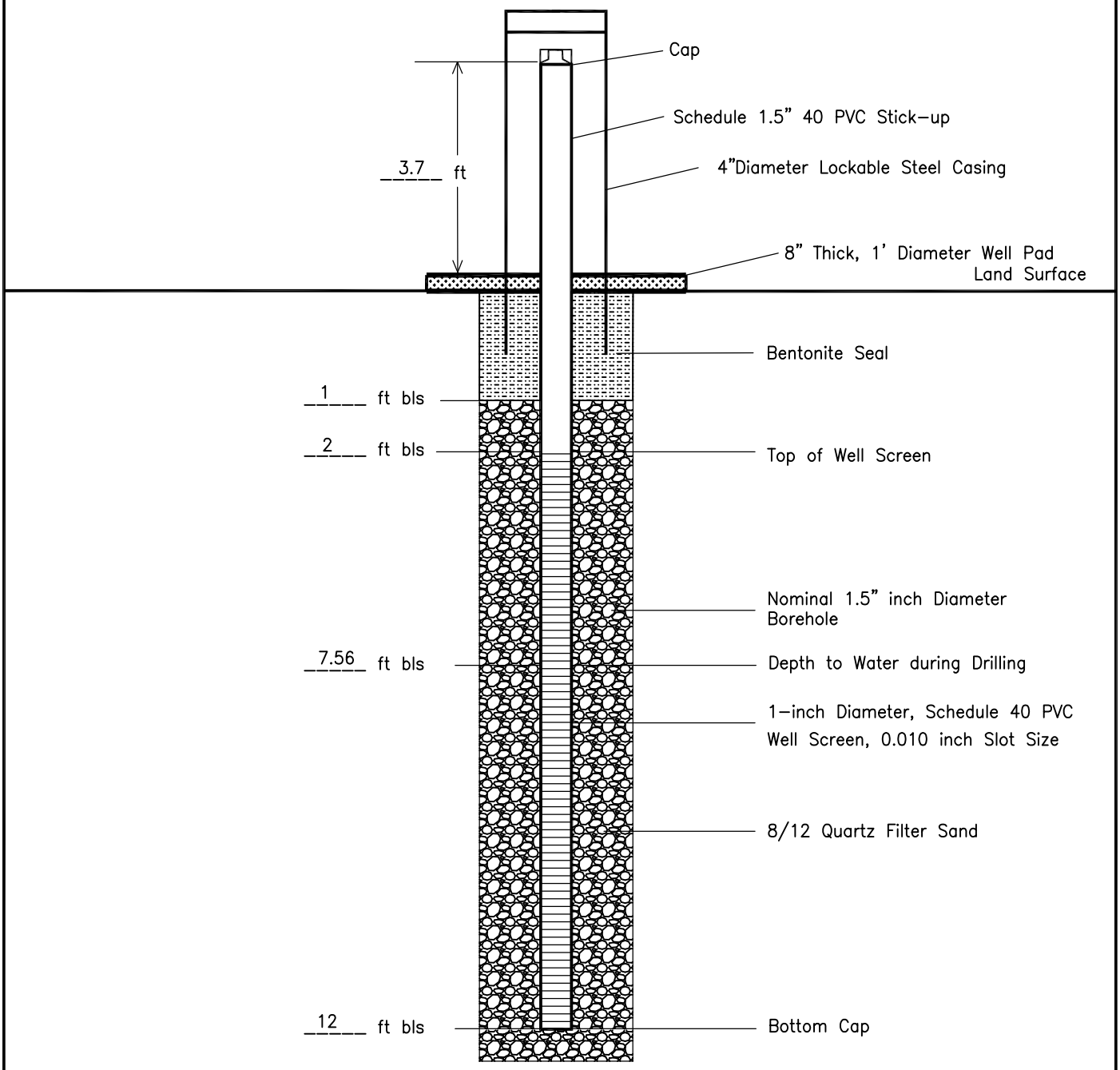
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: VINTON B	***Well ID No.***	***TOP OF CASING ELEVATION:*** 3777.31
LOCATION: EL PASO COUNTY, TEXAS		***SURFACE ELEVATION:*** 3773.60
INSTALLATION DATE: 6/25/2013	VB–MW–2	***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3537597.966 348283.897



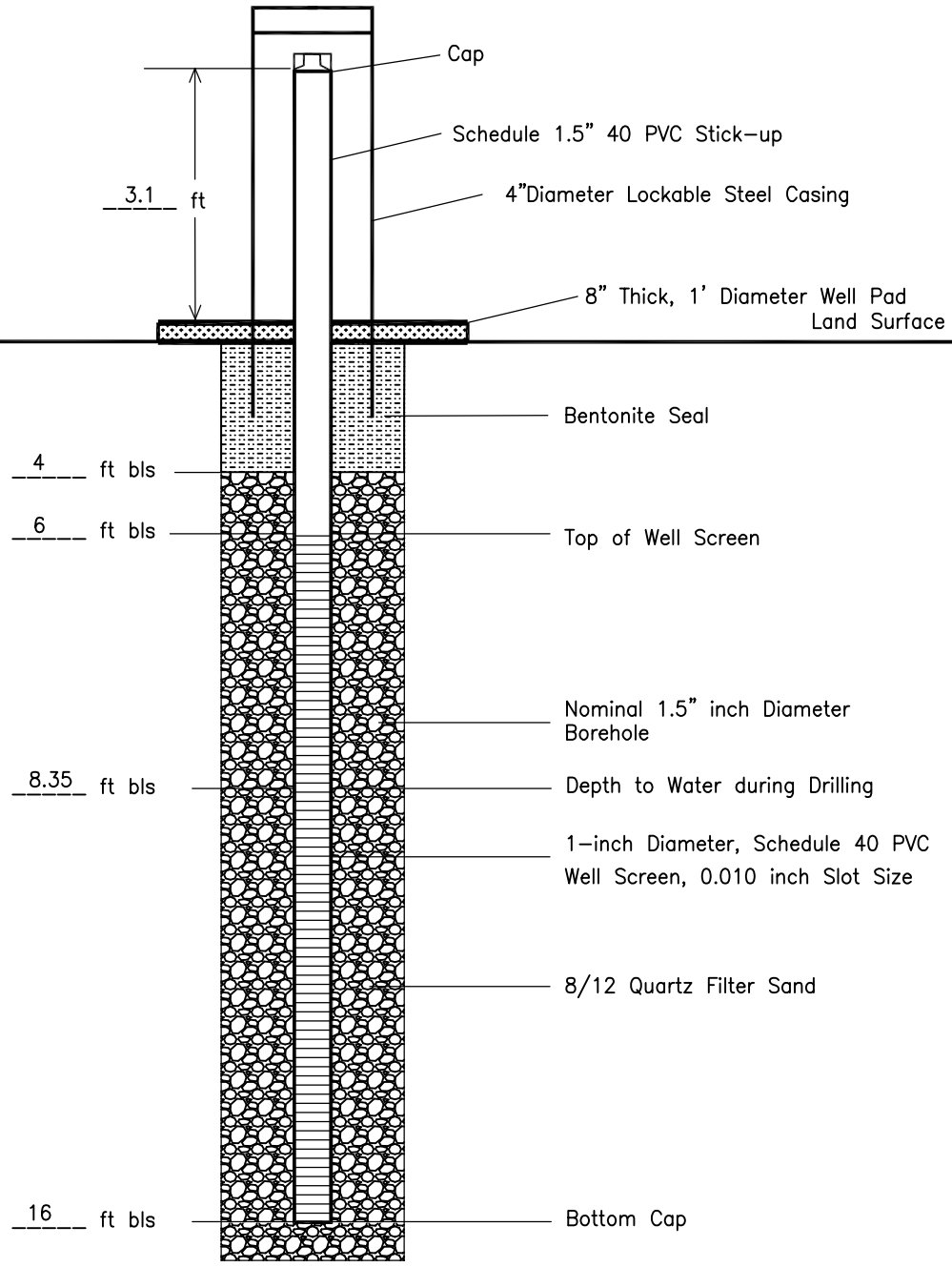
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: YESO EAST	**Well ID No.**	**TOP OF CASING ELEVATION:** 4093.98
LOCATION: DONA ANA COUNTY, NEW MEXICO	YE–MW–1	**SURFACE ELEVATION:** 4090.86
INSTALLATION DATE: 6/1/2013		**RIG TYPE:** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3624421.134, 286602.653



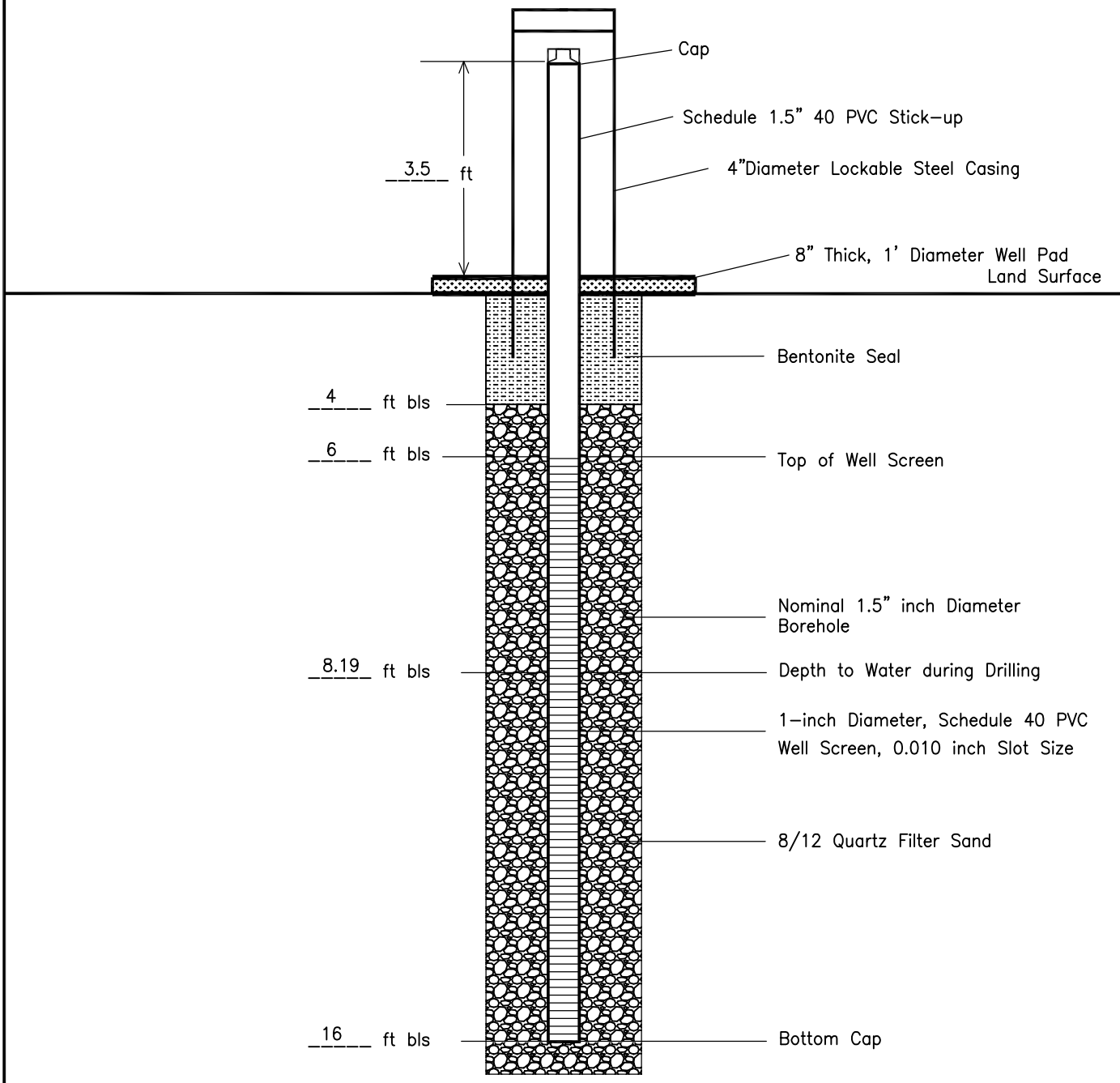
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: YESO EAST	**Well ID No.** YE–MW–2	**TOP OF CASING ELEVATION:** 4094.18
LOCATION: DONA ANA COUNTY, NEW MEXICO		**SURFACE ELEVATION:** 4090.68
INSTALLATION DATE: 6/1/2013		**RIG TYPE:** AMS 9100
ON–SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		**DRILLING METHOD:** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		**NORTHING/EASTING:** 3624146.749 286892.238



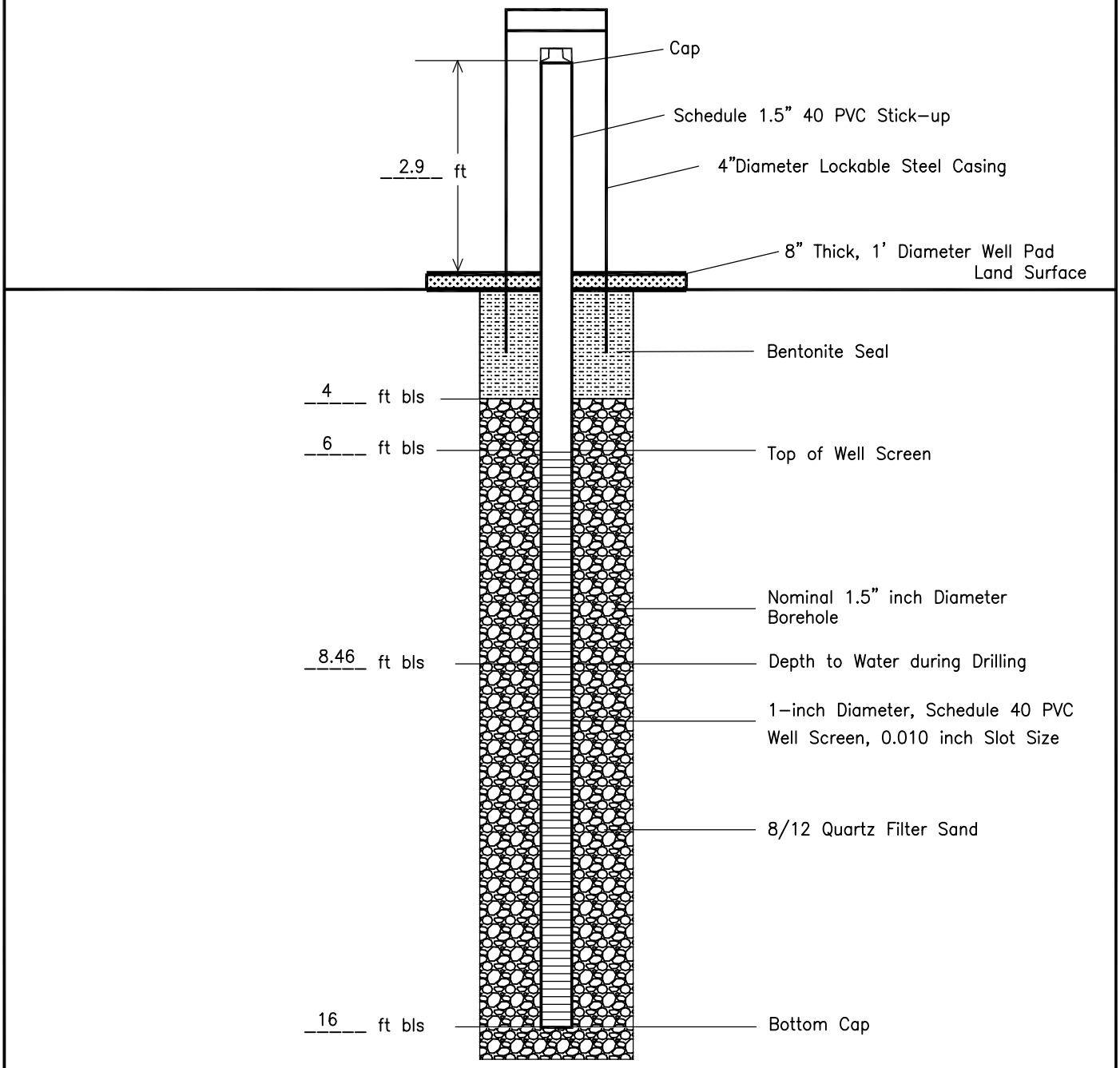
ft bls – feet below land surface

HDR

HDR Engineering, Inc.

MONITORING WELL

PROJECT NAME: YESO EAST	***Well ID No.***	***TOP OF CASING ELEVATION:*** 4093.01
LOCATION: DONA ANA COUNTY, NEW MEXICO	YE–MW–3	***SURFACE ELEVATION:*** 4090.13
INSTALLATION DATE: 6/1/2013		***RIG TYPE:*** AMS 9100
ON-SITE GEOLOGIST/ENGINEER: DAVE ATTEBERRY		***DRILLING METHOD:*** DIRECT PUSH
DRILLING COMPANY: GEOMECHANICS SOUTHWEST, INC.		***NORTHING/EASTING:*** 3624323.547 286863.809



ft bls – feet below land surface

HDR

HDR Engineering, Inc.

APPENDIX G

GROUNDWATER MONITORING WELL PHOTOGRAPHS

Monitoring Well Photographs

Restoration sites containing the wells are in order from north to south.

Trujillo Well #1. View is to the east.

Trujillo Well #2. View is to the west.

Trujillo Well #3. View is to the west.

Jaralosa Well #1. View is to the west.

Jaralosa Well #2. View is to the west.

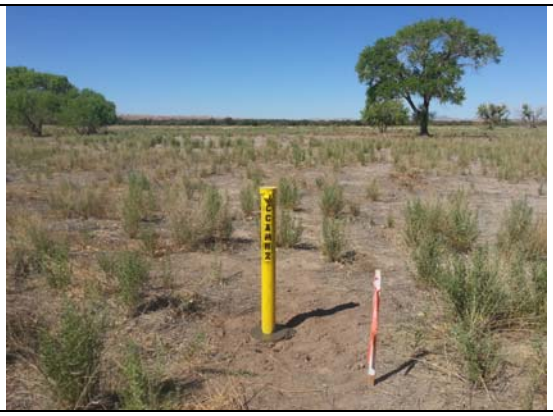
Jaralosa Well #3. View is to the west.

Yeso East Well #1. View is to the south.

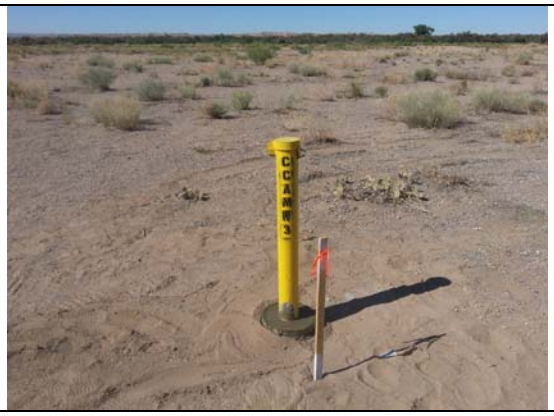
Yeso East Well #2. View is to the east.

Yeso East Well #3. View is to the east.

Crow Canyon A Well #1. View is to the west.



Crow Canyon A Well #2. View is to the west.



Crow Canyon A Well #3. View is to the south.

	
Crow Canyon B Well #1. View is to the southwest.	Crow Canyon B Well #2. View is to the south.
	
Crow Canyon B Well #3. View is to the southwest.	Rincon Siphon Well #1. View is to the west.
	
Rincon Siphon Well #2. View is to the west.	Rincon Siphon Well #4. View is to the southwest.

Rincon Siphon Well #5. View is to the west.

Rincon Siphon Well #6. View is to the east.

Rincon Siphon Well #7. View is to the south.

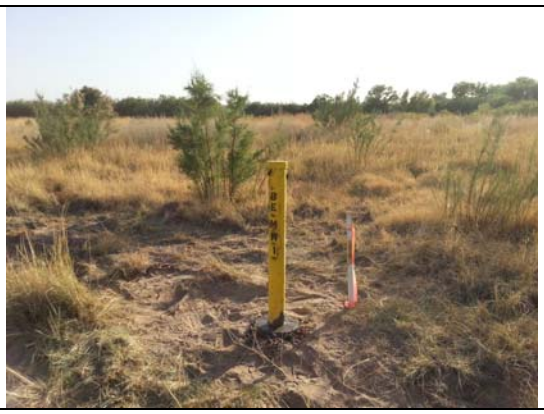
Broad Canyon Arroyo Well #1. View is to the east.

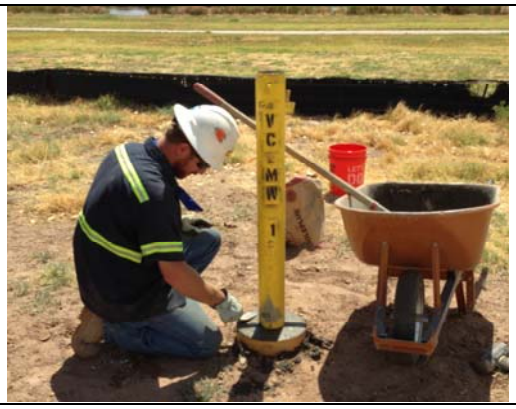
Broad Canyon Arroyo Well #2. View is to the east.

Broad Canyon Arroyo Well #3. View is to the southeast.

	
Seldon Point Bar Well #1. View is to the south.	Seldon Point Bar Well #2. View is to the south.
	
Seldon Point Bar Well #3. View is to the north.	Leasburg Extension Lateral Well #1. View is to the west.
	
Leasburg Extension Lateral Well #2. View is to the west.	Leasburg Extension Lateral Well #3. View is to the west.

	
Clark Lateral Well #1. View is to the west.	Clark Lateral Well #2. View is to the west.
	
Mesilla East Well #1. View is to the west.	Mesilla East Well #2. View is to the east.
	
Mesilla East Well #3. View is to the west.	Below Mesilla Dam Well #1. View is to the southwest.

	
Below Mesilla Dam Well #2. View is to the southwest.	Berino East Well #1. View is to the west.
	
Berino East Well #2. View is to the west.	Berino West Well #1. View is to the east.
	
Berino West Well #2. View is to the east.	Vinton A Well #1. View is to the east.

	
Vinton A Well #2. View is to the east.	Vinton B Well #1. View is to the east.
	
Vinton B Well #2. View is to the east.	Valley Creek Well #1. View is to the east.
	
Valley Creek Well #2. View is to the east.	Country Club East Well #1. View is to the west.

	
Country Club East Well #2. View is to the west.	Country Club East Well #3. View is to the west.
	
Sunland Park Well #1. View is to the southeast.	Sunland Park Well #2. View is to the south.
	
Sunland Park Well #3. View is to the south.	Anapra Bridge Well #1. View is to the south.

Anapra Bridge Well #2. View is to the south.

APPENDIX H

GROUNDWATER MONITORING WELL LOCATION MAPS

Trujillo

USIBWC 2013 Groundwater Monitoring Well Locations
Sierra County, NM

0 1,000 2,000 Feet
0 250 500 Meters

N

TRU-MW-2
Surface Elevation: 4128.92 Ft

Depth (in)	Salinity (PPT)
0-6	0
7-24	0.1
25-48	0.1

TRU-MW-3
Surface Elevation: 4128.14 Ft

Depth (in)	Salinity (PPT)
0-6	0.1
7-24	0.1
25 48	0

TRU-MW-1
Surface Elevation: 4127.16 Ft

Depth (in)	Salinity (PPT)
0-6	0
7-24	0.1
25-48	0

Legend

Surveyed Monitoring Well Locations
- Trujillo
- Restoration Sites Revised 2012
- Section
- Township

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Jaralosa and Yeso East

USIBWC 2013 Groundwater Monitoring Well Locations
Doña Ana County, NM

JAR-MW-2
Surface Elevation: 4094.32 Ft

Depth (in)	Salinity (PPT)
0-6	0.2
7-24	0.4
25-48	0.2

JAR-MW-3
Surface Elevation: 4093.04 Ft

Depth (in)	Salinity (PPT)
0-6	1.8
7-24	2.2
25-48	0.2

JAR-MW-1
Surface Elevation: 4093.43 Ft

Depth (in)	Salinity (PPT)
0-6	0.8
7-24	0.9
25-48	0

YE-MW-1
Surface Elevation: 4090.86 Ft

Depth (in)	Salinity (PPT)
0-6	0
7-24	0
25-48	0.1

YE-MW-3
Surface Elevation: 4090.13 Ft

Depth (in)	Salinity (PPT)
0-6	0
7-24	0
25-48	0

YE-MW-2
Surface Elevation: 4090.68 Ft

Depth (in)	Salinity (PPT)
0-6	0.1
7-24	0.4
25-48	0.1

0 1,000 2,000 Feet
0 250 500 Meters

N

Legend

Surveyed Monitoring Well Locations
- Jaralosa
- Yeso East
- Restoration Sites Revised 2012

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Crow Canyon A

USIBWC 2013 Groundwater Monitoring Well Locations
Doña Ana County, NM

0 1,000 2,000 Feet
0 250 500 Meters

N

CCA-MW-3
Surface Elevation: 4085.2 Ft

Depth (in)	Salinity (PPT)
0-6	0
7-24	0.1
25-48	0

CCA-MW-2
Surface Elevation: 4083.67 Ft

Depth (in)	Salinity (PPT)
0-6	0.1
7-24	0.9
25-48	1.1

CCA-MW-1
Surface Elevation: 4083.29 Ft

Depth (in)	Salinity (PPT)
0-6	0
7-24	0.1
25-48	0

Crow Canyon A1
Crow Canyon A2
Crow Canyon B1

Carriage Hills Rd
NM-187
CR-E61
CR-E55
Rincon Rd
Rincon Bonito Rd
390
187

Legend

Surveyed Monitoring Well Locations
- Crow Canyon A
- Restoration Sites Revised 2012

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Crow Canyon B

USIBWC 2013 Groundwater Monitoring Well Locations
Doña Ana County, NM

0 1,000 2,000 Feet
0 250 500 Meters

N

CCB-MW-2
Surface Elevation: 4081.43 Ft

Depth (in)	Salinity (PPT)
0-6	0.1
7-24	0
25-48	0

CCB-MW-1
Surface Elevation: 4079.22 Ft

Depth (in)	Salinity (PPT)
0-6	1.3
7-24	1.1
25-48	0.8

CCB-MW-3
Surface Elevation: 4070.92 Ft

Depth (in)	Salinity (PPT)
0-6	0
7-24	0
25-48	0.4

Crow Canyon A2
Crow Canyon B2
Crow Canyon B1
Crow Canyon C
Crow Canyon D1 - below Hatch Siphon
Crow Canyon D2 - below Hatch Siphon
Maple Ln
Rancho Bonito Rd
Rancho Bonito Rd
Garbage Hills Rd
Arroyo Cuervo Rd
Arroyo Cuervo Rd
Arroyo Cuervo Rd
Arroyo Cuervo Rd
Sunday Dr
River Levee
River Levee
19S 4W

Legend

Surveyed Monitoring Well Locations
- Crow Canyon B
- Restoration Sites Revised 2012
- Section
- Township

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Rincon Siphon

USIBWC 2013 Groundwater Monitoring Well Locations
Doña Ana County, NM

0 1,000 2,000 Feet
0 250 500 Meters

N

RS-MW-7
Surface Elevation: 4050.87 Ft

Depth (in)	Salinity (PPT)
0-6	0.4
7-24	0.2
25-48	0

RS-MW-6
Surface Elevation: 4048.94 Ft

Depth (in)	Salinity (PPT)
0-6	0.1
7-24	0
25-48	0

RS-MW-1
Surface Elevation: 4048.02 Ft

Depth (in)	Salinity (PPT)
0-6	0.6
7-24	0.2
25-48	0

RS-MW-2
Surface Elevation: 4051.89 Ft

Depth (in)	Salinity (PPT)
0-6	0.8
7-24	0.1
25-48	0

RS-MW-4
Surface Elevation: 4045.13 Ft

Depth (in)	Salinity (PPT)
0-6	0.2
7-24	0.2
25-48	0

RS-MW-5
Surface Elevation: 4043.14 Ft

Depth (in)	Salinity (PPT)
0-6	1.2
7-24	0.8
25-48	0

Legend

Surveyed Monitoring Well Locations
- Rincon Siphon
- Restoration Sites Revised 2012
- Section
- Township

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Broad Canyon Arroyo

USIBWC 2013 Groundwater Monitoring Well Locations
Doña Ana County, NM

BCA-MW-2
Surface Elevation: 3987.89 Ft

Depth (in)	Salinity (PPT)
0-6	0.2
7-24	0
25-48	0.7

BCA-MW-3
Surface Elevation: 3992.79 Ft

Depth (in)	Salinity (PPT)
0-6	0.2
7-24	0.6
25-48	1.8

BCA-MW-1
Surface Elevation: 3988.22 Ft

Depth (in)	Salinity (PPT)
0-6	0.1
7-24	0.1
25-48	0

Broad Canyon Arroyo A - Lower
Broad Canyon Arroyo B - Upper
20S 1W
20S 2W
NM-185
NM-183

0 1,000 2,000 Feet
0 250 500 Meters

N

Legend

Surveyed Monitoring Well Locations
- Broad Canyon Arroyo
- Restoration Sites Revised 2012
- Section
- Township

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Seldon Point Bar

USIBWC 2013 Groundwater Monitoring Well Locations
Doña Ana County, NM

0 1,000 2,000 Feet
0 250 500 Meters

N

SPB-MW-1
Surface Elevation: 3979.54 Ft

Depth (in)	Salinity (PPT)
0-6	0.4
7-24	0
25-48	0

SPB-MW-3
Surface Elevation: 3981.47 Ft

Depth (in)	Salinity (PPT)
0-6	4.6
7-24	1.3
25-48	0

SPB-MW-2
Surface Elevation: 3979.91 Ft

Depth (in)	Salinity (PPT)
0-6	0.8
7-24	0
25-48	0.1

Legend

Surveyed Monitoring Well Locations
- Seldon Point Bar

Restoration Sites Revised 2012
Section
Township

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Leasburg Extension Lateral

USIBWC 2013 Groundwater Monitoring Well Locations
Doña Ana County, NM

0 1,000 2,000 Feet
0 250 500 Meters

N

LEL-MW-1
Surface Elevation: 3900.12 Ft

Depth (in)	Salinity (PPT)
0-6	0
7-24	0.1
25-48	0

LEL-MW-2
Surface Elevation: 3900.31 Ft

Depth (in)	Salinity (PPT)
0-6	0
7-24	0
25-48	0

LEL-MW-3
Surface Elevation: 3899.31 Ft

Depth (in)	Salinity (PPT)
0-6	0.1
7-24	0.7
25-48	0.1

Leasburg Extension Lateral WW 8

Leasburg Lateral Expansion

Legend

Surveyed Monitoring Well Locations
- Leasburg Extension Lateral
- Restoration Sites Revised 2012
- Section
- Township

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Clark Lateral

USIBWC 2013 Groundwater Monitoring Well Locations
Doña Ana County, NM

0 1,000 2,000 Feet
0 250 500 Meters

N

CL-MW-1
Surface Elevation: 3884.56 Ft

Depth (in)	Salinity (PPT)
0-6	0
7-24	0.1
25-48	0.1

CL-MW-2
Surface Elevation: 3884.84 Ft

Depth (in)	Salinity (PPT)
0-6	0
7-24	0.2
25-48	0.2

Clark Lateral

Legend

Surveyed Monitoring Well Locations
- Clark Lateral
- Restoration Sites Revised 2012
- Section
- Township

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Mesilla East

USIBWC 2013 Groundwater Monitoring Well Locations
Doña Ana County, NM

0 1,000 2,000 Feet
0 250 500 Meters

N

ME-MW-2
Surface Elevation: 3879.42 Ft

Depth (in)	Salinity (PPT)
0-6	0.1
7-24	0.4
25-48	0.2

ME-MW-1
Surface Elevation: 3877.88 Ft

Depth (in)	Salinity (PPT)
0-6	0.1
7-24	0
25-48	0

ME-MW-3
Surface Elevation: 3874.97 Ft

Depth (in)	Salinity (PPT)
0-6	0.1
7-24	0.6
25-48	0.1

Mesilla East Expansion
Mesilla Valley Bosque St. Park
Mesilla East
S Fairacres Rd
Snow Rd
Dimattco Rd
Queenbarry St
Mesilla Hills Dr
Desert Star Rd
24S 1E
bing

Legend

Surveyed Monitoring Well Locations
- Mesilla East
- Restoration Sites Revised 2012
- Section
- Township

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Below Mesilla Dam

USIBWC 2013 Groundwater Monitoring Well Locations
Doña Ana County, NM

0 1,000 2,000 Feet
0 250 500 Meters

N

BMD-MW-1
Surface Elevation: 3856 Ft

Depth (in)	Salinity (PPT)
0-6	4.42
7-24	0.1
25-48	0

BMD-MW-2
Surface Elevation: 3856 Ft

Depth (in)	Salinity (PPT)
0-6	0
7-24	0
25-48	0

Legend

Surveyed Monitoring Well Locations

- Below Mesilla Dam

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Berino East and West

USIBWC 2013 Groundwater Monitoring Well Locations
Doña Ana County, NM

0 1,000 2,000 Feet
0 250 500 Meters

N

BW-MW-2
Surface Elevation: 3809.28 Ft

Depth (in)	Salinity (PPT)
0-6	0.1
7-24	0
25-48	0.1

BW-MW-1
Surface Elevation: 3809.21 Ft

Depth (in)	Salinity (PPT)
0-6	0.8
7-24	0
25-48	0.1

BE-MW-2
Surface Elevation: 3807.92 Ft

Depth (in)	Salinity (PPT)
0-6	0.2
7-24	0
25-48	0

BE-MW-1
Surface Elevation: 3806.77 Ft

Depth (in)	Salinity (PPT)
0-6	6.2
7-24	2.5
25-48	0

Legend

Surveyed Monitoring Well Locations
- Berino East
- Berino West
- Restoration Sites Revised 2012

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Vinton A and B

USIBWC 2013 Groundwater Monitoring Well Locations
El Paso County, TX

0 1,000 2,000 Feet
0 250 500 Meters

N

VA-MW-1
Surface Elevation: 3777.44 Ft

Depth (in)	Salinity (PPT)
0-6	0.1
7-24	0
25-48	0

VA-MW-2
Surface Elevation: 3776.76 Ft

Depth (in)	Salinity (PPT)
0-6	0.6
7-24	0
25-48	0

VB-MW-1
Surface Elevation: 3774.04 Ft

Depth (in)	Salinity (PPT)
0-6	0.1
7-24	0.1
25-48	0

VB-MW-2
Surface Elevation: 3773.6 Ft

Depth (in)	Salinity (PPT)
0-6	0.2
7-24	0.1
25-48	0

Legend

Surveyed Monitoring Well Locations
- Vinton A
- Vinton B
- Restoration Sites Revised 2012

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Valley Creek

USIBWC 2013 Groundwater Monitoring Well Locations
El Paso County, TX

0 1,000 2,000 Feet
0 250 500 Meters

N

VC-MW-1
Surface Elevation: 3752.26 Ft

Depth (in)	Salinity (PPT)
0-6	0.9
7-24	0.1
25-48	0.1

VC-MW-2
Surface Elevation: 3751.16 Ft

Depth (in)	Salinity (PPT)
0-6	1.1
7-24	0.1
25-48	0.1

Legend

Surveyed Monitoring Well Locations

- Valley Creek
- Restoration Sites Revised 2012

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Country Club East

USIBWC 2013 Groundwater Monitoring Well Locations
Doña Ana County, NM and
El Paso County, TX

0 1,000 2,000 Feet
0 250 500 Meters

N

CCE-MW-2
Surface Elevation: 3745.48 Ft

Depth (in)	Salinity (PPT)
0-6	0.2
7-24	0
25-48	0

CCE-MW-3
Surface Elevation: 3743.96 Ft

Depth (in)	Salinity (PPT)
0-6	0.6
7-24	0.4
25-48	0.3

CCE-MW-1
Surface Elevation: 3743.48 Ft

Depth (in)	Salinity (PPT)
0-6	0.7
7-24	0.1
25-48	0.1

Legend

Surveyed Monitoring Well Locations
- Country Club East

Restoration Sites Revised 2012
Section
Township

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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Sunland Park and Anapra Bridge

USIBWC 2013 Groundwater Monitoring Well Locations
Doña Ana County, NM

SP-MW-1
Surface Elevation: 3737.91 Ft

Depth (in)	Salinity (PPT)
0-6	0.05
7-24	0.3
25-48	0

SP-MW-3
Surface Elevation: 3736.85 Ft

Depth (in)	Salinity (PPT)
0-6	0.4
7-24	0.2
25-48	0.2

AB-MW-2
Surface Elevation: 3735.14 Ft

Depth (in)	Salinity (PPT)
0-6	0.2
7-24	0
25-48	0

SP-MW-2
Surface Elevation: 3737.08 Ft

Depth (in)	Salinity (PPT)
0-6	0.2
7-24	0.2
25-48	0

AB-MW-1
Surface Elevation: 3734.21 Ft

Depth (in)	Salinity (PPT)
0-6	0.2
7-24	0.1
25-48	0

0 1,000 2,000 Feet
0 250 500 Meters

N

Legend

Surveyed Monitoring Well Locations
- Anapra Bridge
- Sunland Park
- Restoration Sites Revised 2012
- Section
- Township

Map Units: Meters
Coordinate System: NAD 1983 UTM Zone 13

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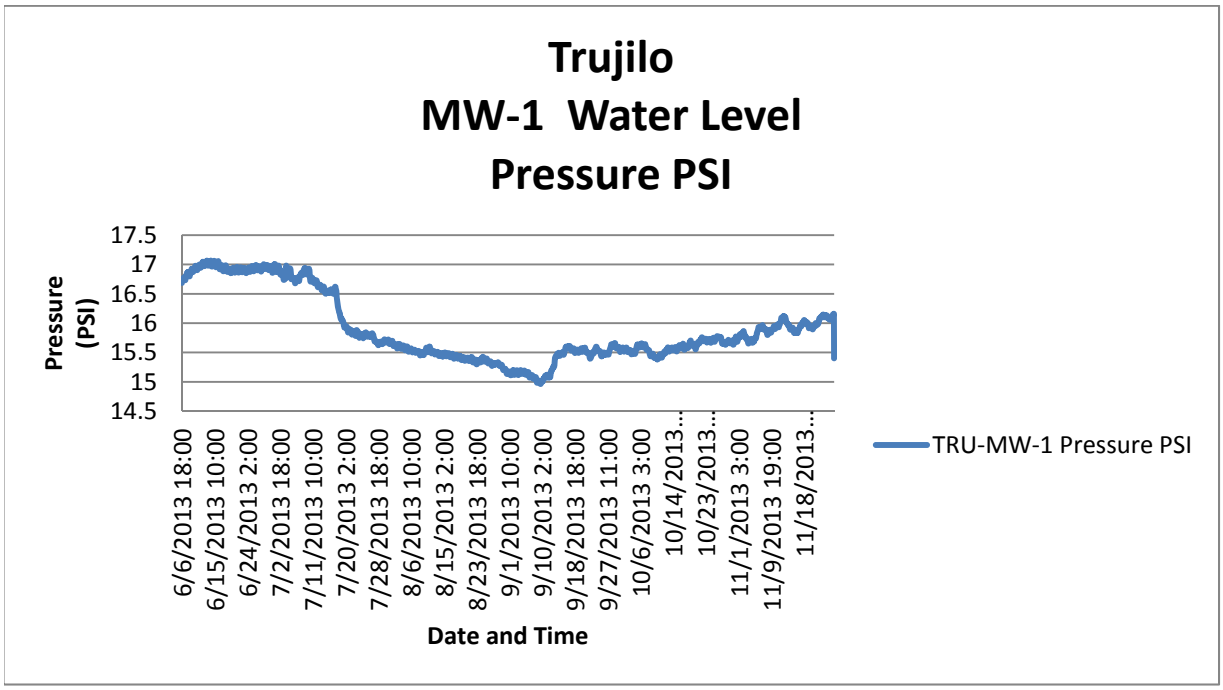
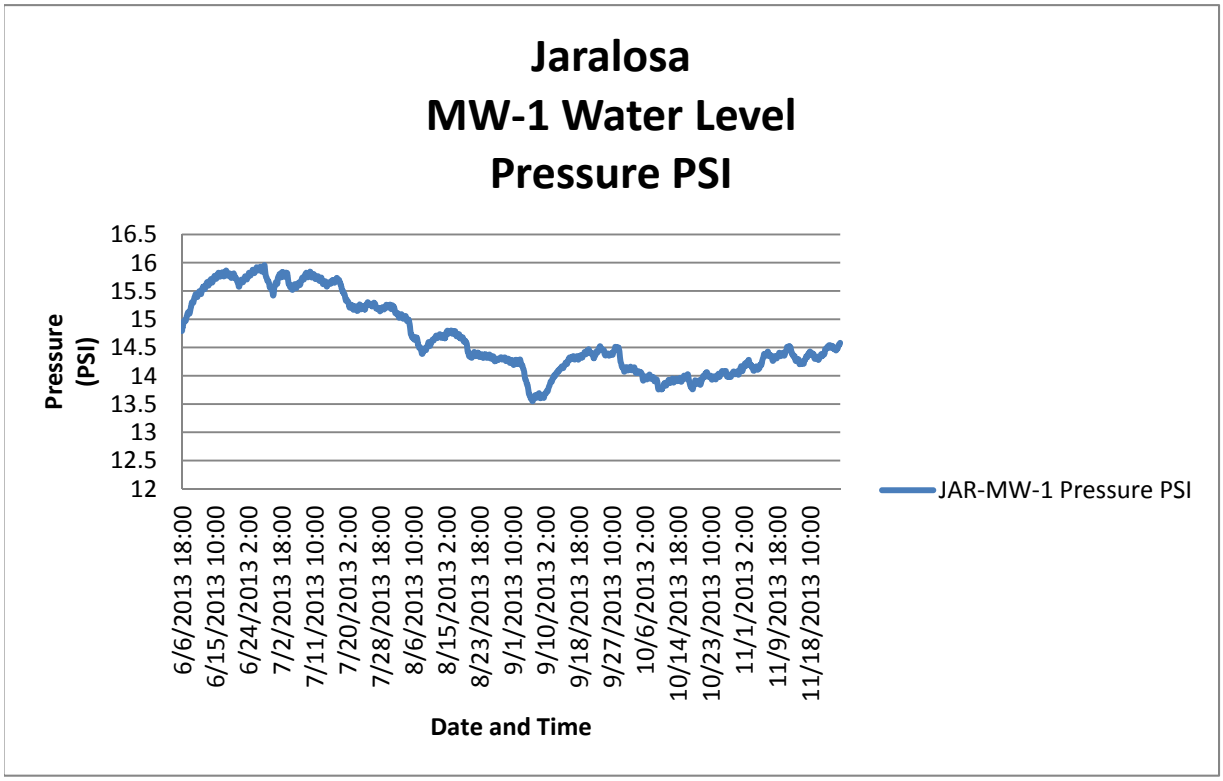
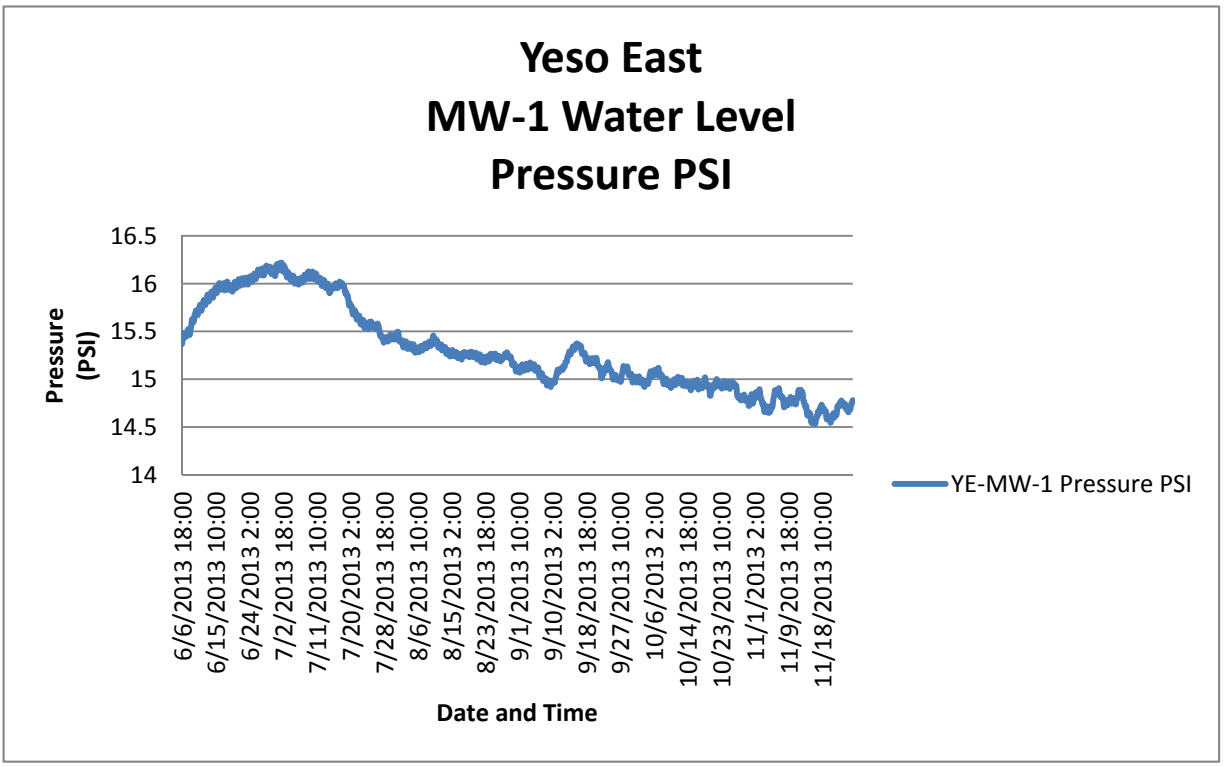
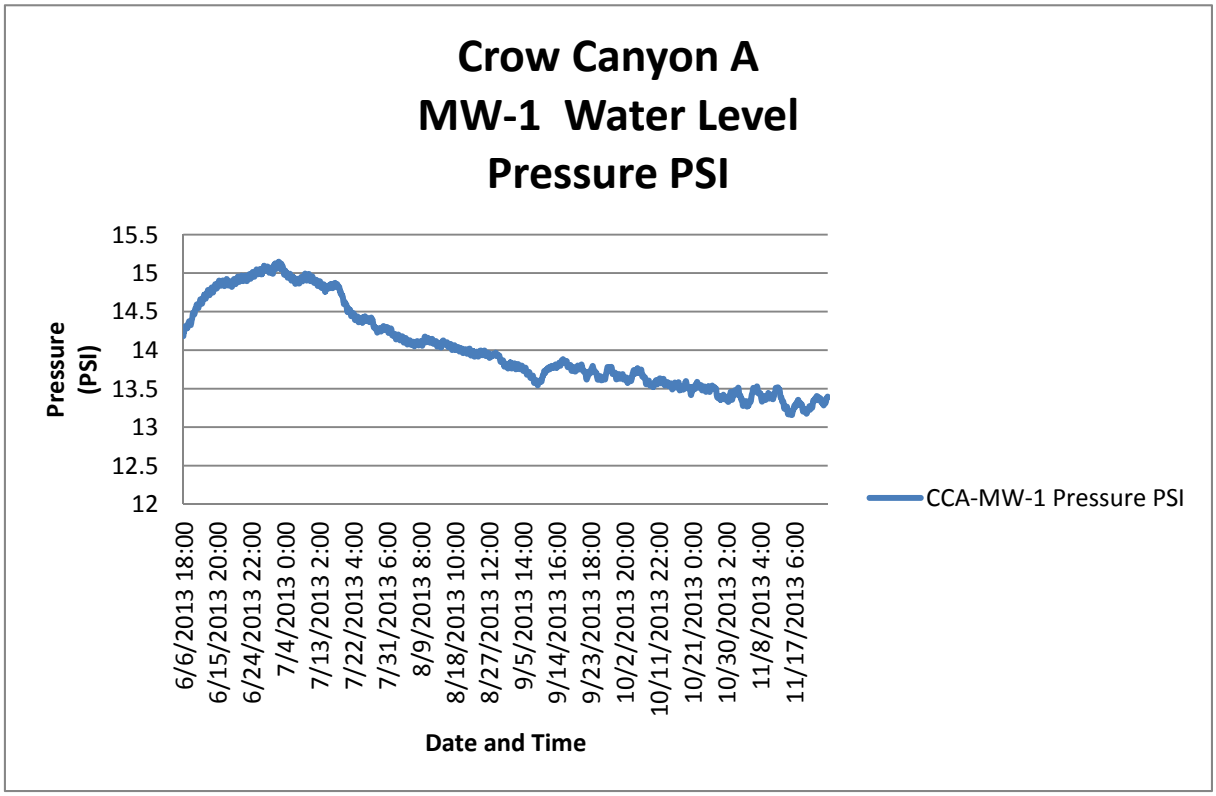
APPENDIX I

GROUNDWATER MONITORING WELL AUTOMATIC MONITORING GRAPHS

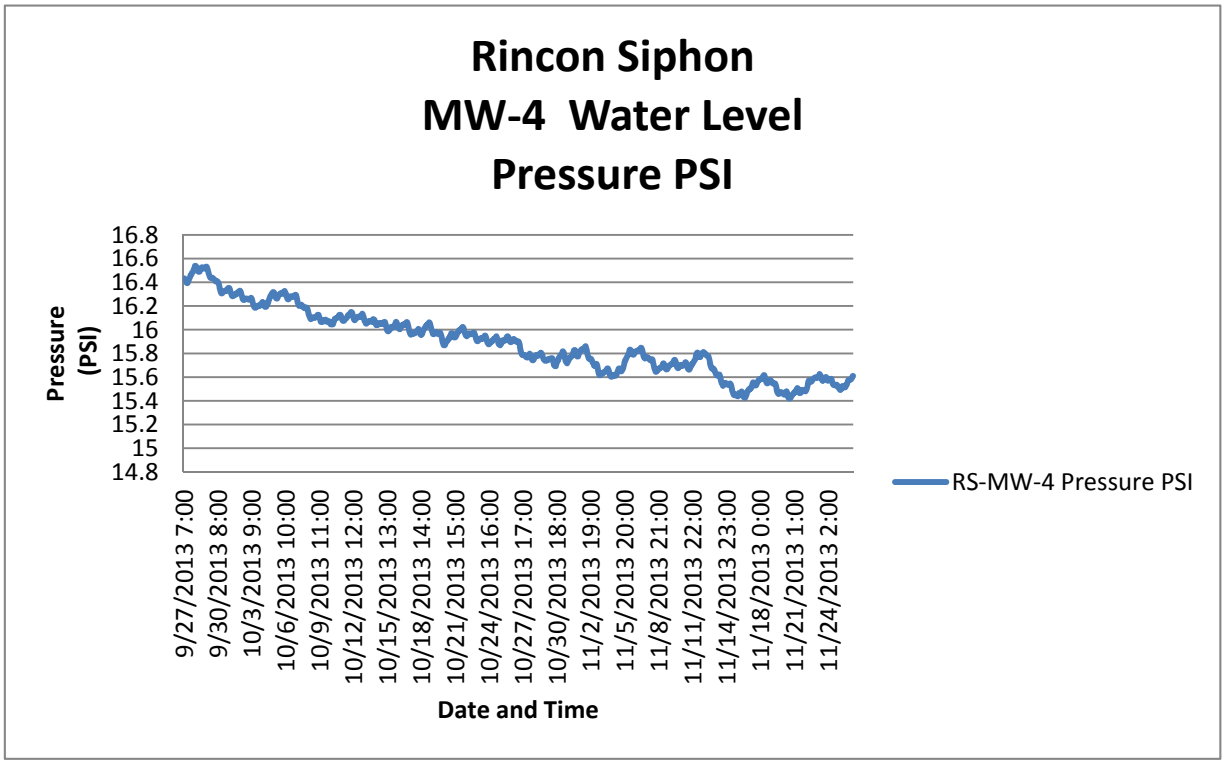

Trujilo
MW-1 Water Level
Pressure PSI
Pressure (PSI)
17.5
17
16.5
16
15.5
15
14.5
6/6/2013 18:00
6/15/2013 10:00
6/24/2013 2:00
7/2/2013 18:00
7/11/2013 10:00
7/20/2013 2:00
7/28/2013 18:00
8/6/2013 10:00
8/15/2013 2:00
8/23/2013 18:00
9/1/2013 10:00
9/10/2013 2:00
9/18/2013 18:00
9/27/2013 11:00
10/6/2013 3:00
10/14/2013...
10/23/2013...
11/1/2013 3:00
11/9/2013 19:00
11/18/2013...
Date and Time
TRU-MW-1 Pressure PSI

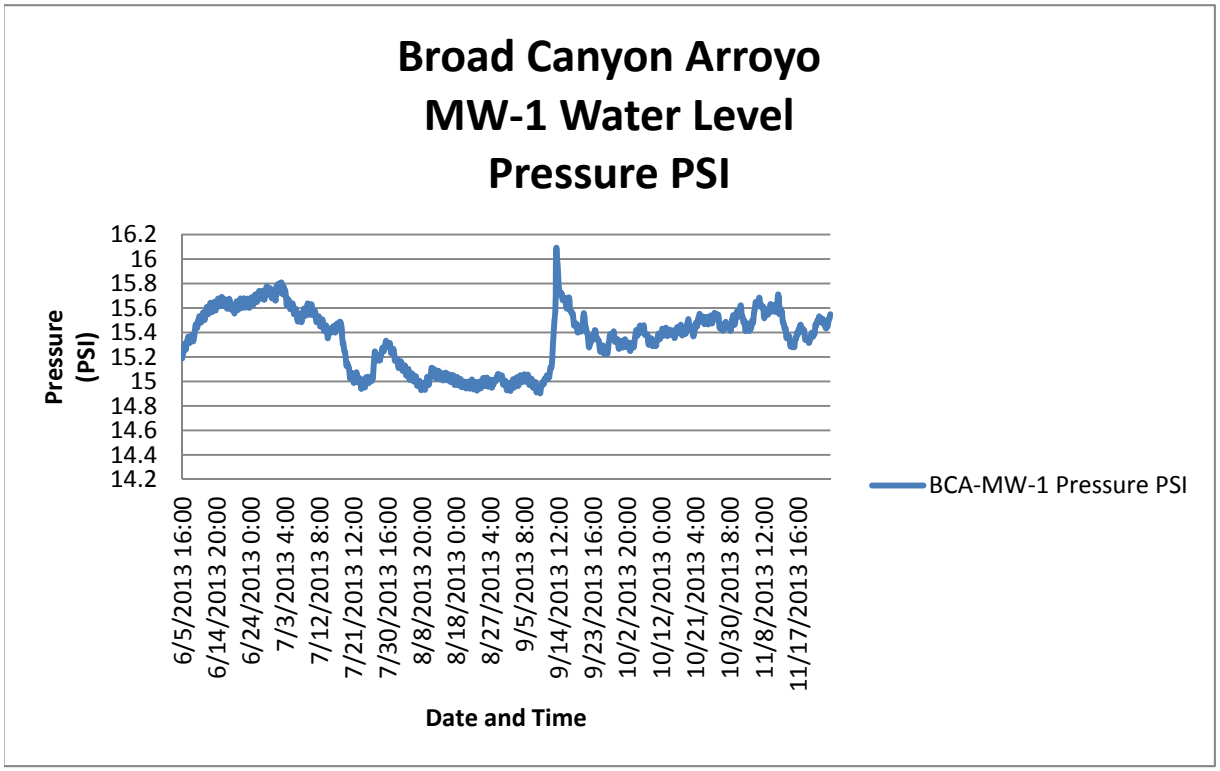

Jaralosa
MW-1 Water Level
Pressure PSI
Pressure (PSI)
16.5
16
15.5
15
14.5
14
13.5
13
12.5
12
6/6/2013 18:00
6/15/2013 10:00
6/24/2013 2:00
7/2/2013 18:00
7/11/2013 10:00
7/20/2013 2:00
7/28/2013 18:00
8/6/2013 10:00
8/15/2013 2:00
8/23/2013 18:00
9/1/2013 10:00
9/10/2013 2:00
9/18/2013 18:00
9/27/2013 10:00
10/6/2013 2:00
10/14/2013 18:00
10/23/2013 10:00
11/1/2013 2:00
11/9/2013 18:00
11/18/2013 10:00
Date and Time
JAR-MW-1 Pressure PSI

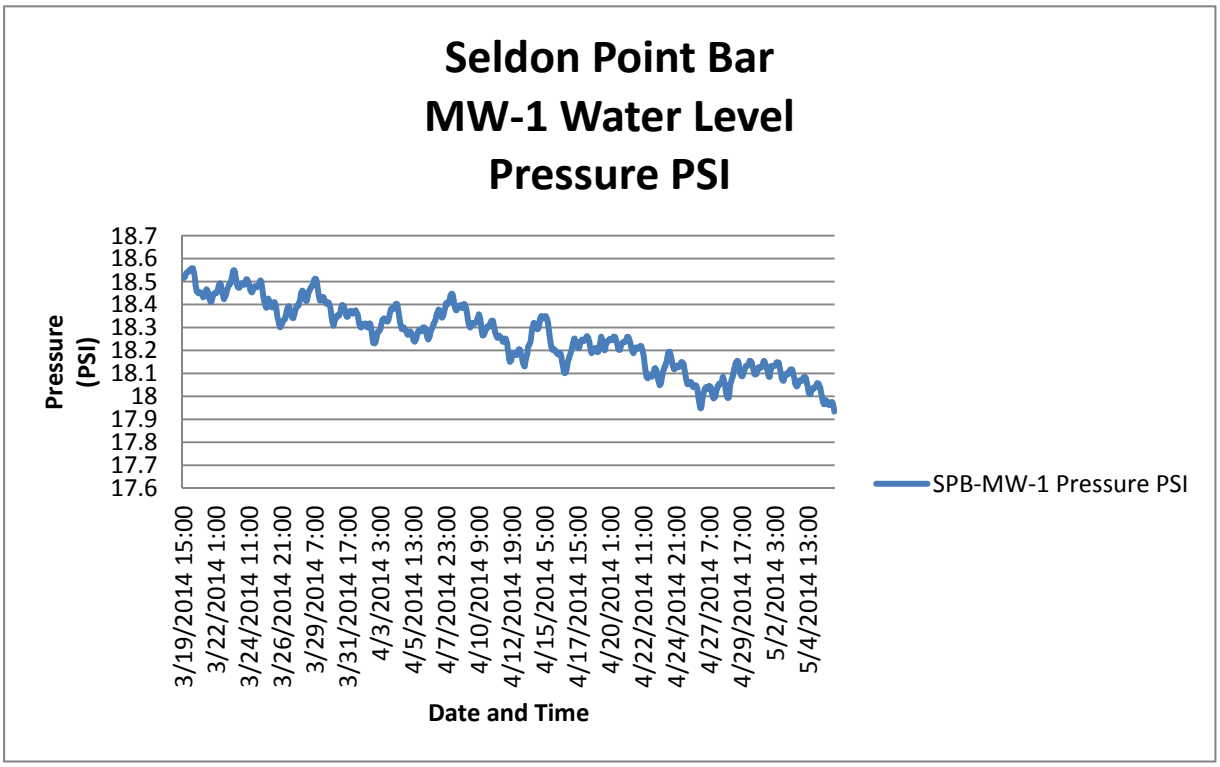


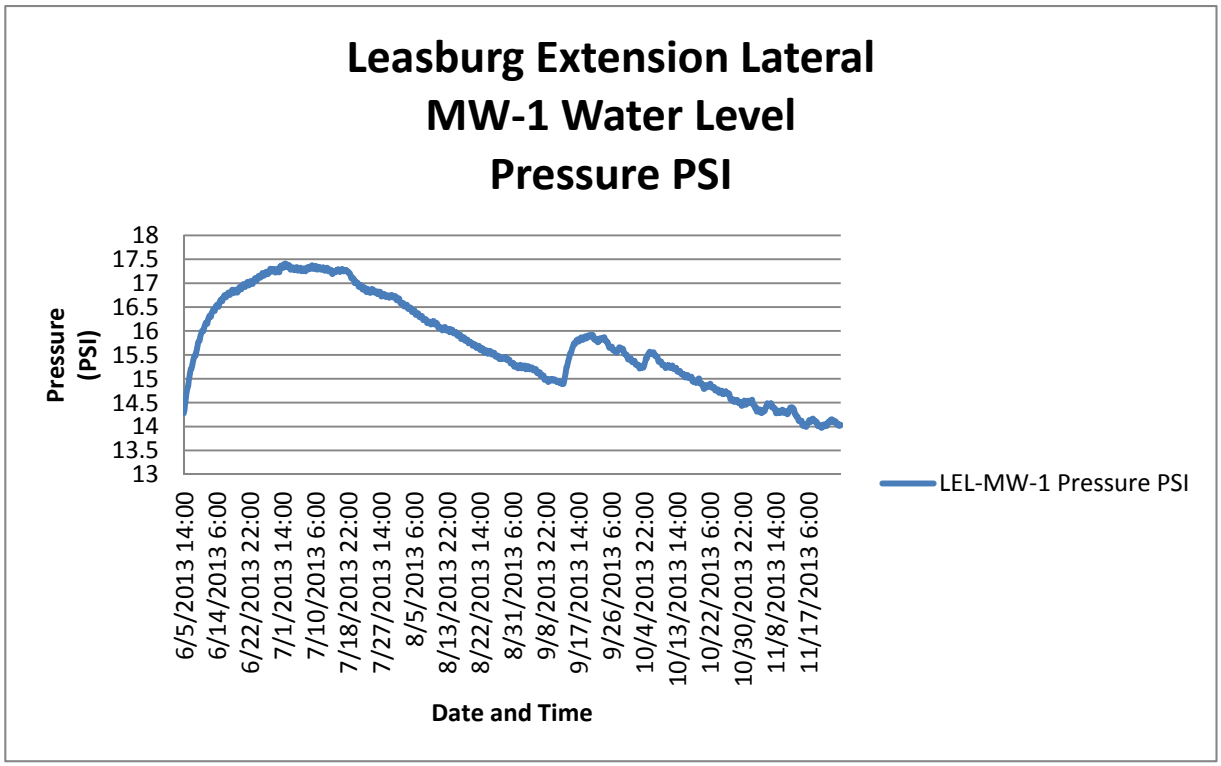


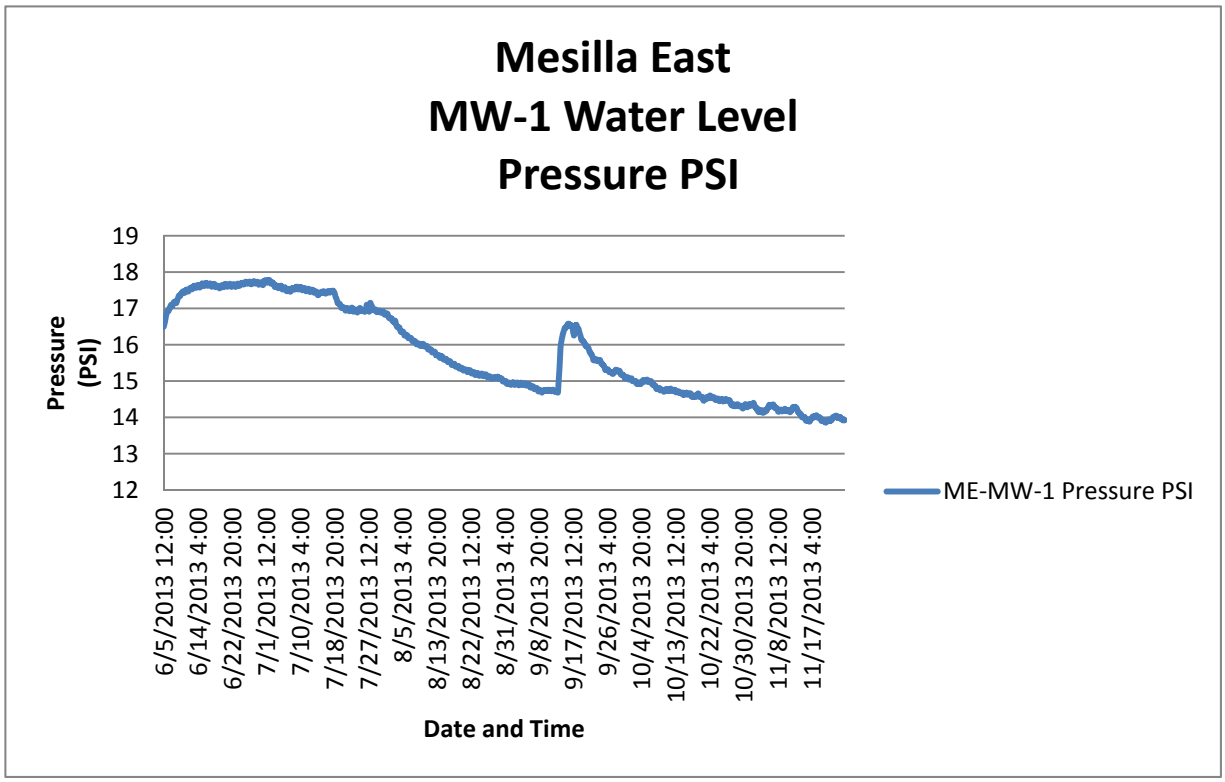
Note: Due to dry conditions, the transducer for Crow Canyon B did not produce usable results.

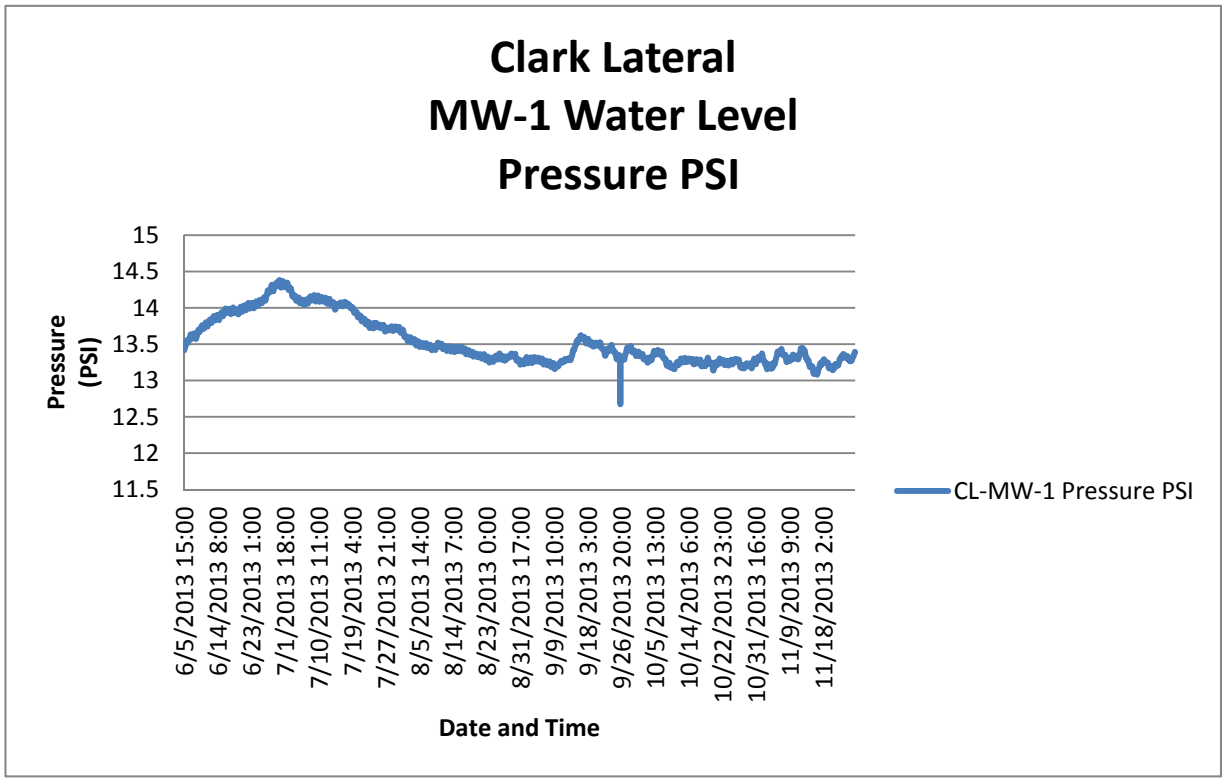

Rincon Siphon
MW-4 Water Level
Pressure PSI
Pressure (PSI)
16.8
16.6
16.4
16.2
16
15.8
15.6
15.4
15.2
15
14.8
9/27/2013 7:00
9/30/2013 8:00
10/3/2013 9:00
10/6/2013 10:00
10/9/2013 11:00
10/12/2013 12:00
10/15/2013 13:00
10/18/2013 14:00
10/21/2013 15:00
10/24/2013 16:00
10/27/2013 17:00
10/30/2013 18:00
11/2/2013 19:00
11/5/2013 20:00
11/8/2013 21:00
11/11/2013 22:00
11/14/2013 23:00
11/18/2013 0:00
11/21/2013 1:00
11/24/2013 2:00
Date and Time
RS-MW-4 Pressure PSI

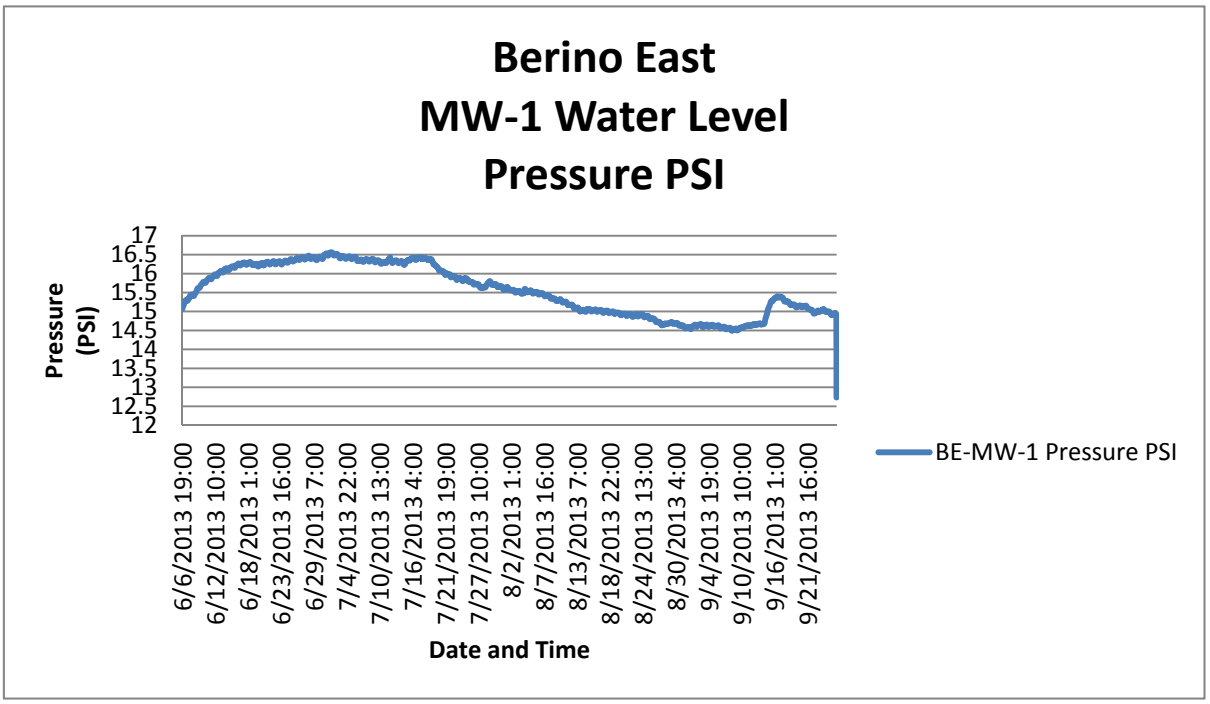

Broad Canyon Arroyo
MW-1 Water Level
Pressure PSI
Pressure (PSI)
16.2
16
15.8
15.6
15.4
15.2
15
14.8
14.6
14.4
14.2
6/5/2013 16:00
6/14/2013 20:00
6/24/2013 0:00
7/3/2013 4:00
7/12/2013 8:00
7/21/2013 12:00
7/30/2013 16:00
8/8/2013 20:00
8/18/2013 0:00
8/27/2013 4:00
9/5/2013 8:00
9/14/2013 12:00
9/23/2013 16:00
10/2/2013 20:00
10/12/2013 0:00
10/21/2013 4:00
10/30/2013 8:00
11/8/2013 12:00
11/17/2013 16:00
Date and Time
BCA-MW-1 Pressure PSI

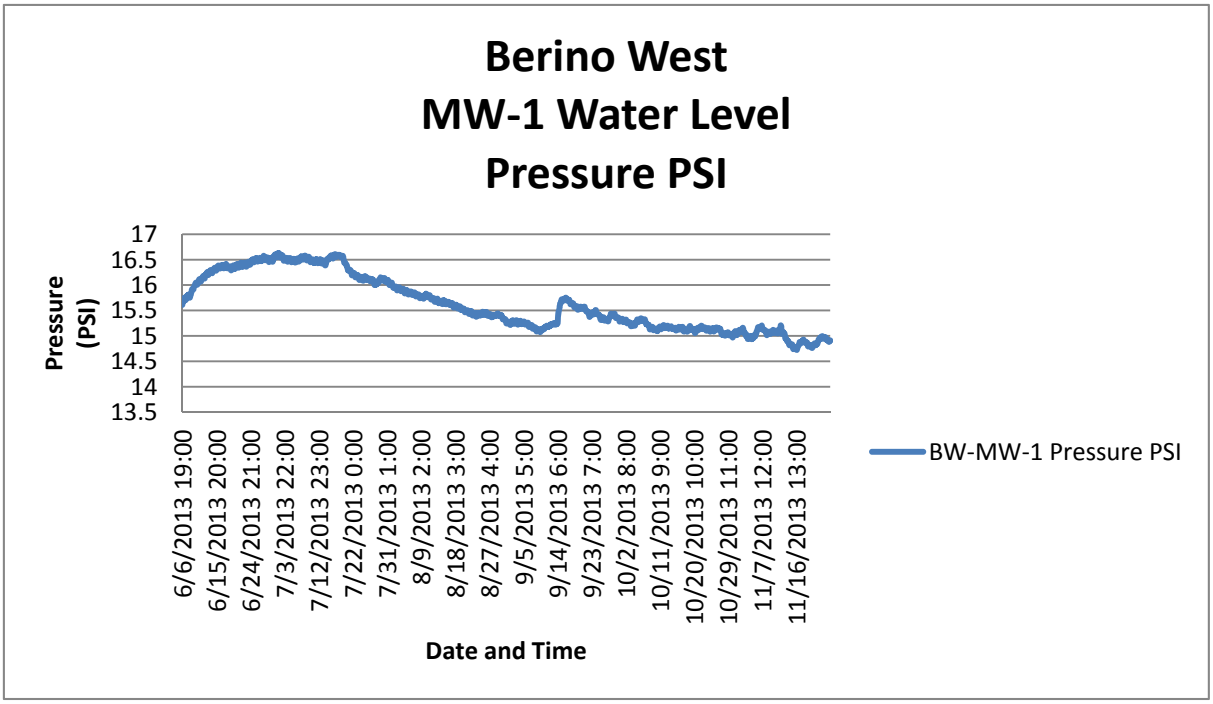

Seldon Point Bar
MW-1 Water Level
Pressure PSI
Pressure (PSI)
18.7
18.6
18.5
18.4
18.3
18.2
18.1
18
17.9
17.8
17.7
17.6
3/19/2014 15:00
3/22/2014 1:00
3/24/2014 11:00
3/26/2014 21:00
3/29/2014 7:00
3/31/2014 17:00
4/3/2014 3:00
4/5/2014 13:00
4/7/2014 23:00
4/10/2014 9:00
4/12/2014 19:00
4/15/2014 5:00
4/17/2014 15:00
4/20/2014 1:00
4/22/2014 11:00
4/24/2014 21:00
4/27/2014 7:00
4/29/2014 17:00
5/2/2014 3:00
5/4/2014 13:00
Date and Time
SPB-MW-1 Pressure PSI

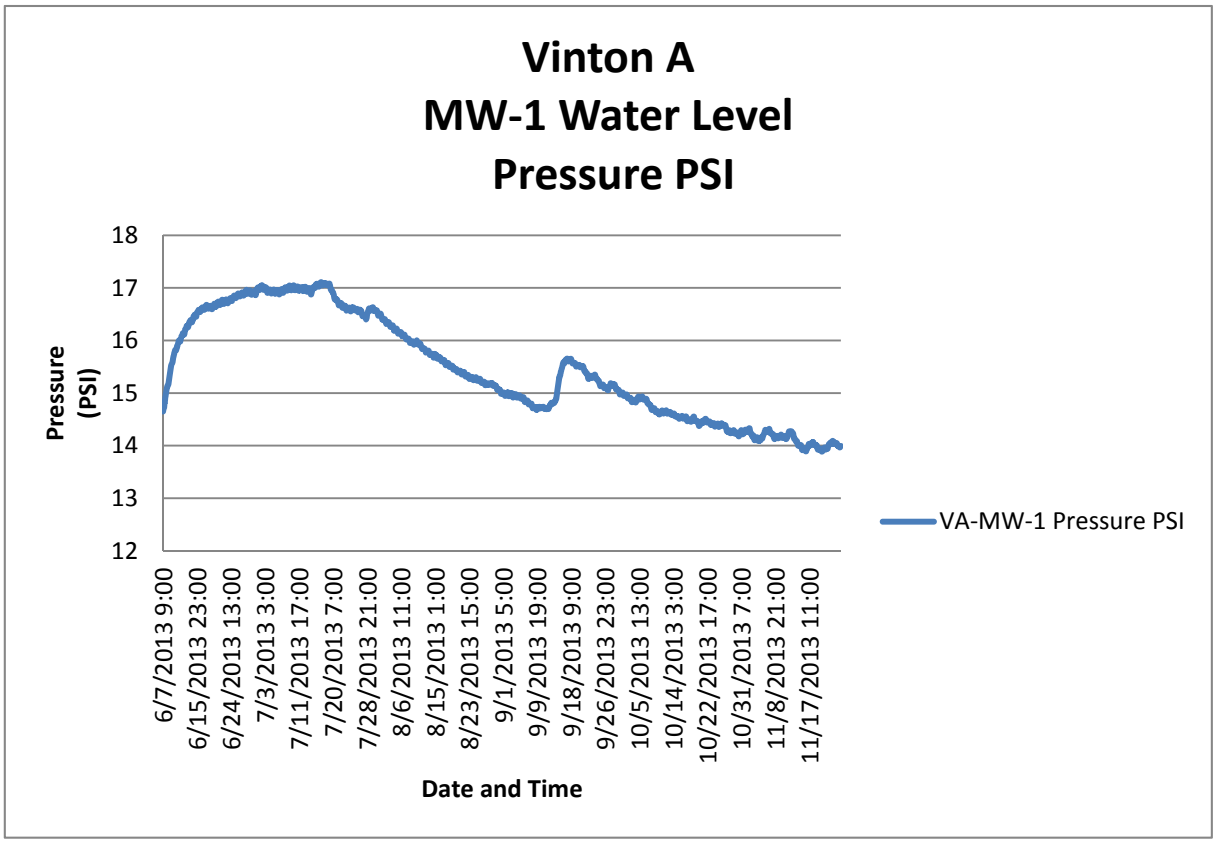

Leasburg Extension Lateral
MW-1 Water Level
Pressure PSI
Pressure (PSI)
18
17.5
17
16.5
16
15.5
15
14.5
14
13.5
13
6/5/2013 14:00
6/14/2013 6:00
6/22/2013 22:00
7/1/2013 14:00
7/10/2013 6:00
7/18/2013 22:00
7/27/2013 14:00
8/5/2013 6:00
8/13/2013 22:00
8/22/2013 14:00
8/31/2013 6:00
9/8/2013 22:00
9/17/2013 14:00
9/26/2013 6:00
10/4/2013 22:00
10/13/2013 14:00
10/22/2013 6:00
10/30/2013 22:00
11/8/2013 14:00
11/17/2013 6:00
Date and Time
LEL-MW-1 Pressure PSI

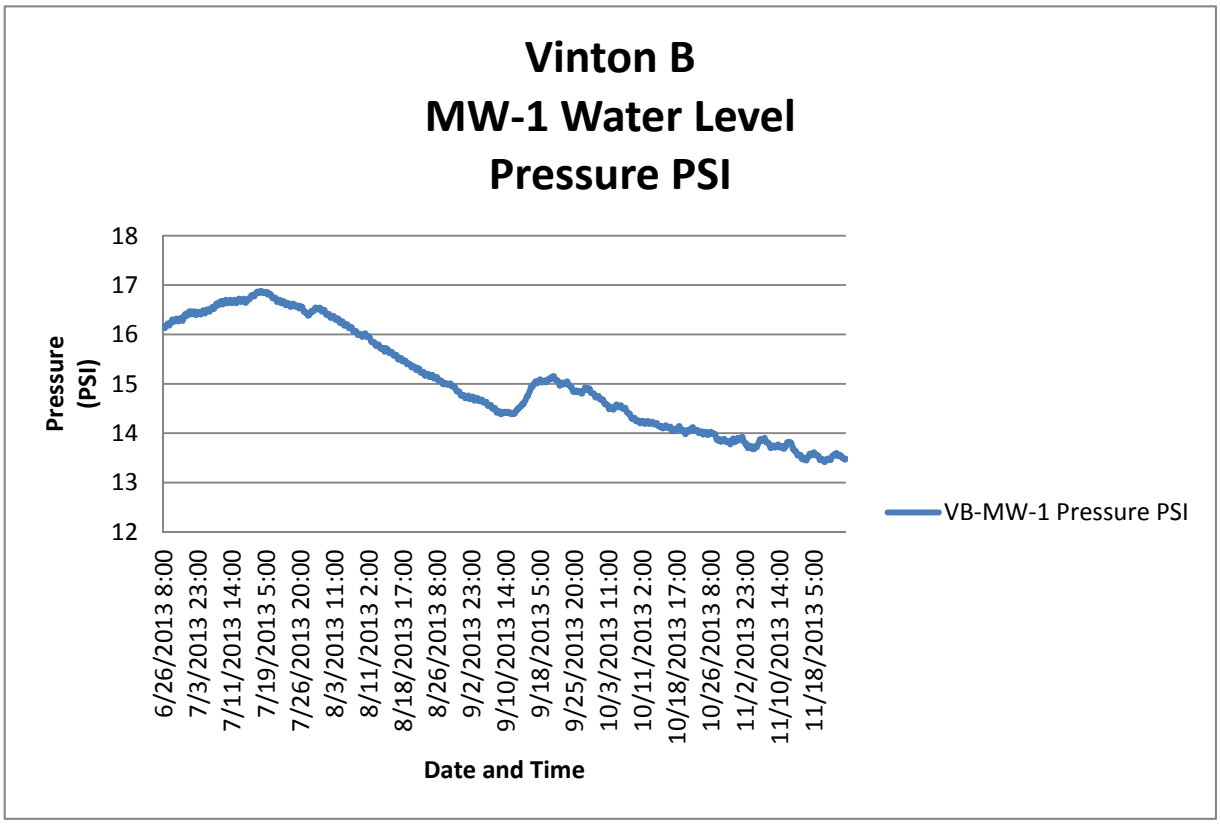

Mesilla East
MW-1 Water Level
Pressure PSI
Pressure (PSI)
19
18
17
16
15
14
13
12
6/5/2013 12:00
6/14/2013 4:00
6/22/2013 20:00
7/1/2013 12:00
7/10/2013 4:00
7/18/2013 20:00
7/27/2013 12:00
8/5/2013 4:00
8/13/2013 20:00
8/22/2013 12:00
8/31/2013 4:00
9/8/2013 20:00
9/17/2013 12:00
9/26/2013 4:00
10/4/2013 20:00
10/13/2013 12:00
10/22/2013 4:00
10/30/2013 20:00
11/8/2013 12:00
11/17/2013 4:00
Date and Time
ME-MW-1 Pressure PSI

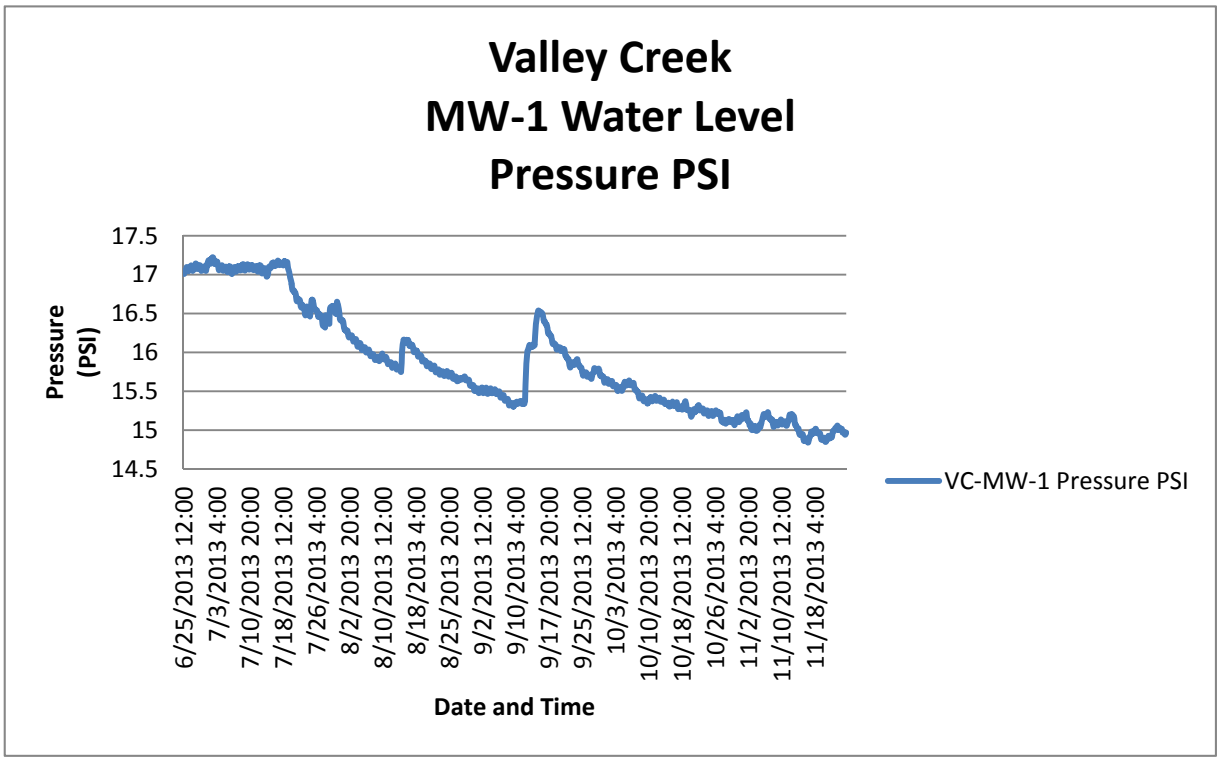

Clark Lateral
MW-1 Water Level
Pressure PSI
Pressure (PSI)
15
14.5
14
13.5
13
12.5
12
11.5
6/5/2013 15:00
6/14/2013 8:00
6/23/2013 1:00
7/1/2013 18:00
7/10/2013 11:00
7/19/2013 4:00
7/27/2013 21:00
8/5/2013 14:00
8/14/2013 7:00
8/23/2013 0:00
8/31/2013 17:00
9/9/2013 10:00
9/18/2013 3:00
9/26/2013 20:00
10/5/2013 13:00
10/14/2013 6:00
10/22/2013 23:00
10/31/2013 16:00
11/9/2013 9:00
11/18/2013 2:00
Date and Time
CL-MW-1 Pressure PSI

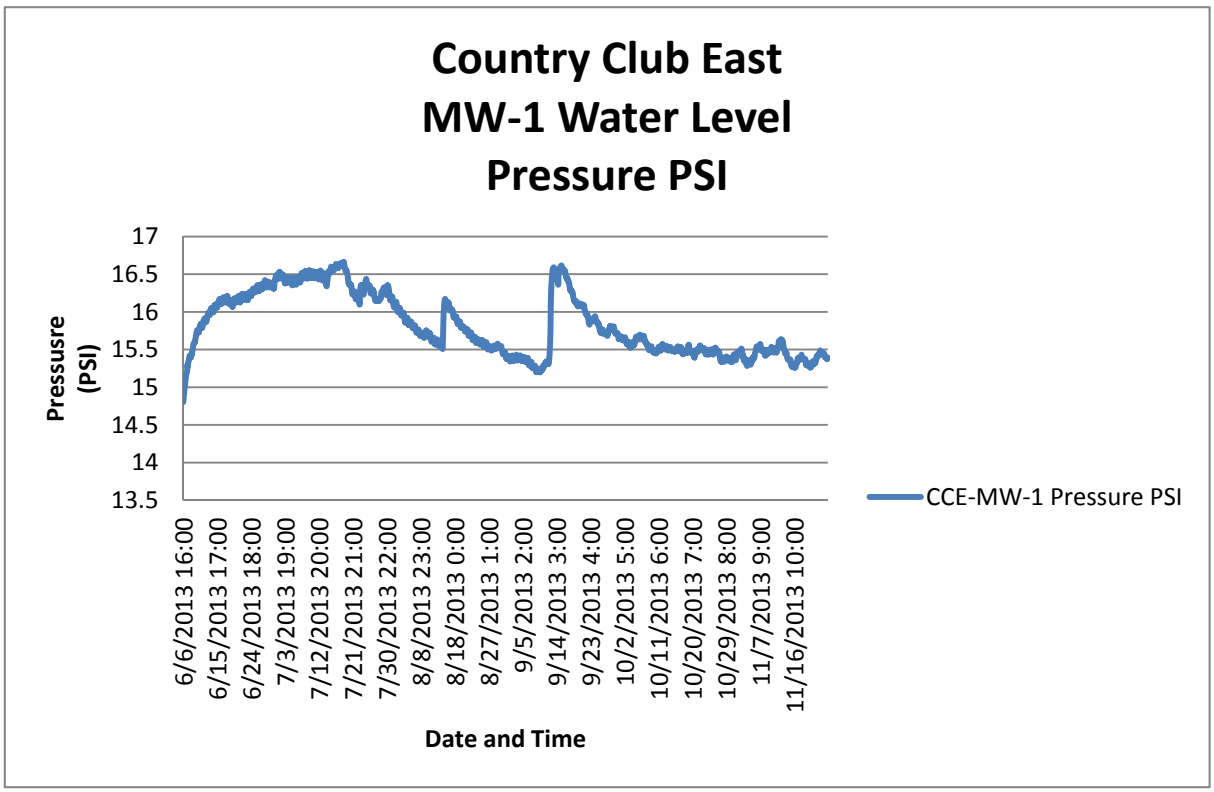

Berino East
MW-1 Water Level
Pressure PSI
Pressure (PSI)
17
16.5
16
15.5
15
14.5
14
13.5
13
12.5
12
6/6/2013 19:00
6/12/2013 10:00
6/18/2013 1:00
6/23/2013 16:00
6/29/2013 7:00
7/4/2013 22:00
7/10/2013 13:00
7/16/2013 4:00
7/21/2013 19:00
7/27/2013 10:00
8/2/2013 1:00
8/7/2013 16:00
8/13/2013 7:00
8/18/2013 22:00
8/24/2013 13:00
8/30/2013 4:00
9/4/2013 19:00
9/10/2013 10:00
9/16/2013 1:00
9/21/2013 16:00
Date and Time
BE-MW-1 Pressure PSI

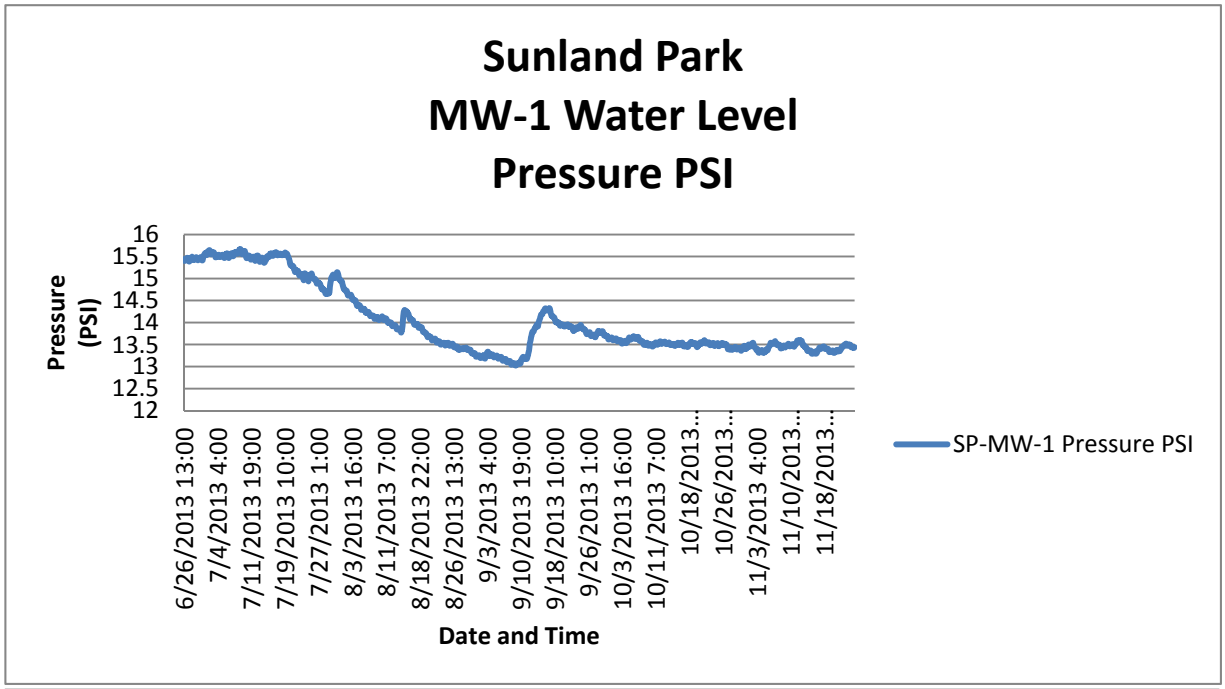

Berino West
MW-1 Water Level
Pressure PSI
Pressure (PSI)
17
16.5
16
15.5
15
14.5
14
13.5
6/6/2013 19:00
6/15/2013 20:00
6/24/2013 21:00
7/3/2013 22:00
7/12/2013 23:00
7/22/2013 0:00
7/31/2013 1:00
8/9/2013 2:00
8/18/2013 3:00
8/27/2013 4:00
9/5/2013 5:00
9/14/2013 6:00
9/23/2013 7:00
10/2/2013 8:00
10/11/2013 9:00
10/20/2013 10:00
10/29/2013 11:00
11/7/2013 12:00
11/16/2013 13:00
Date and Time
BW-MW-1 Pressure PSI

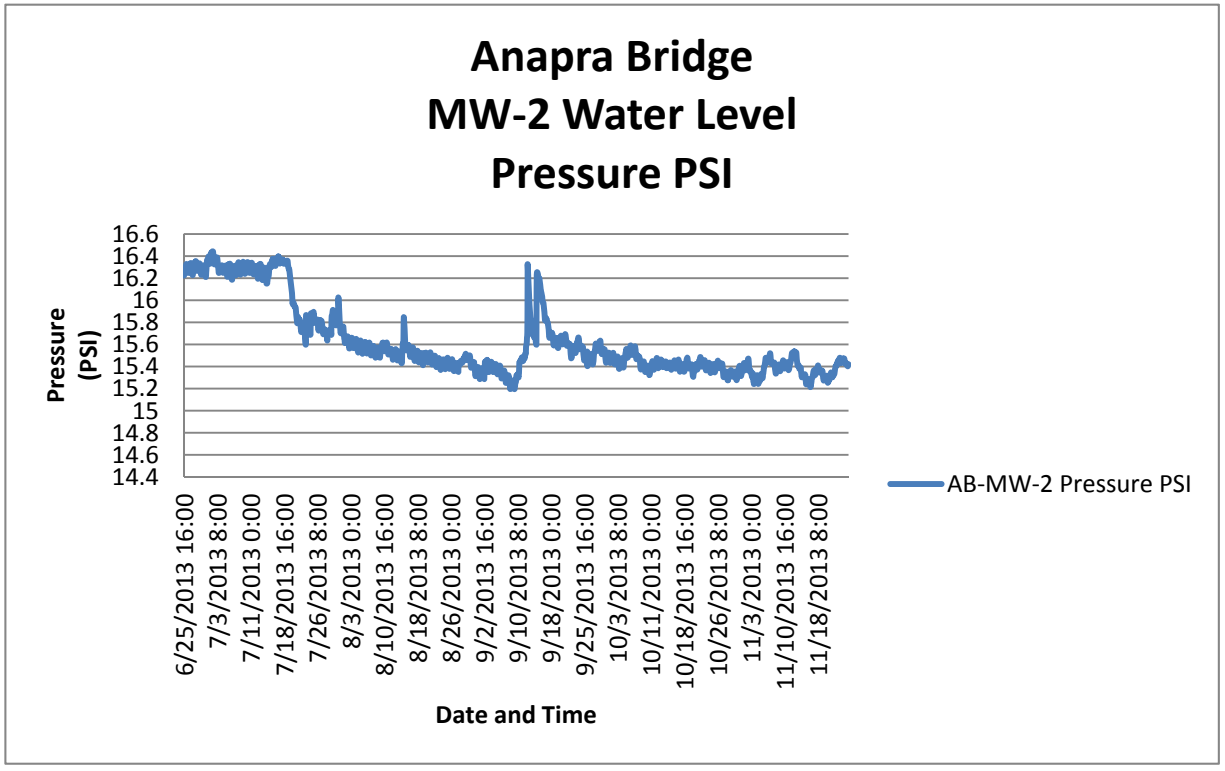

Vinton A
MW-1 Water Level
Pressure PSI
Pressure (PSI)
18
17
16
15
14
13
12
6/7/2013 9:00
6/15/2013 23:00
6/24/2013 13:00
7/3/2013 3:00
7/11/2013 17:00
7/20/2013 7:00
7/28/2013 21:00
8/6/2013 11:00
8/15/2013 1:00
8/23/2013 15:00
9/1/2013 5:00
9/9/2013 19:00
9/18/2013 9:00
9/26/2013 23:00
10/5/2013 13:00
10/14/2013 3:00
10/22/2013 17:00
10/31/2013 7:00
11/8/2013 21:00
11/17/2013 11:00
Date and Time
VA-MW-1 Pressure PSI


Vinton B
MW-1 Water Level
Pressure PSI
Pressure (PSI)
18
17
16
15
14
13
12
6/26/2013 8:00
7/3/2013 23:00
7/11/2013 14:00
7/19/2013 5:00
7/26/2013 20:00
8/3/2013 11:00
8/11/2013 2:00
8/18/2013 17:00
8/26/2013 8:00
9/2/2013 23:00
9/10/2013 14:00
9/18/2013 5:00
9/25/2013 20:00
10/3/2013 11:00
10/11/2013 2:00
10/18/2013 17:00
10/26/2013 8:00
11/2/2013 23:00
11/10/2013 14:00
11/18/2013 5:00
Date and Time
VB-MW-1 Pressure PSI


Valley Creek
MW-1 Water Level
Pressure PSI
Pressure (PSI)
17.5
17
16.5
16
15.5
15
14.5
6/25/2013 12:00
7/3/2013 4:00
7/10/2013 20:00
7/18/2013 12:00
7/26/2013 4:00
8/2/2013 20:00
8/10/2013 12:00
8/18/2013 4:00
8/25/2013 20:00
9/2/2013 12:00
9/10/2013 4:00
9/17/2013 20:00
9/25/2013 12:00
10/3/2013 4:00
10/10/2013 20:00
10/18/2013 12:00
10/26/2013 4:00
11/2/2013 20:00
11/10/2013 12:00
11/18/2013 4:00
Date and Time
VC-MW-1 Pressure PSI

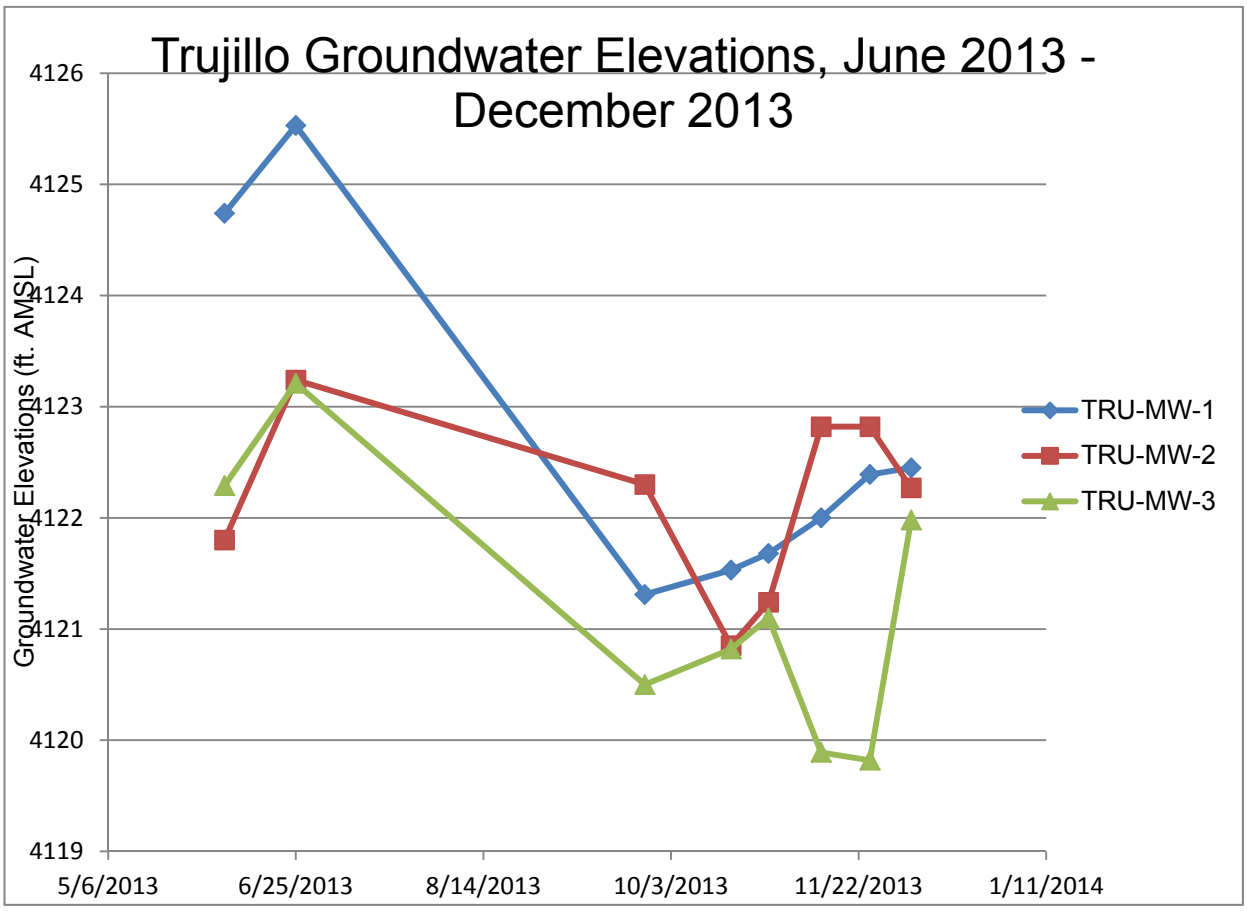

Country Club East
MW-1 Water Level
Pressure PSI
Pressusre (PSI)
17
16.5
16
15.5
15
14.5
14
13.5
6/6/2013 16:00
6/15/2013 17:00
6/24/2013 18:00
7/3/2013 19:00
7/12/2013 20:00
7/21/2013 21:00
7/30/2013 22:00
8/8/2013 23:00
8/18/2013 0:00
8/27/2013 1:00
9/5/2013 2:00
9/14/2013 3:00
9/23/2013 4:00
10/2/2013 5:00
10/11/2013 6:00
10/20/2013 7:00
10/29/2013 8:00
11/7/2013 9:00
11/16/2013 10:00
Date and Time
CCE-MW-1 Pressure PSI

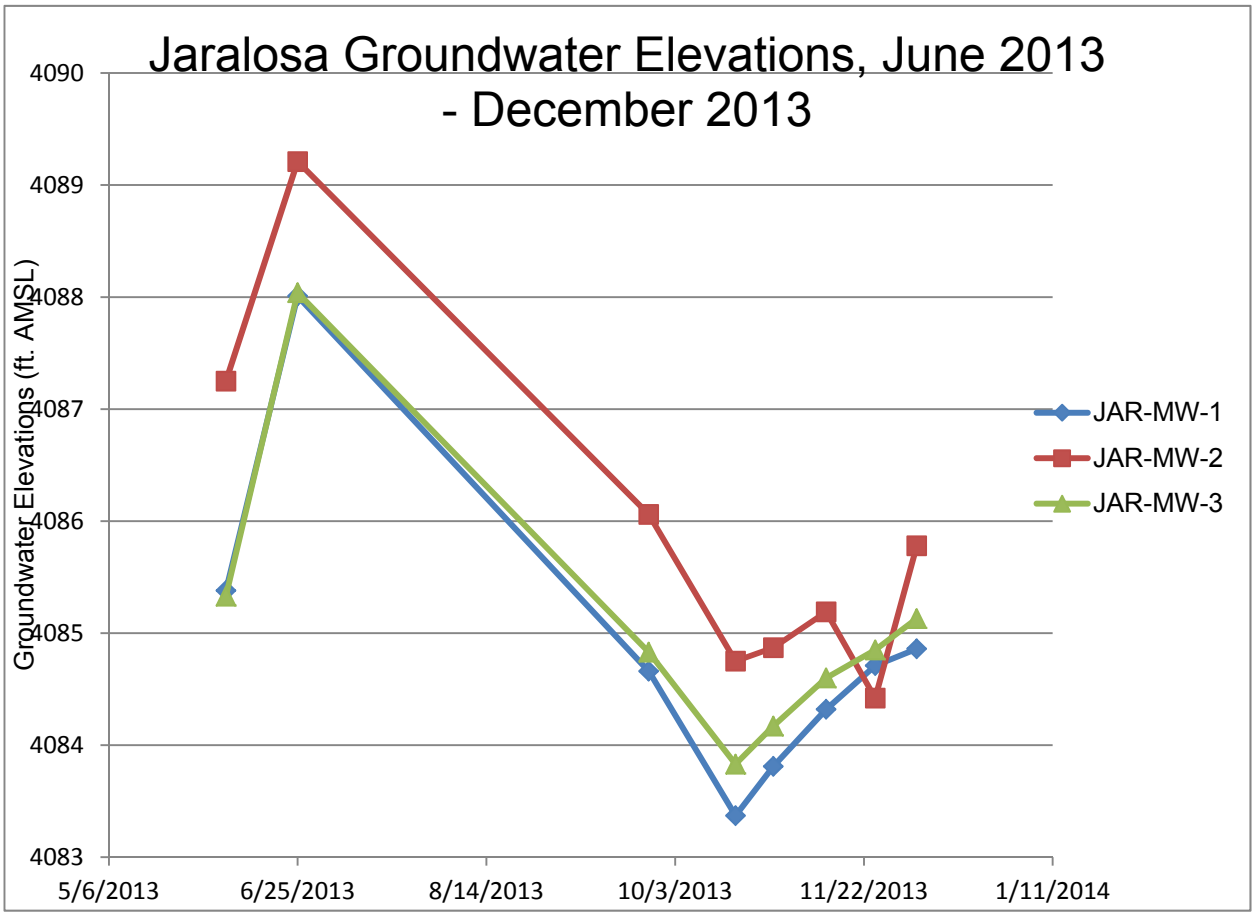

Sunland Park
MW-1 Water Level
Pressure PSI
Pressure (PSI)
16
15.5
15
14.5
14
13.5
13
12.5
12
6/26/2013 13:00
7/4/2013 4:00
7/11/2013 19:00
7/19/2013 10:00
7/27/2013 1:00
8/3/2013 16:00
8/11/2013 7:00
8/18/2013 22:00
8/26/2013 13:00
9/3/2013 4:00
9/10/2013 19:00
9/18/2013 10:00
9/26/2013 1:00
10/3/2013 16:00
10/11/2013 7:00
10/18/2013...
10/26/2013...
11/3/2013 4:00
11/10/2013...
11/18/2013...
Date and Time
SP-MW-1 Pressure PSI

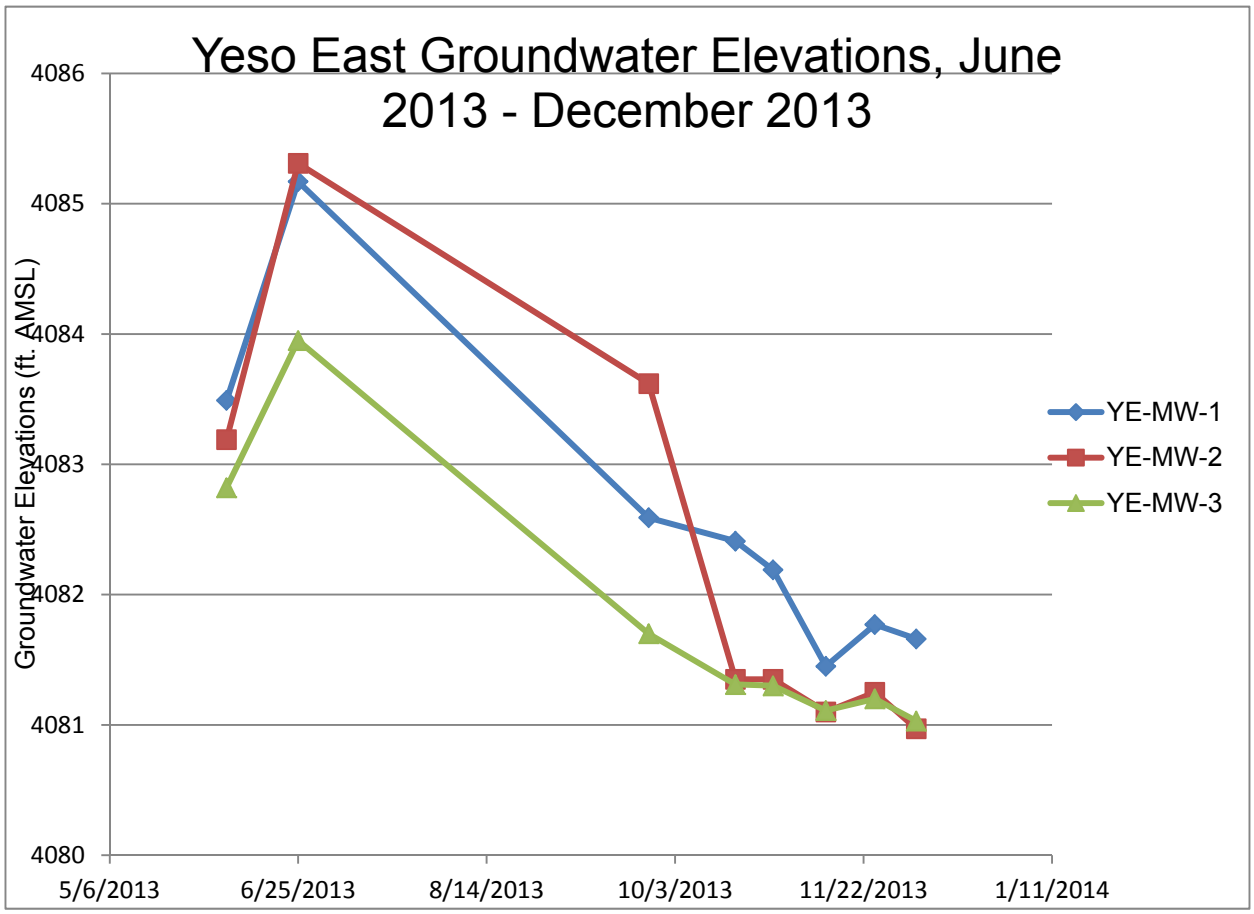

Anapra Bridge
MW-2 Water Level
Pressure PSI
Pressure (PSI)
16.6
16.4
16.2
16
15.8
15.6
15.4
15.2
15
14.8
14.6
14.4
6/25/2013 16:00
7/3/2013 8:00
7/11/2013 0:00
7/18/2013 16:00
7/26/2013 8:00
8/3/2013 0:00
8/10/2013 16:00
8/18/2013 8:00
8/26/2013 0:00
9/2/2013 16:00
9/10/2013 8:00
9/18/2013 0:00
9/25/2013 16:00
10/3/2013 8:00
10/11/2013 0:00
10/18/2013 16:00
10/26/2013 8:00
11/3/2013 0:00
11/10/2013 16:00
11/18/2013 8:00
Date and Time
AB-MW-2 Pressure PSI

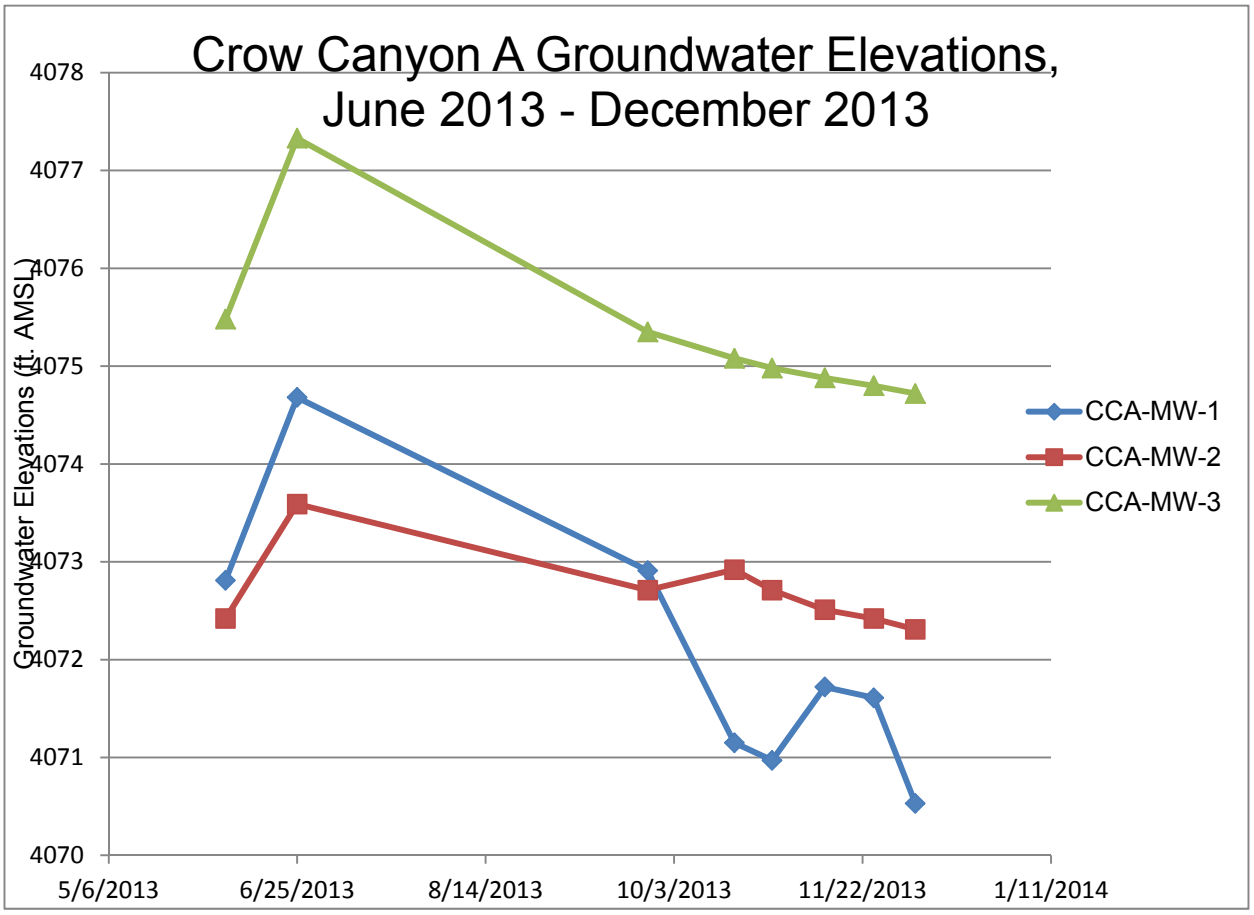
APPENDIX J

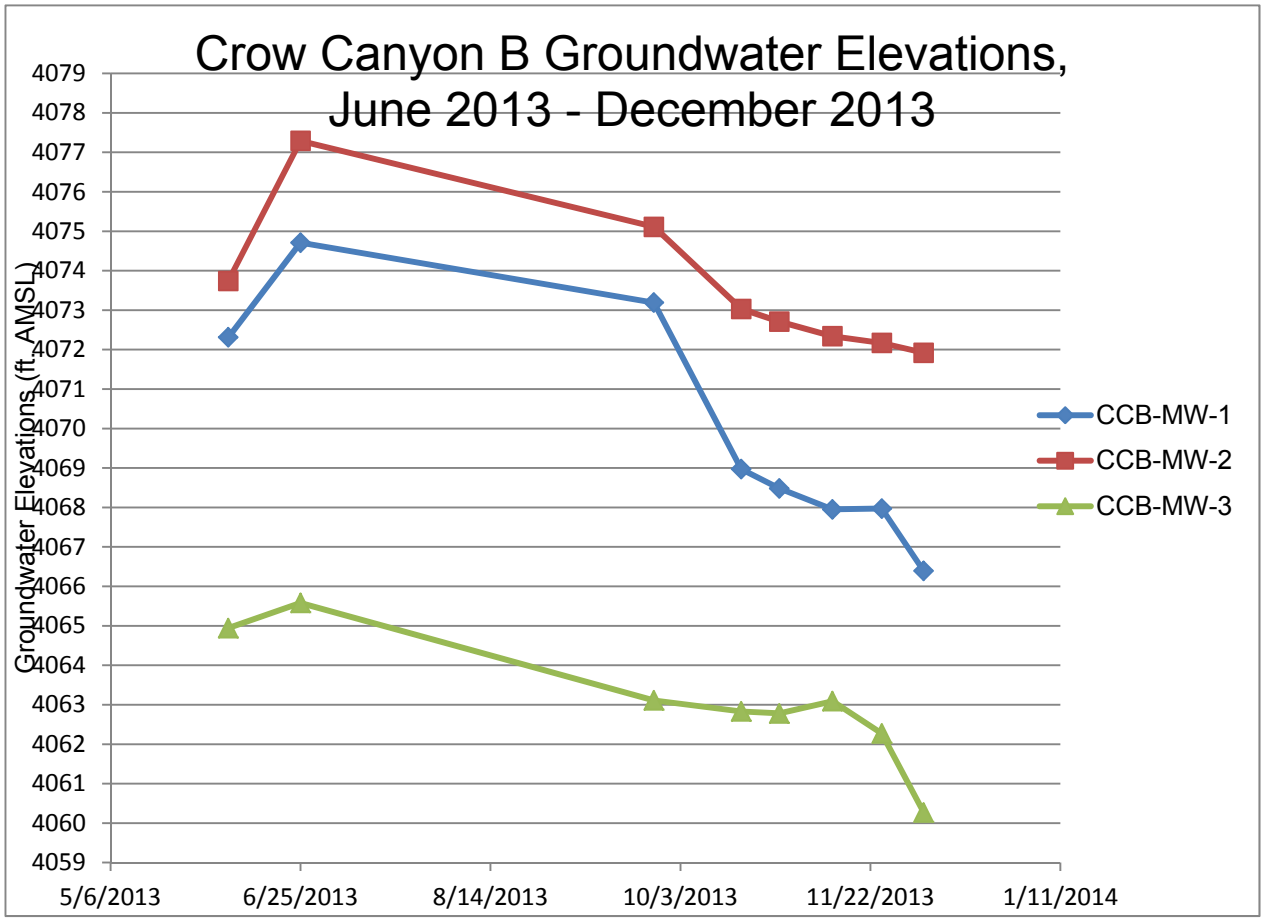
DISCRETE HYDROGRAPHS

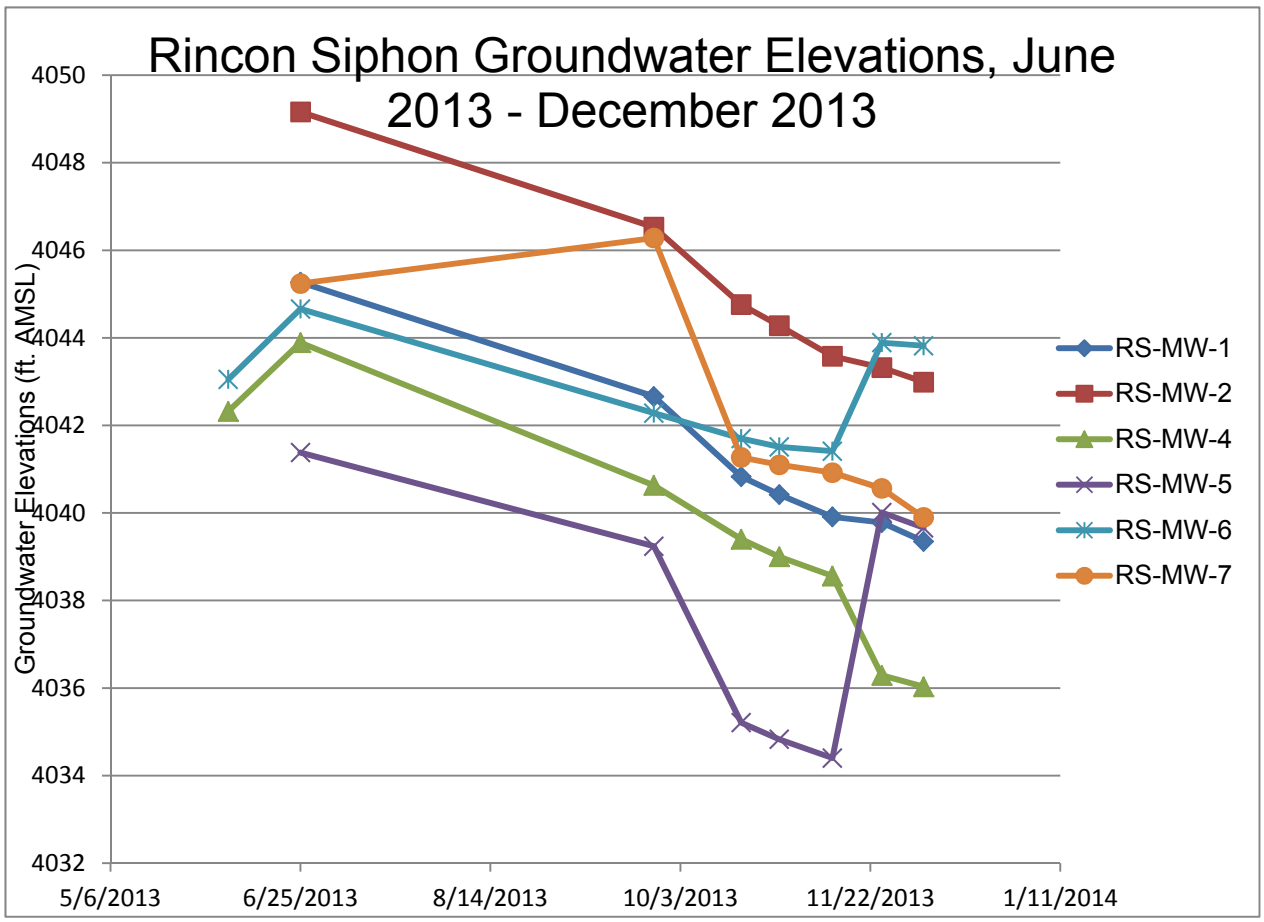

Trujillo Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
4126
4125
4124
4123
4122
4121
4120
4119
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
TRU-MW-1
TRU-MW-2
TRU-MW-3

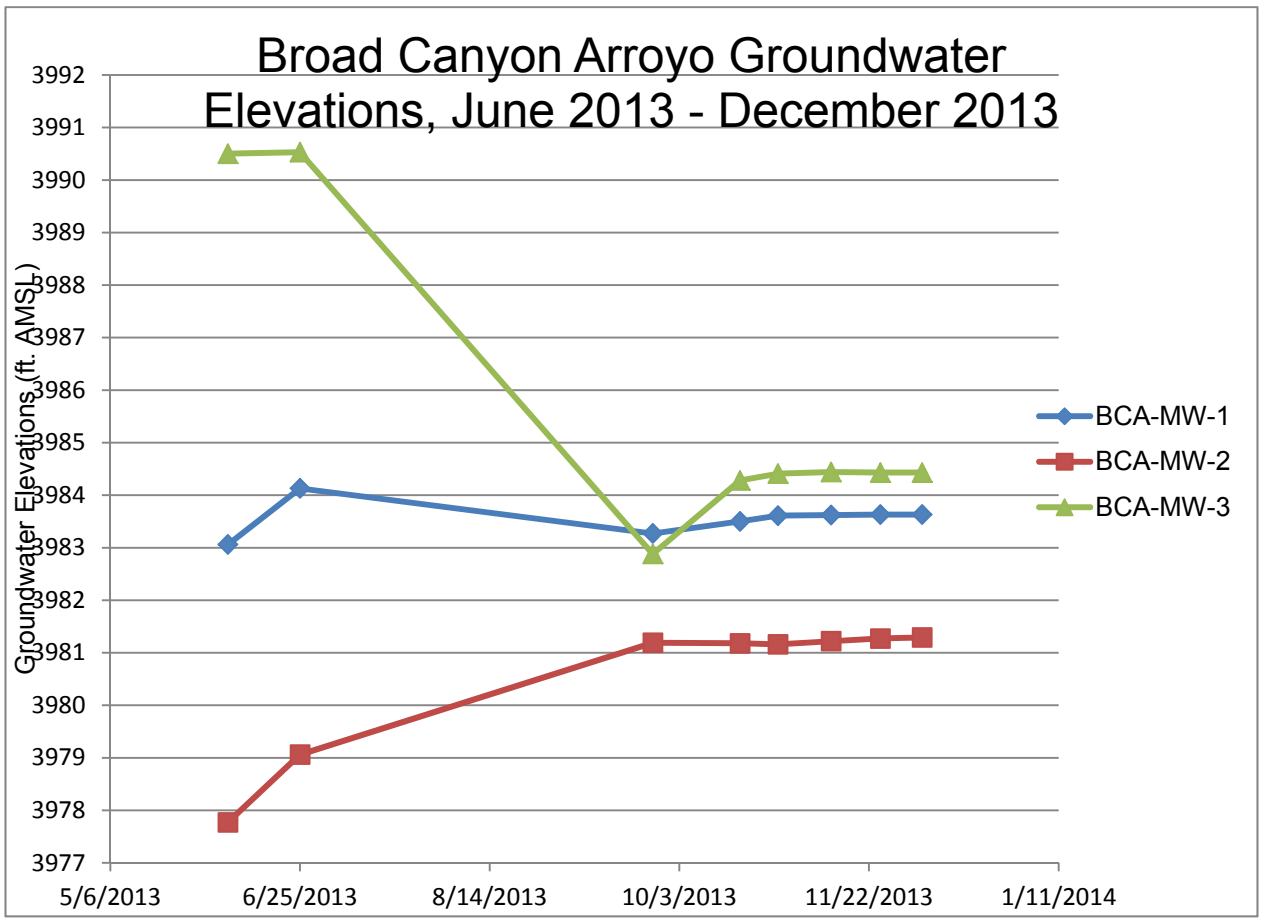

Jaralosa Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
4090
4089
4088
4087
4086
4085
4084
4083
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
JAR-MW-1
JAR-MW-2
JAR-MW-3

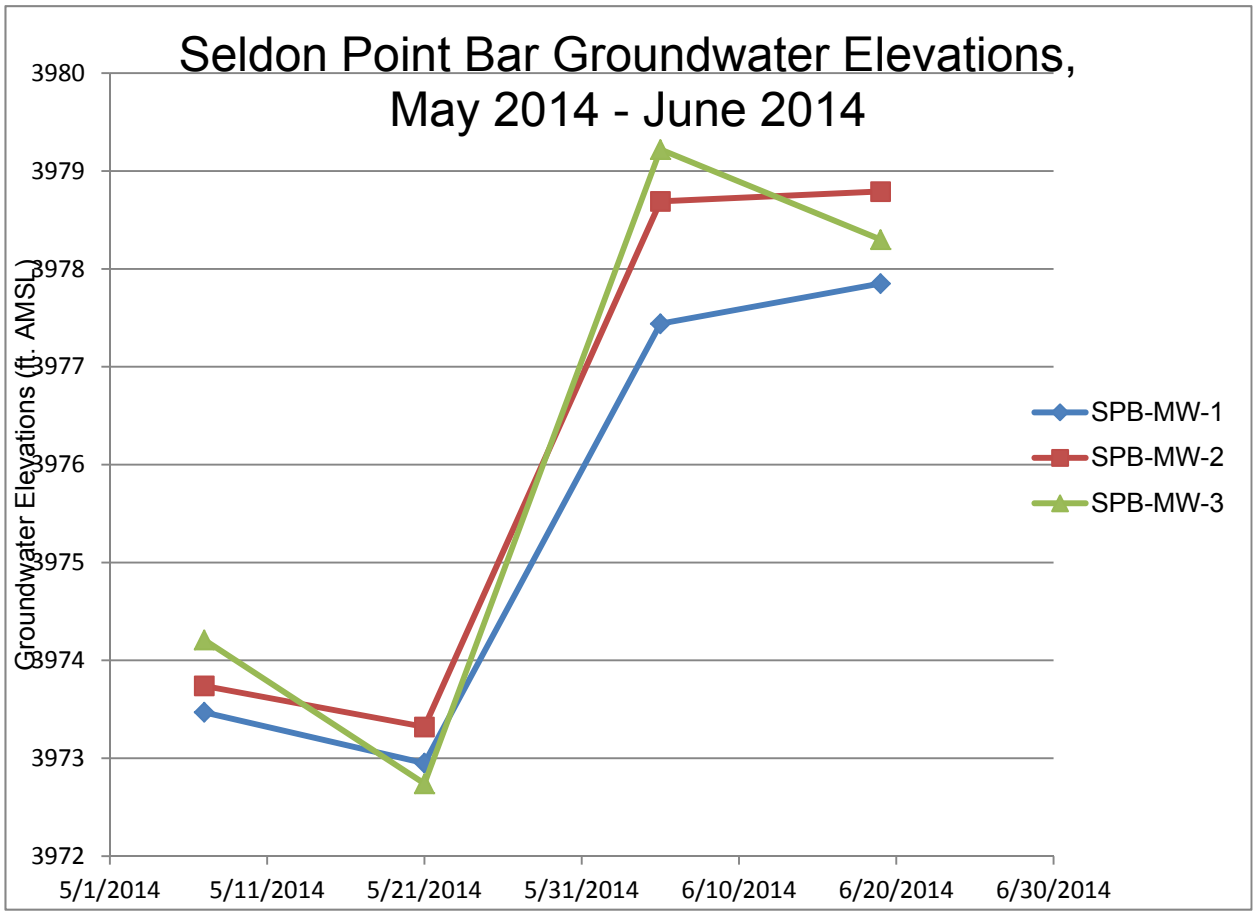

Yeso East Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
4086
4085
4084
4083
4082
4081
4080
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
YE-MW-1
YE-MW-2
YE-MW-3

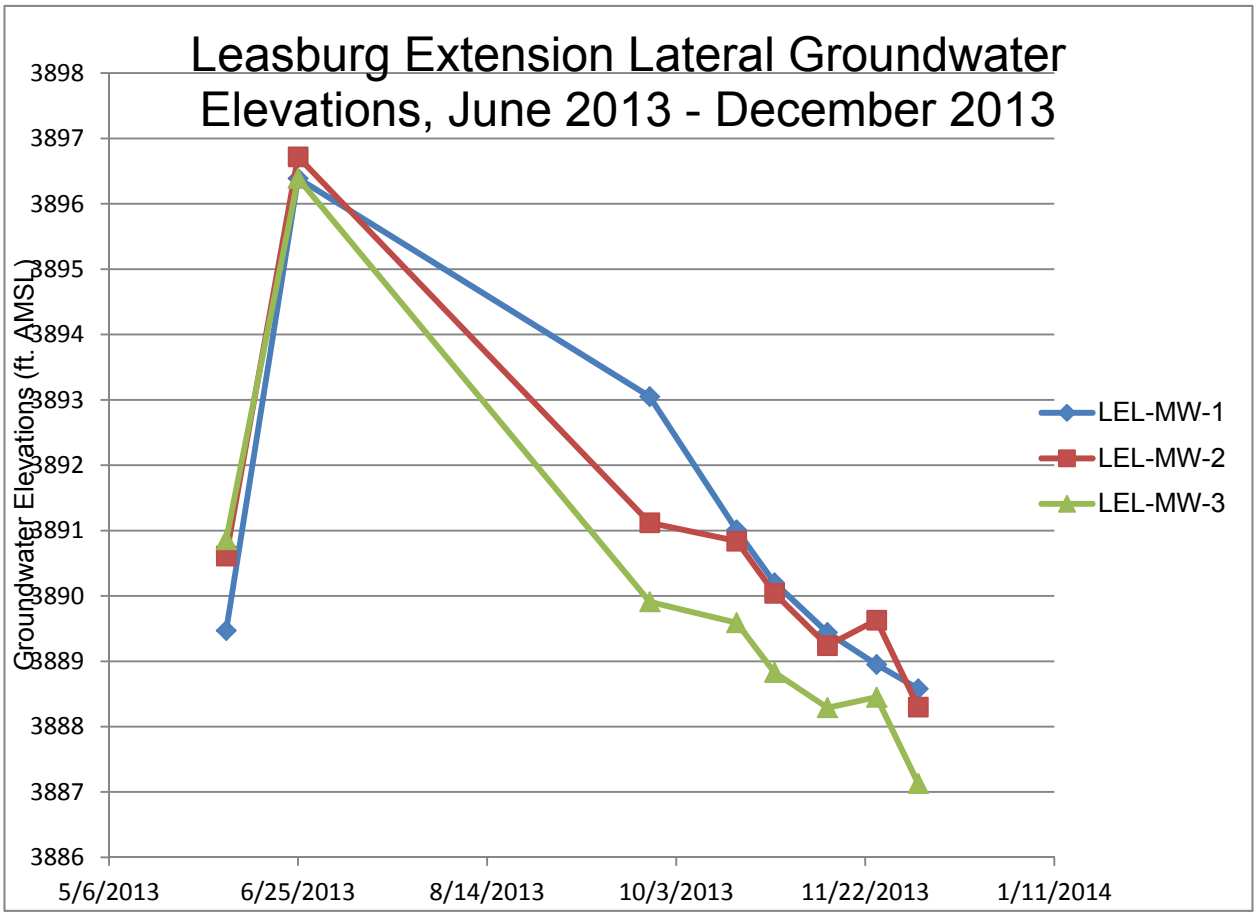

Crow Canyon A Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
4078
4077
4076
4075
4074
4073
4072
4071
4070
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
CCA-MW-1
CCA-MW-2
CCA-MW-3

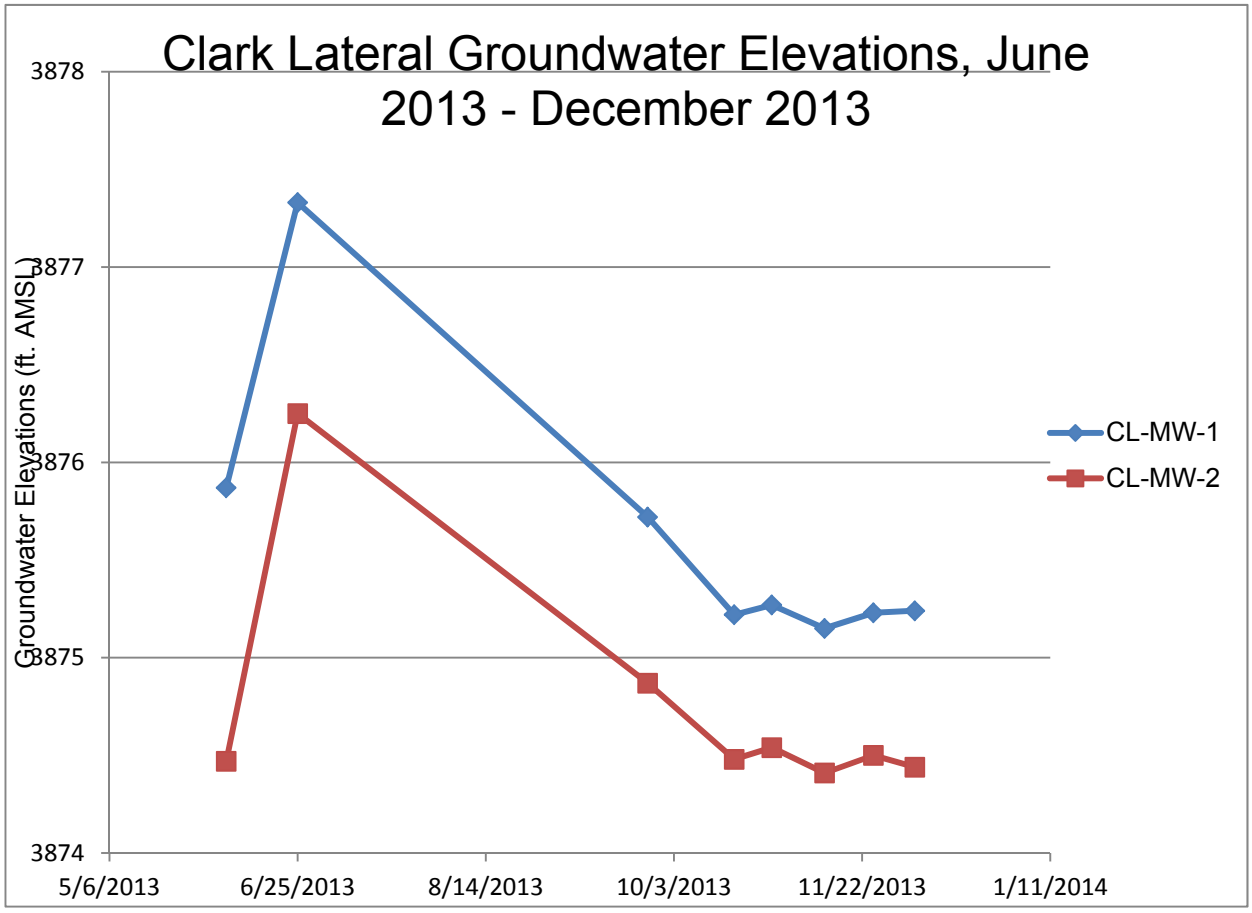

Crow Canyon B Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
4079
4078
4077
4076
4075
4074
4073
4072
4071
4070
4069
4068
4067
4066
4065
4064
4063
4062
4061
4060
4059
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
CCB-MW-1
CCB-MW-2
CCB-MW-3

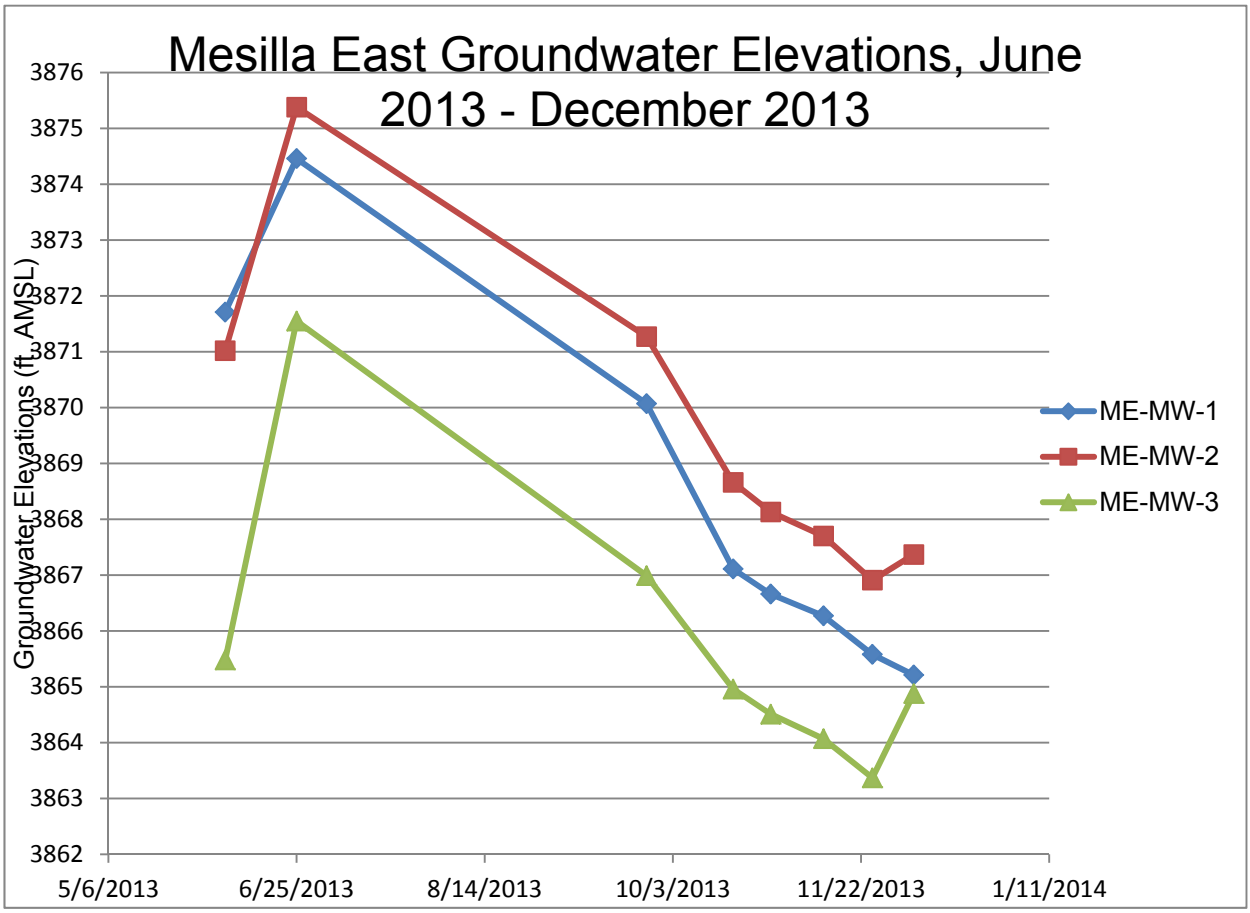

Rincon Siphon Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
4050
4048
4046
4044
4042
4040
4038
4036
4034
4032
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
RS-MW-1
RS-MW-2
RS-MW-4
RS-MW-5
RS-MW-6
RS-MW-7

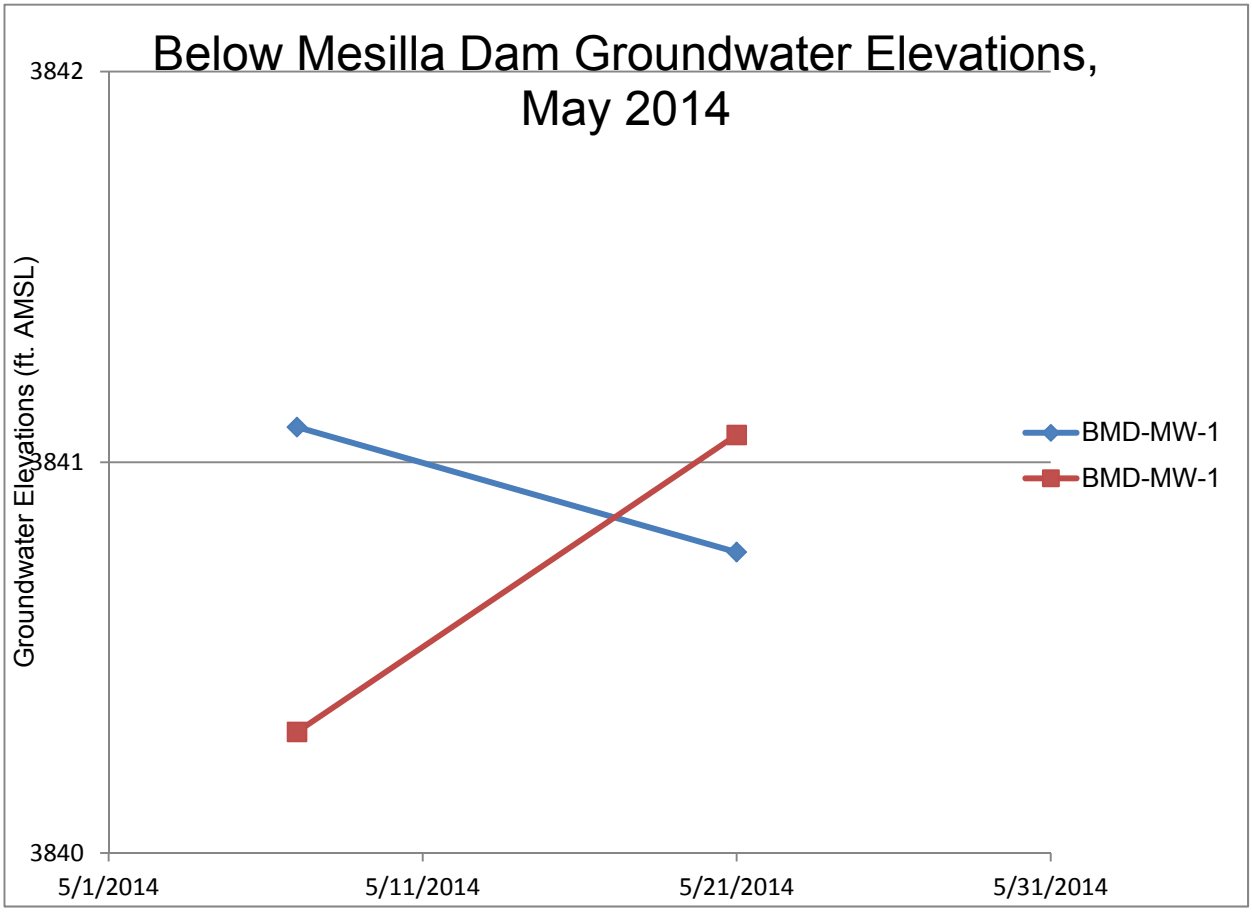

Broad Canyon Arroyo Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
3992
3991
3990
3989
3988
3987
3986
3985
3984
3983
3982
3981
3980
3979
3978
3977
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
BCA-MW-1
BCA-MW-2
BCA-MW-3

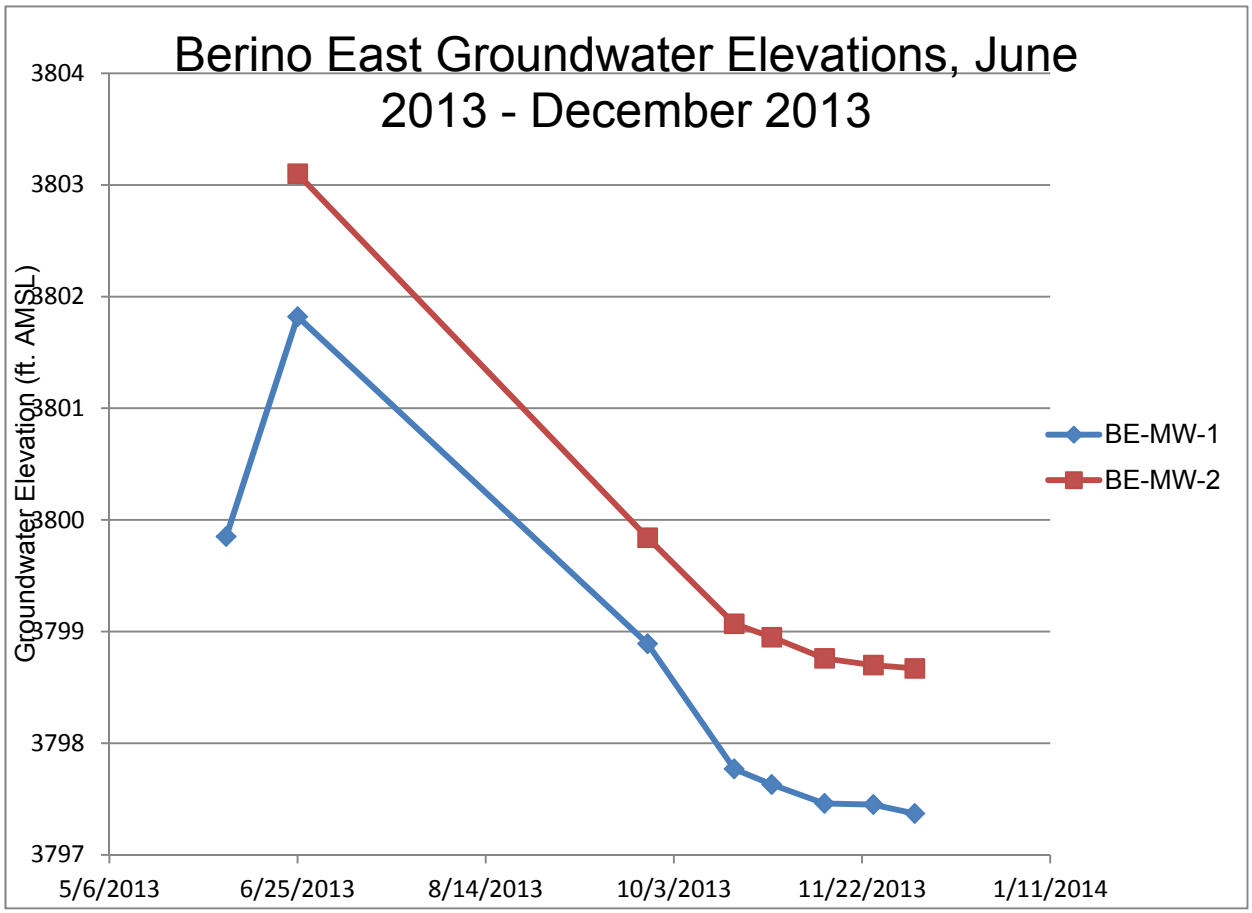

Seldon Point Bar Groundwater Elevations, May 2014 - June 2014
Groundwater Elevations (ft. AMSL)
3980
3979
3978
3977
3976
3975
3974
3973
3972
5/1/2014
5/11/2014
5/21/2014
5/31/2014
6/10/2014
6/20/2014
6/30/2014
SPB-MW-1
SPB-MW-2
SPB-MW-3

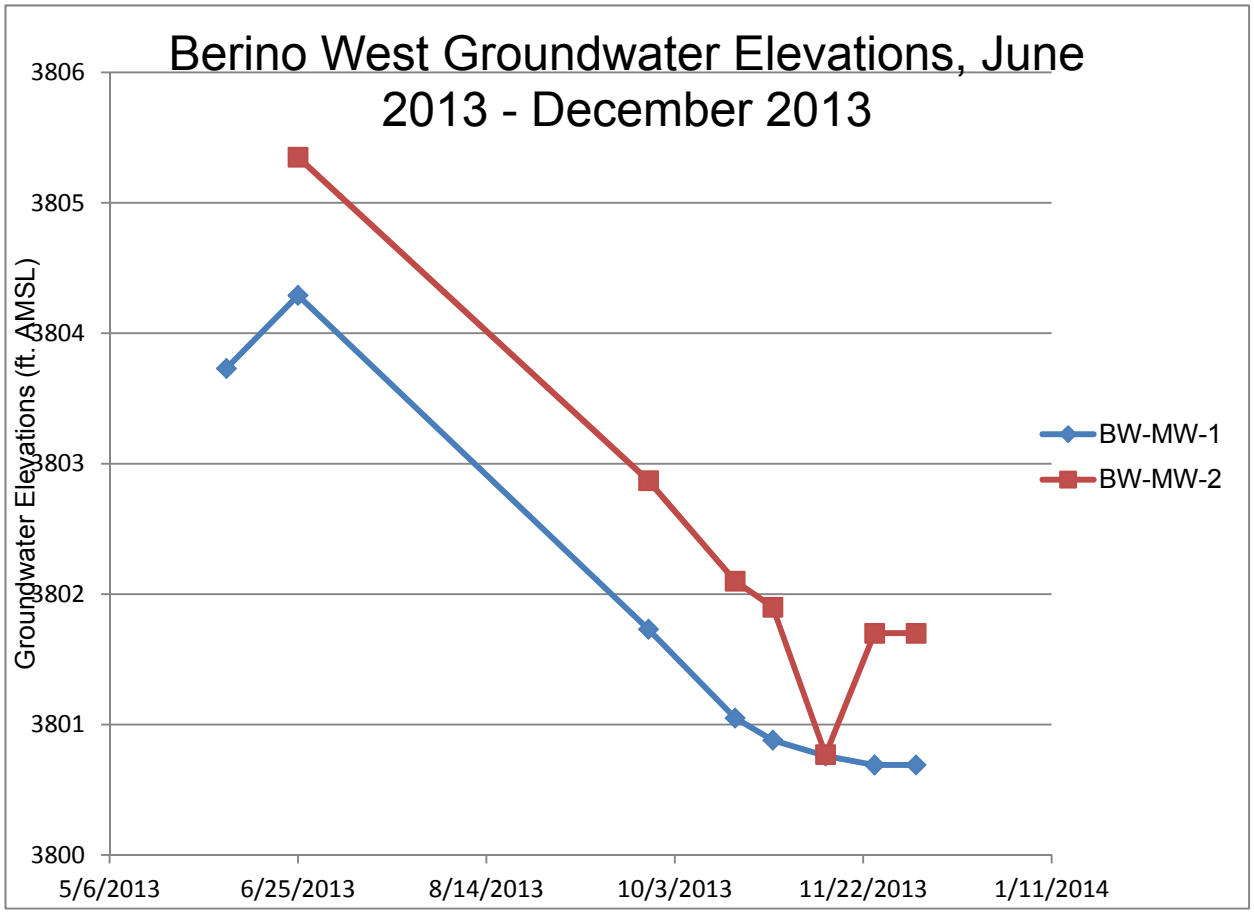

Leasburg Extension Lateral Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
3898
3897
3896
3895
3894
3893
3892
3891
3890
3889
3888
3887
3886
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
LEL-MW-1
LEL-MW-2
LEL-MW-3

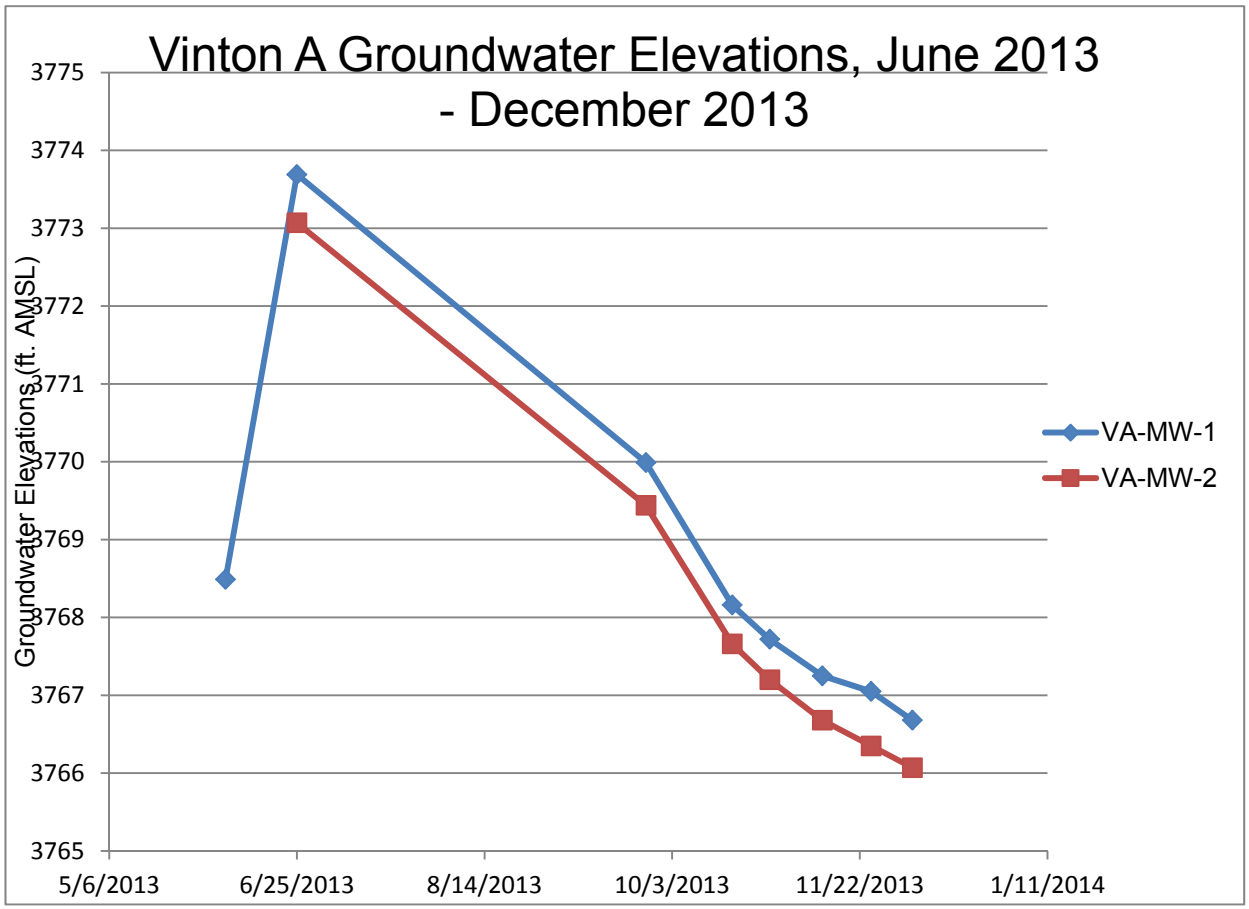

Clark Lateral Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
3878
3877
3876
3875
3874
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
CL-MW-1
CL-MW-2

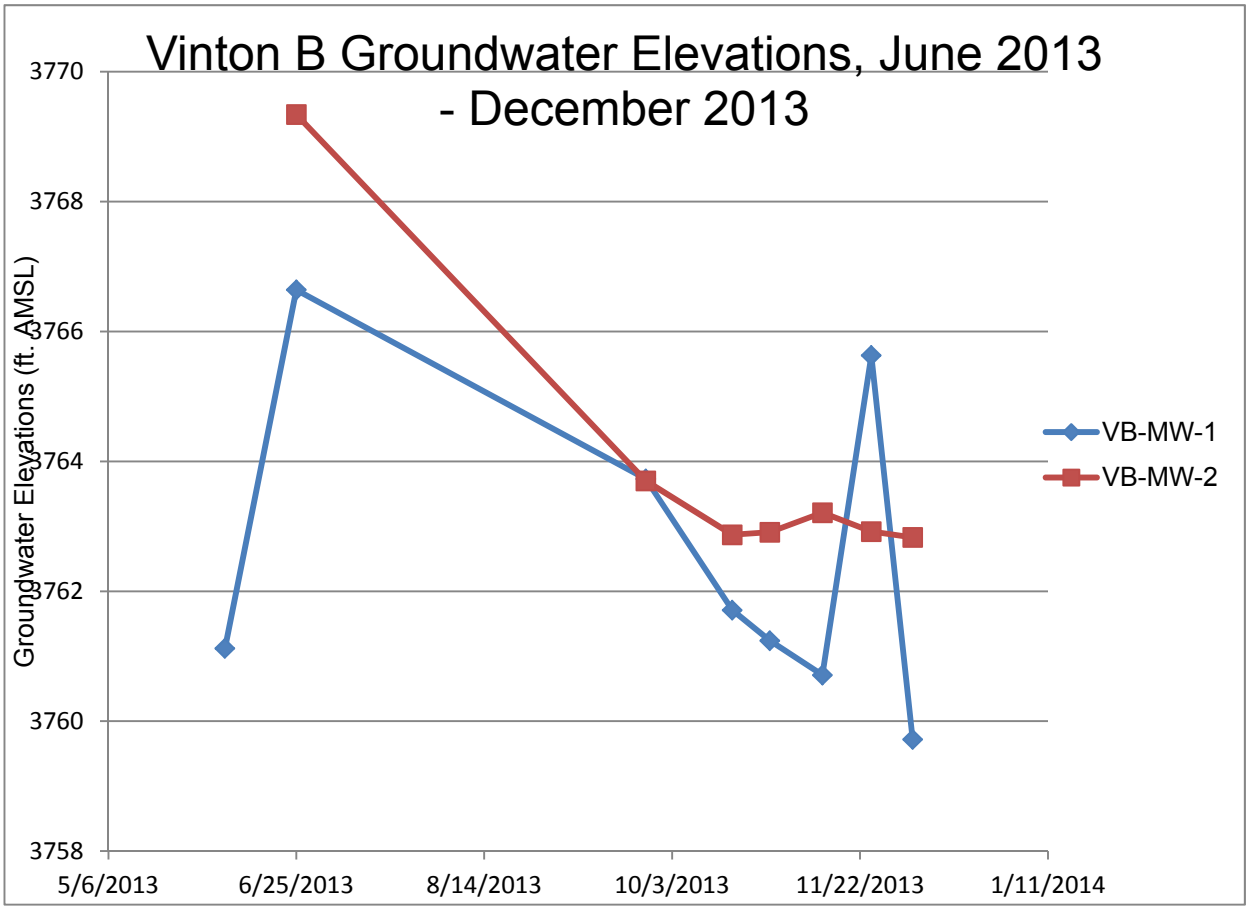

Mesilla East Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
3876
3875
3874
3873
3872
3871
3870
3869
3868
3867
3866
3865
3864
3863
3862
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
ME-MW-1
ME-MW-2
ME-MW-3

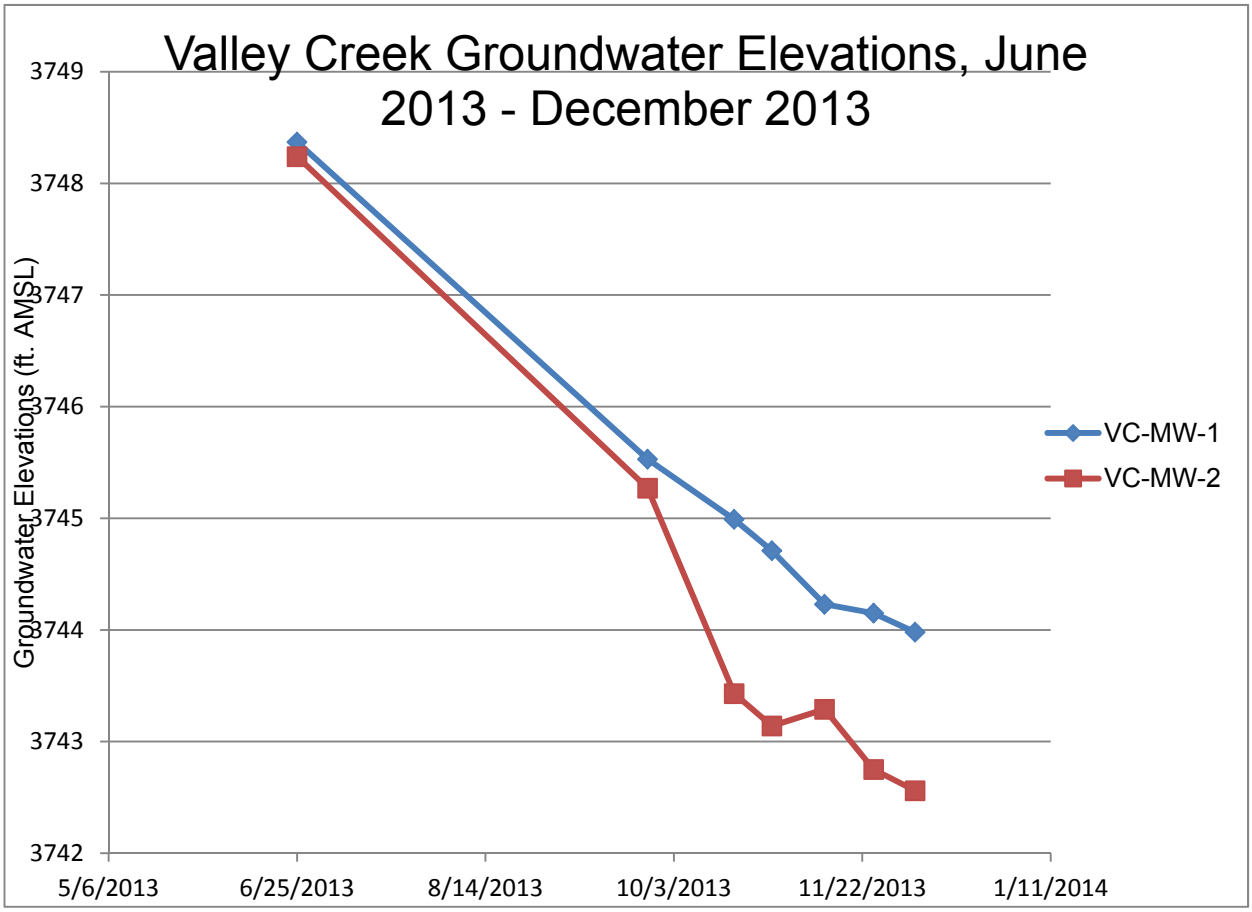

Below Mesilla Dam Groundwater Elevations, May 2014
Groundwater Elevations (ft. AMSL)
3842
3841
3840
5/1/2014
5/11/2014
5/21/2014
5/31/2014
BMD-MW-1
BMD-MW-1

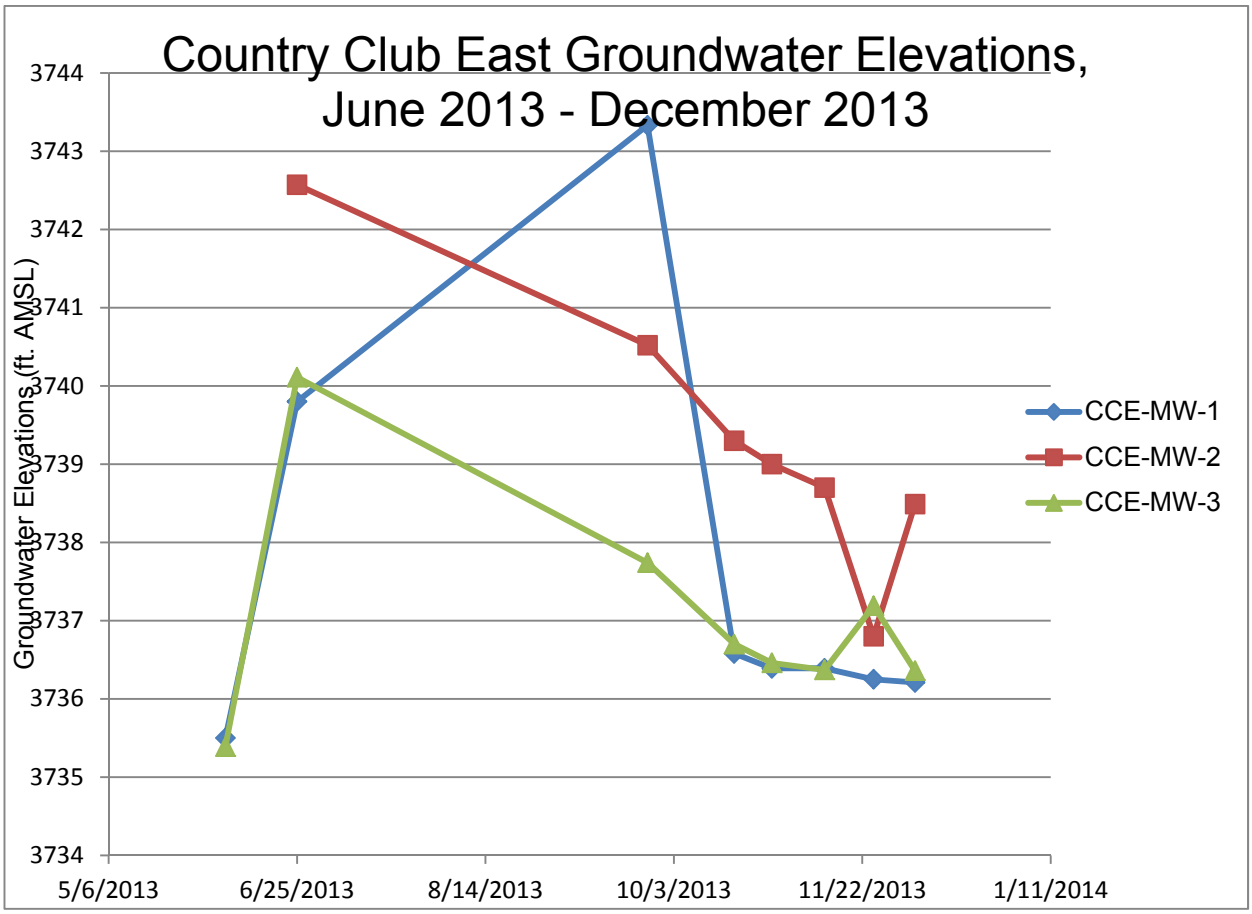

Berino East Groundwater Elevations, June 2013 - December 2013
Groundwater Elevation (ft. AMSL)
3804
3803
3802
3801
3800
3799
3798
3797
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
BE-MW-1
BE-MW-2

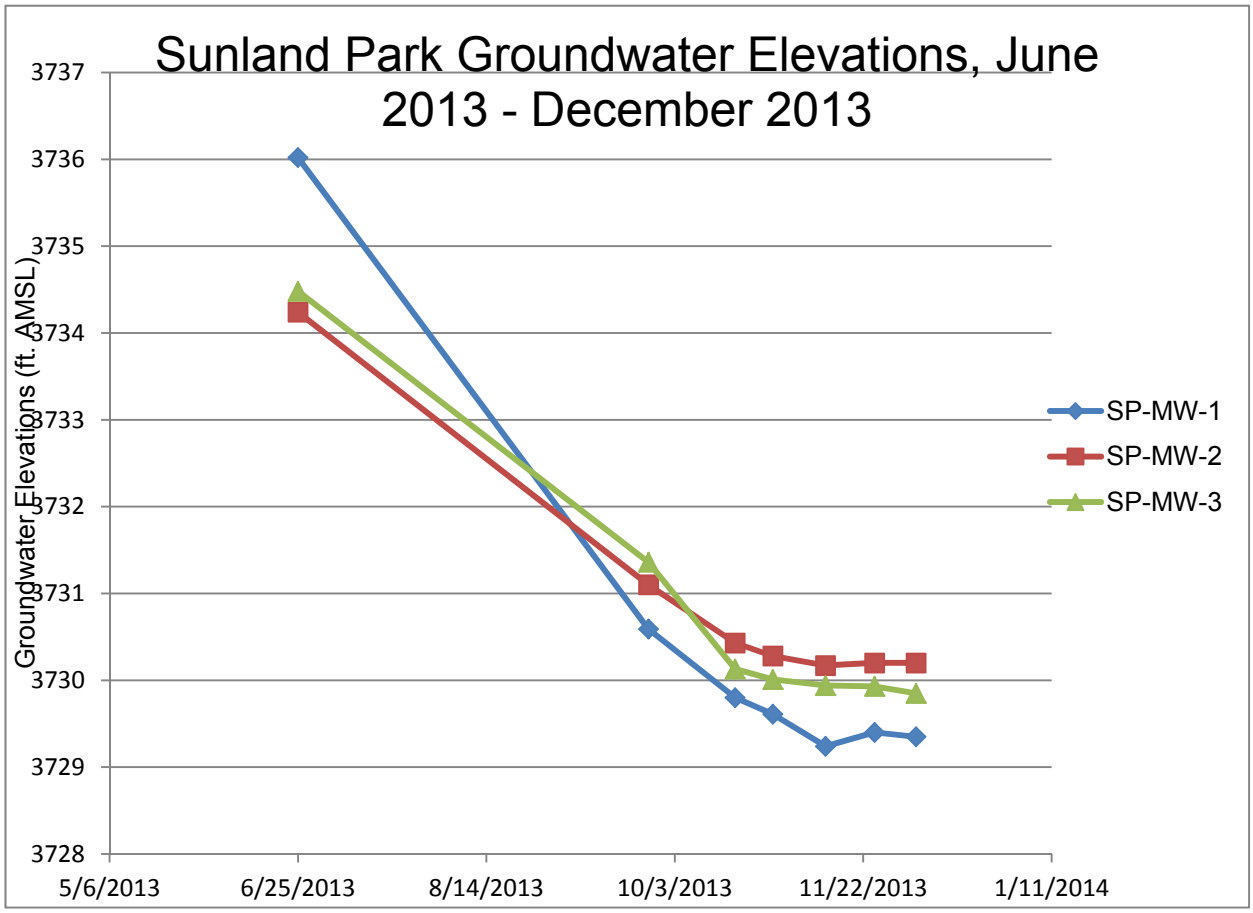

Berino West Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
3806
3805
3804
3803
3802
3801
3800
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
BW-MW-1
BW-MW-2

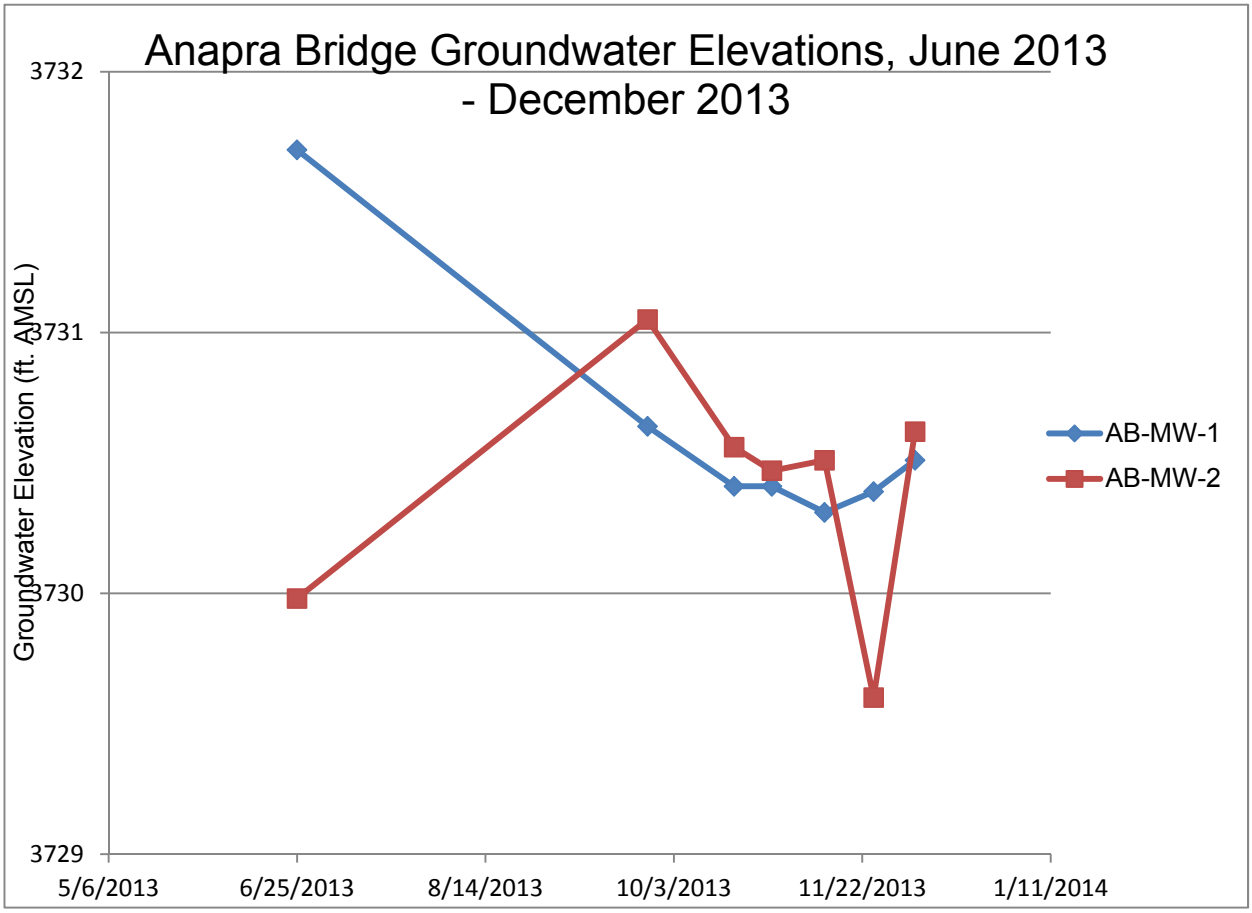

Vinton A Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
3775
3774
3773
3772
3771
3770
3769
3768
3767
3766
3765
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
VA-MW-1
VA-MW-2


Vinton B Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
3770
3768
3766
3764
3762
3760
3758
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
VB-MW-1
VB-MW-2


Valley Creek Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
3749
3748
3747
3746
3745
3744
3743
3742
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
VC-MW-1
VC-MW-2

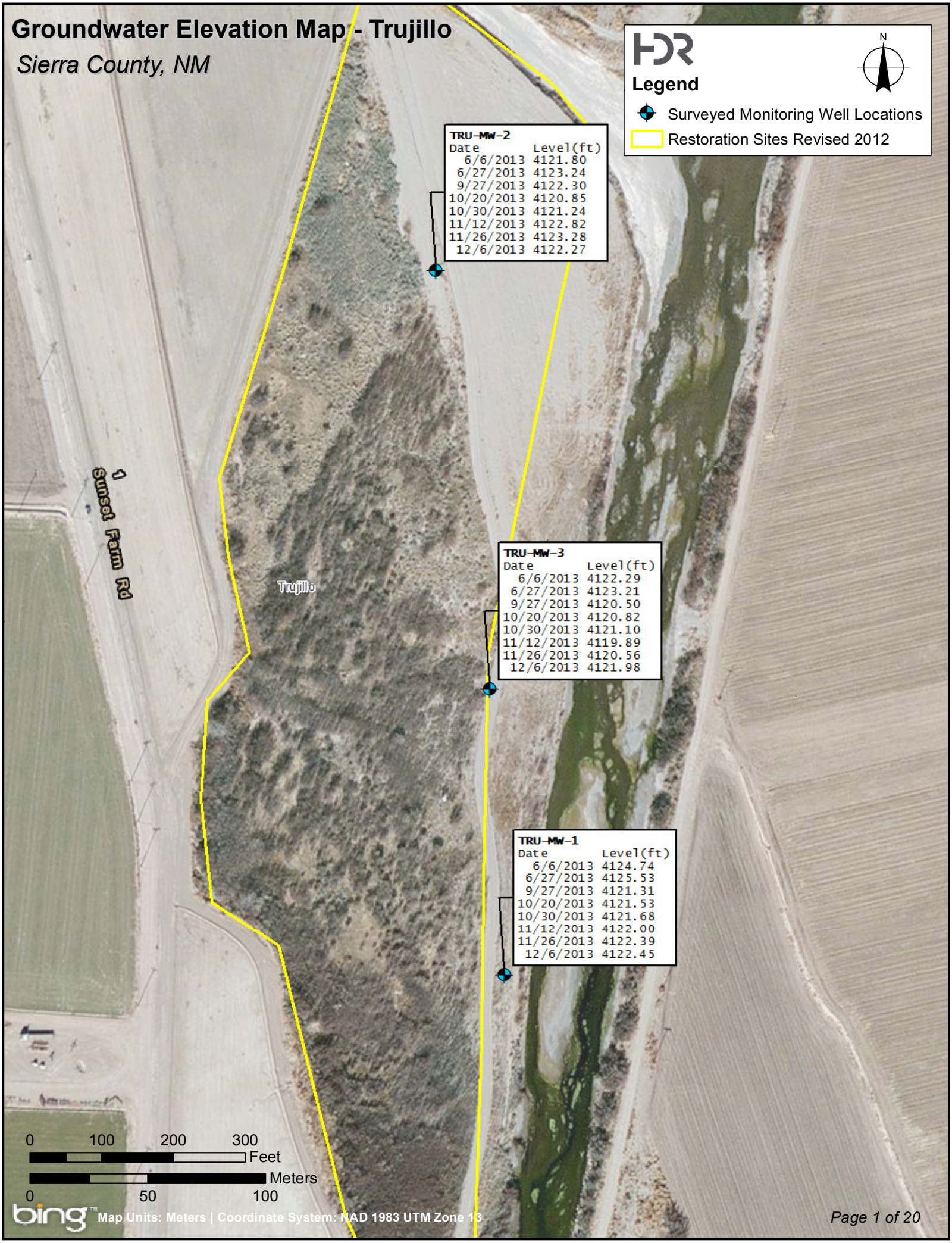

Country Club East Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
3744
3743
3742
3741
3740
3739
3738
3737
3736
3735
3734
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
CCE-MW-1
CCE-MW-2
CCE-MW-3


Sunland Park Groundwater Elevations, June 2013 - December 2013
Groundwater Elevations (ft. AMSL)
3737
3736
3735
3734
3733
3732
3731
3730
3729
3728
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
SP-MW-1
SP-MW-2
SP-MW-3


Anapra Bridge Groundwater Elevations, June 2013 - December 2013
Groundwater Elevation (ft. AMSL)
3732
3731
3730
3729
5/6/2013
6/25/2013
8/14/2013
10/3/2013
11/22/2013
1/11/2014
AB-MW-1
AB-MW-2

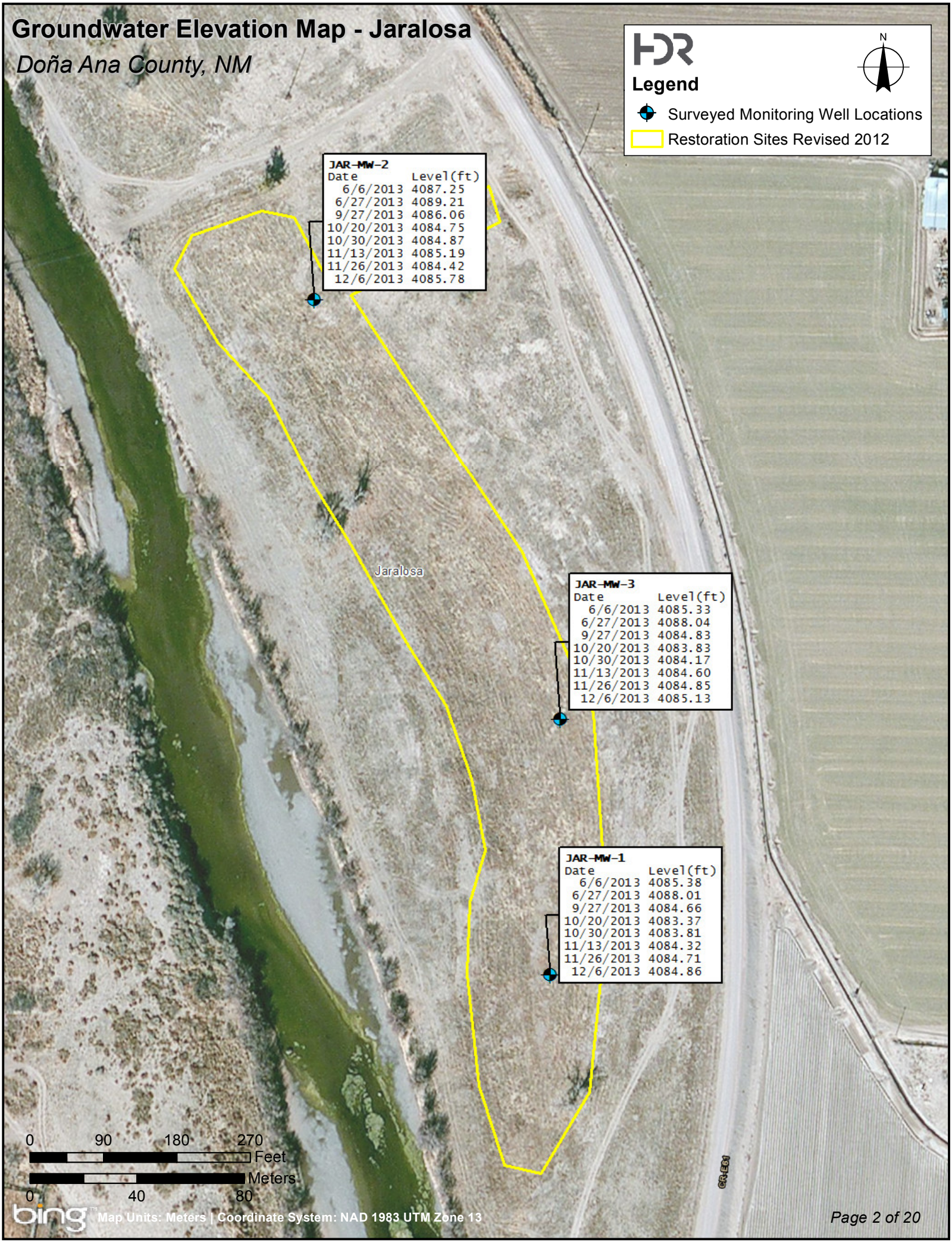
APPENDIX K

MAPS SHOWING MANUALLY-COLLECTED GROUNDWATER LEVELS


Groundwater Elevation Map - Trujillo
Sierra County, NM
Legend
Surveyed Monitoring Well Locations
Restoration Sites Revised 2012
N
TRU-MW-2
Date Level(ft)
6/6/2013 4121.80
6/27/2013 4123.24
9/27/2013 4122.30
10/20/2013 4120.85
10/30/2013 4121.24
11/12/2013 4122.82
11/26/2013 4123.28
12/6/2013 4122.27
TRU-MW-3
Date Level(ft)
6/6/2013 4122.29
6/27/2013 4123.21
9/27/2013 4120.50
10/20/2013 4120.82
10/30/2013 4121.10
11/12/2013 4119.89
11/26/2013 4120.56
12/6/2013 4121.98
TRU-MW-1
Date Level(ft)
6/6/2013 4124.74
6/27/2013 4125.53
9/27/2013 4121.31
10/20/2013 4121.53
10/30/2013 4121.68
11/12/2013 4122.00
11/26/2013 4122.39
12/6/2013 4122.45
Sunset Farm Rd
Trujillo
0 100 200 300
Feet
0 50 100
Meters
bing
Map Units: Meters | Coordinate System: NAD 1983 UTM Zone 13

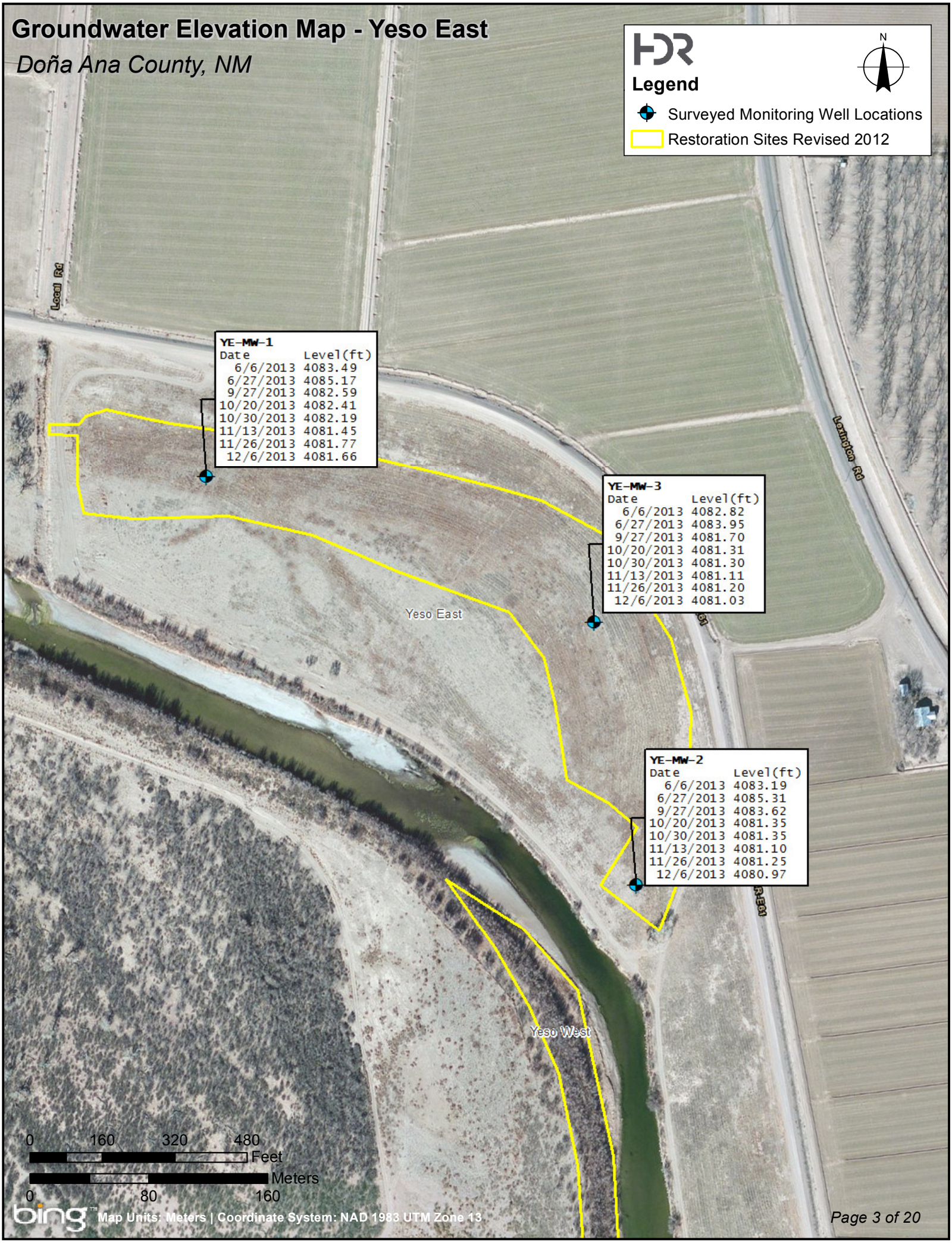
Groundwater Elevation Map - Jaralosa

Doña Ana County, NM



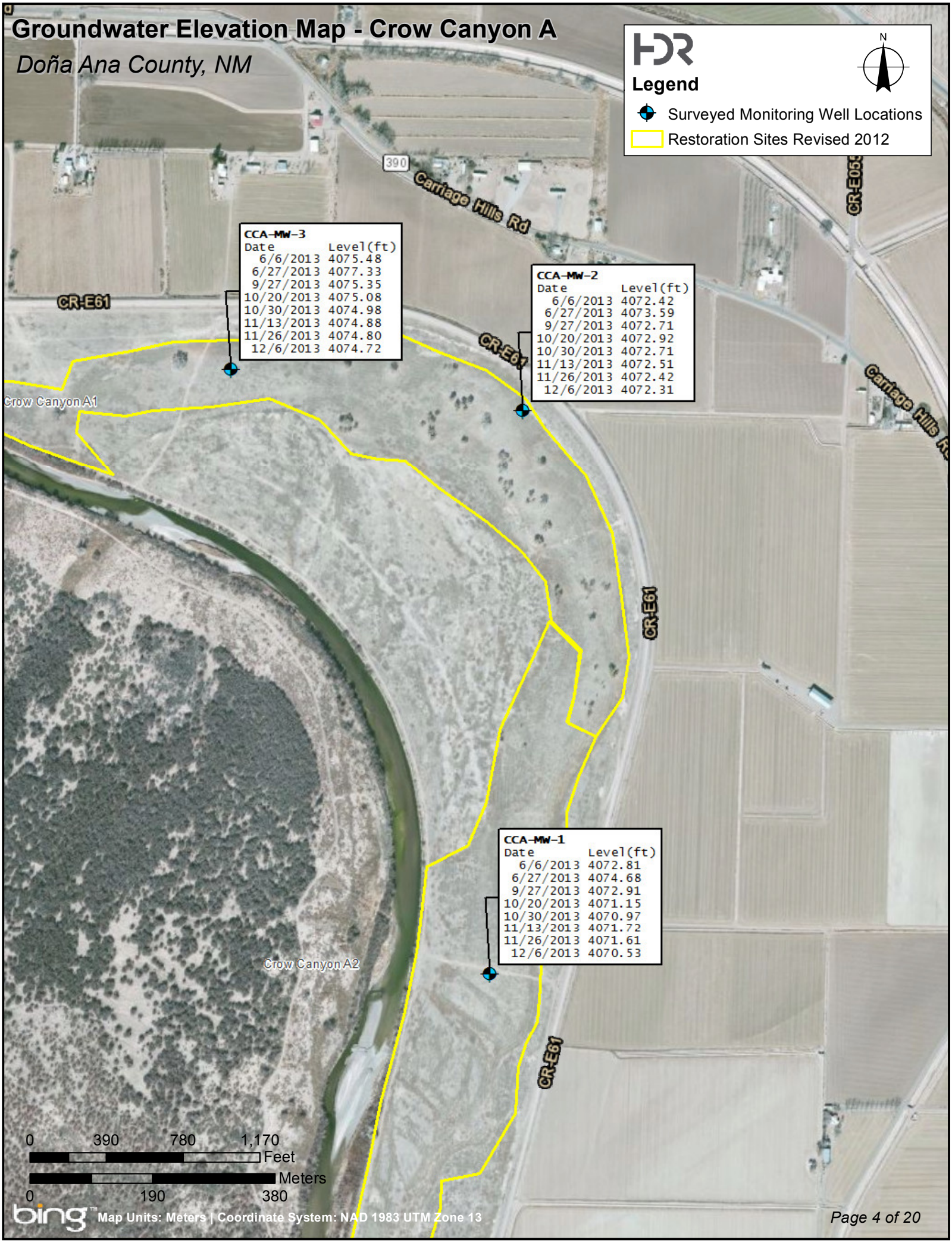
Groundwater Elevation Map - Yeso East

Doña Ana County, NM



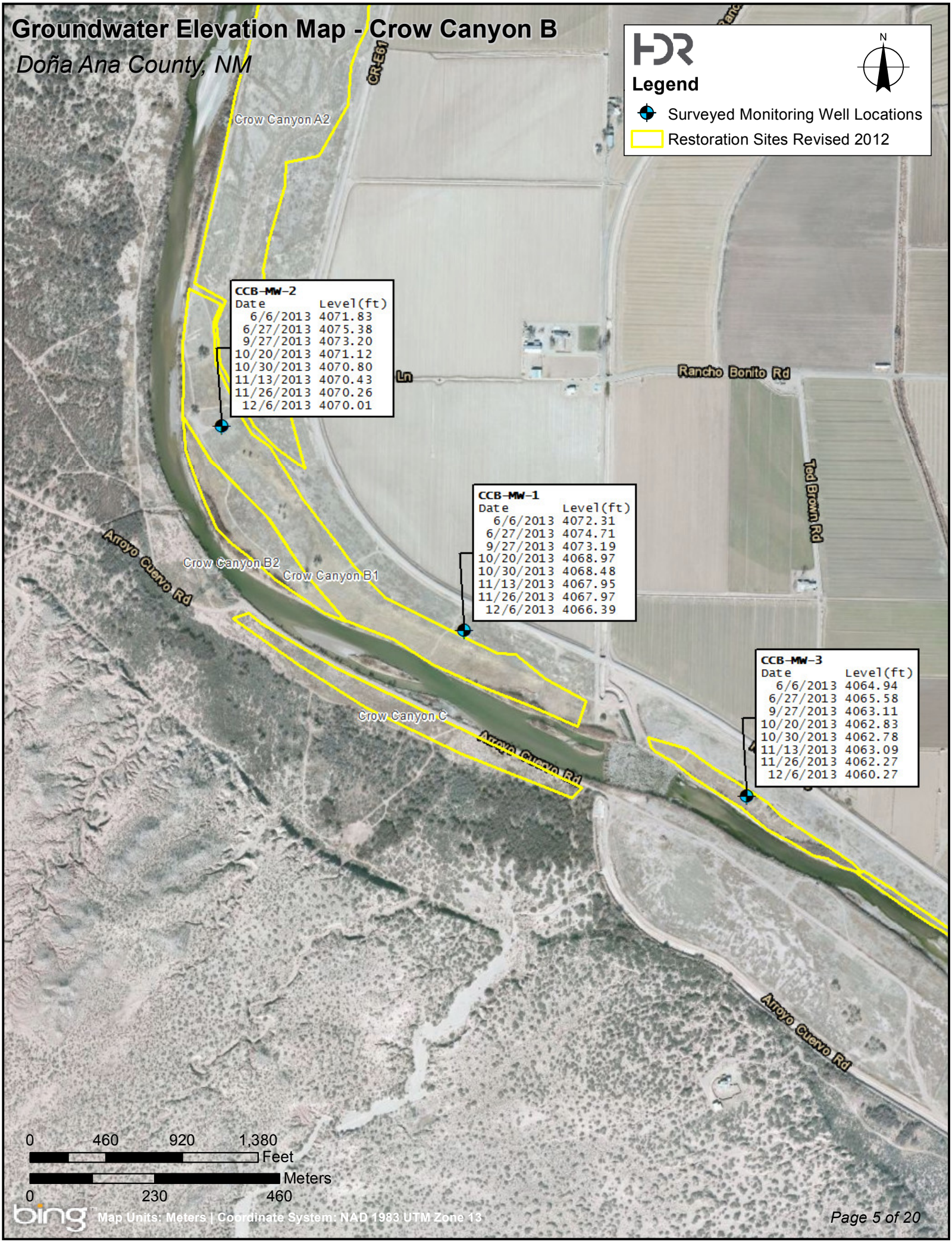
Groundwater Elevation Map - Crow Canyon A

Doña Ana County, NM



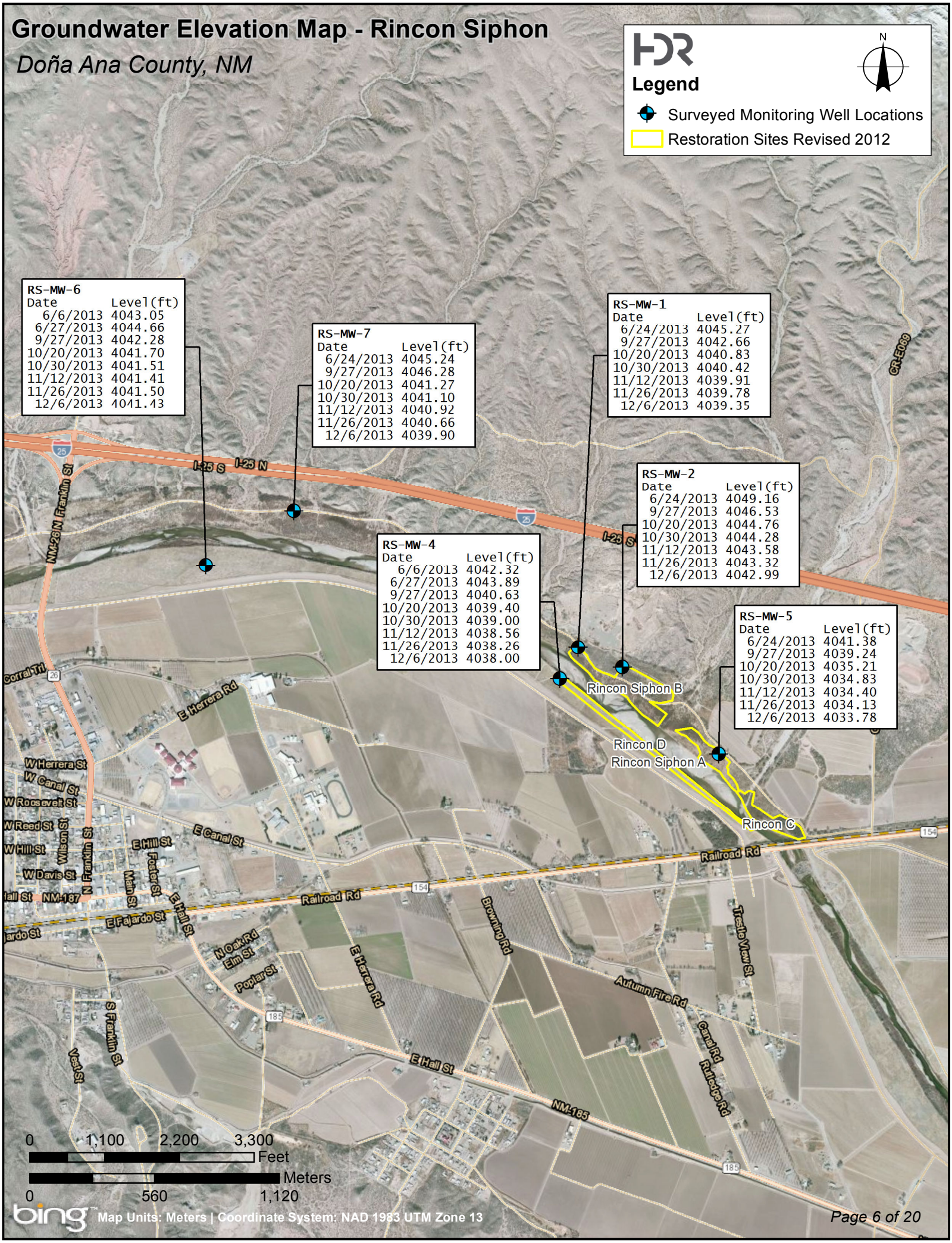
Groundwater Elevation Map - Crow Canyon B

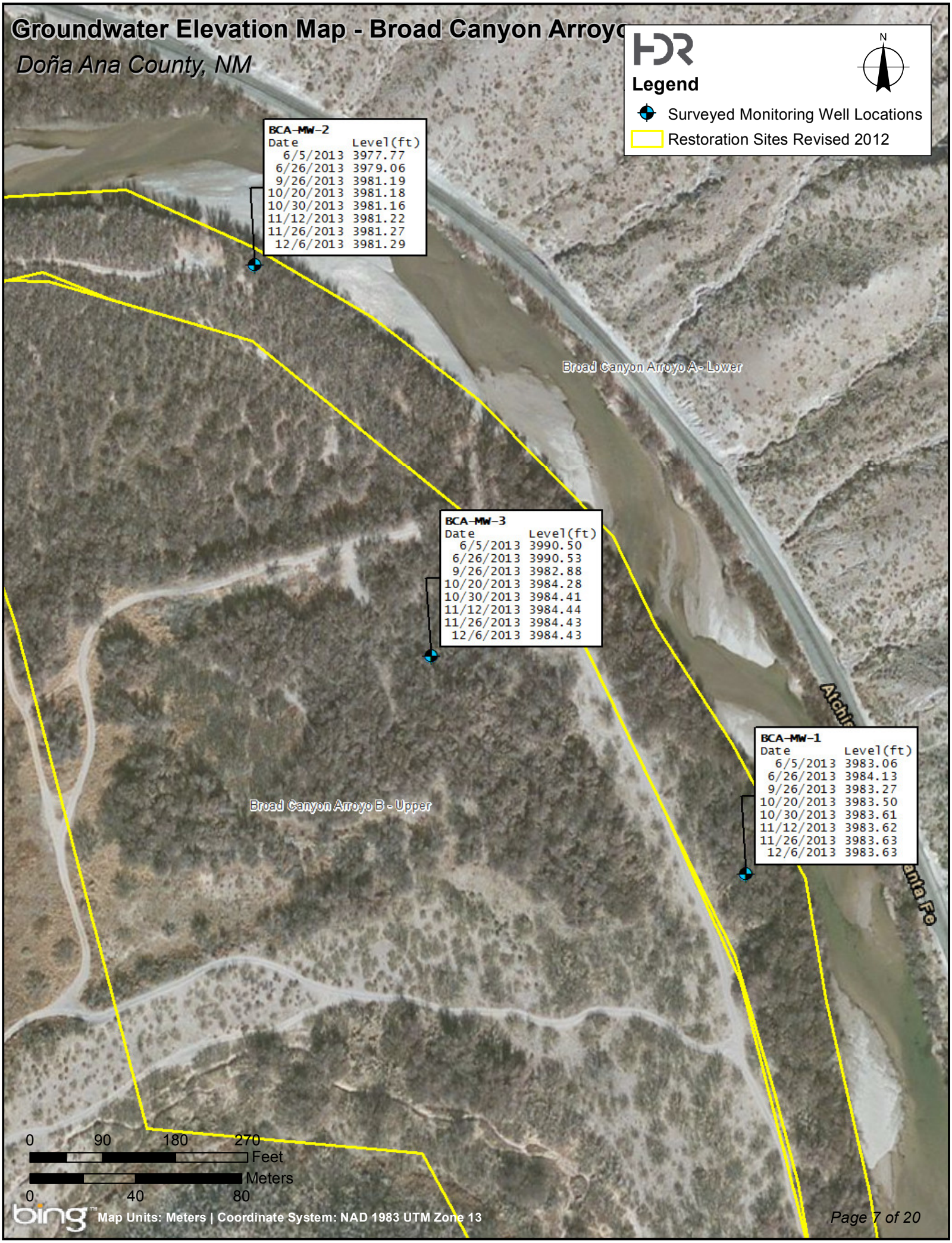
Doña Ana County, NM



Groundwater Elevation Map - Rincon Siphon

Doña Ana County, NM



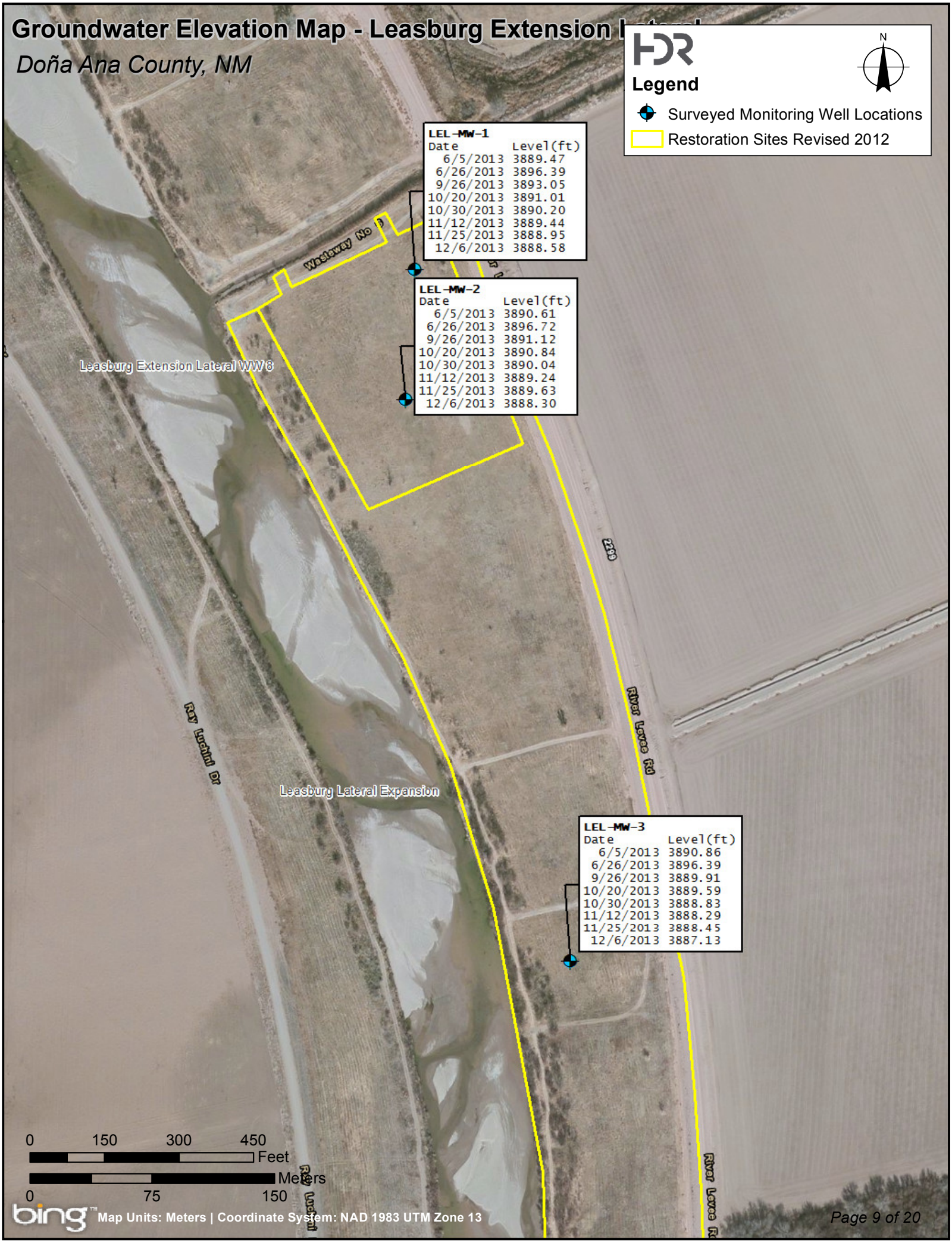

Groundwater Elevation Map - Broad Canyon Arroyo
Doña Ana County, NM
Legend
Surveyed Monitoring Well Locations
Restoration Sites Revised 2012
N
BCA-MW-2
Date Level(ft)
6/5/2013 3977.77
6/26/2013 3979.06
9/26/2013 3981.19
10/20/2013 3981.18
10/30/2013 3981.16
11/12/2013 3981.22
11/26/2013 3981.27
12/6/2013 3981.29
BCA-MW-3
Date Level(ft)
6/5/2013 3990.50
6/26/2013 3990.53
9/26/2013 3982.88
10/20/2013 3984.28
10/30/2013 3984.41
11/12/2013 3984.44
11/26/2013 3984.43
12/6/2013 3984.43
BCA-MW-1
Date Level(ft)
6/5/2013 3983.06
6/26/2013 3984.13
9/26/2013 3983.27
10/20/2013 3983.50
10/30/2013 3983.61
11/12/2013 3983.62
11/26/2013 3983.63
12/6/2013 3983.63
Broad Canyon Arroyo A - Lower
Broad Canyon Arroyo B - Upper
0 90 180 270
Feet
Meters
0 40 80
bing
Map Units: Meters | Coordinate System: NAD 1983 UTM Zone 13

Groundwater Elevation Map - Seldon Point Bar

Doña Ana County, NM

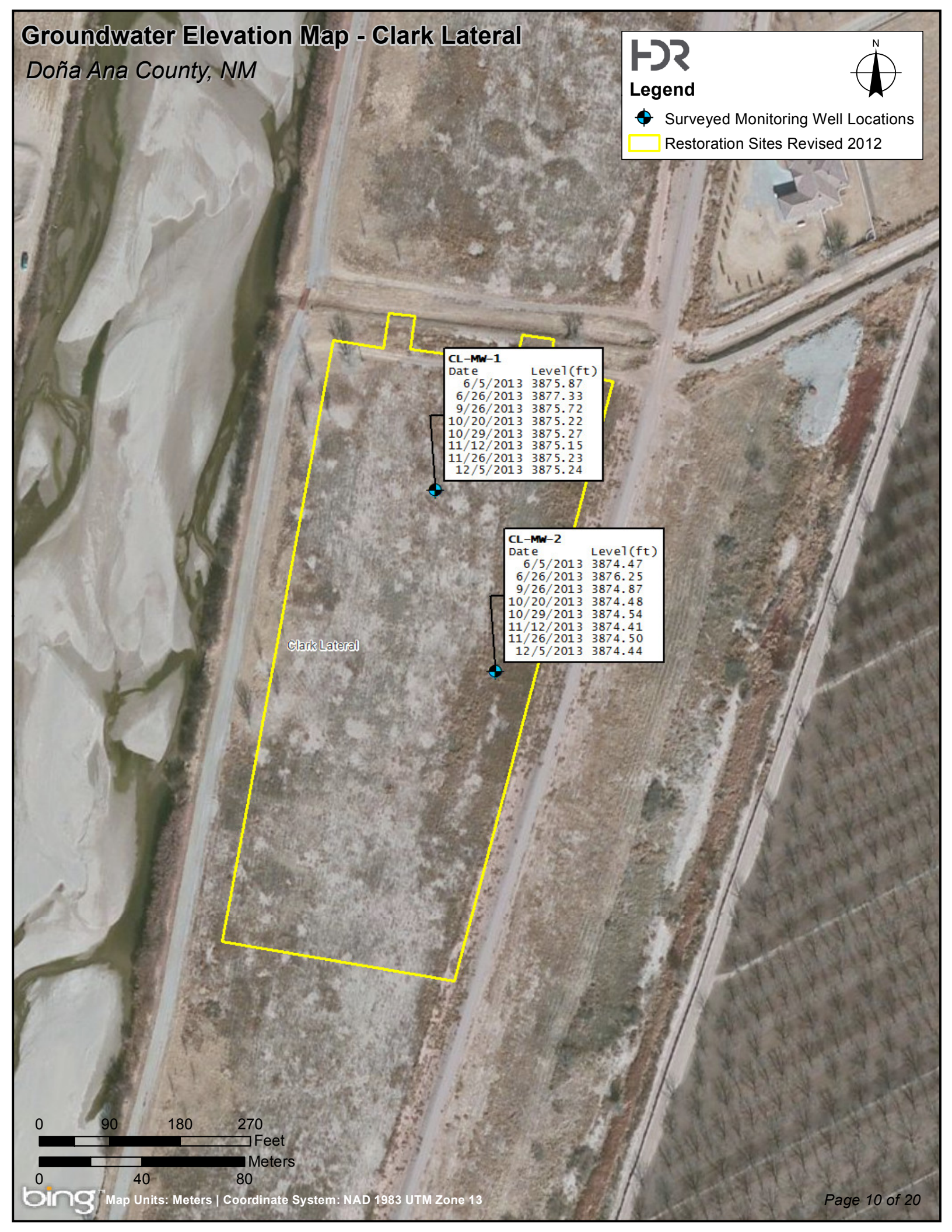
Groundwater Elevation Map - Leasburg Extension Lateral

Doña Ana County, NM



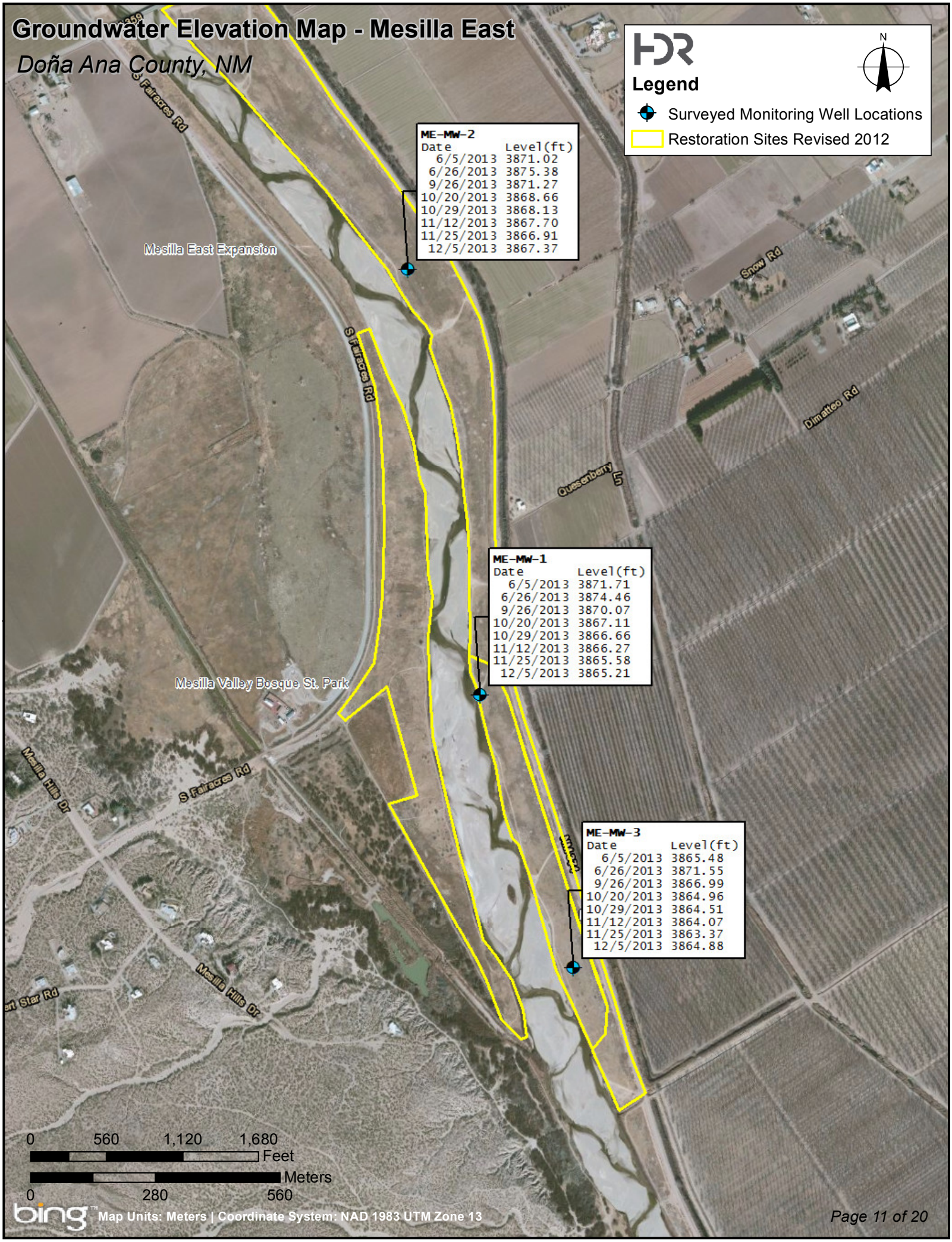
Groundwater Elevation Map - Clark Lateral

Doña Ana County, NM



Groundwater Elevation Map - Mesilla East

Doña Ana County, NM



Map Units: Meters | Coordinate System: NAD 1983 UTM Zone 13

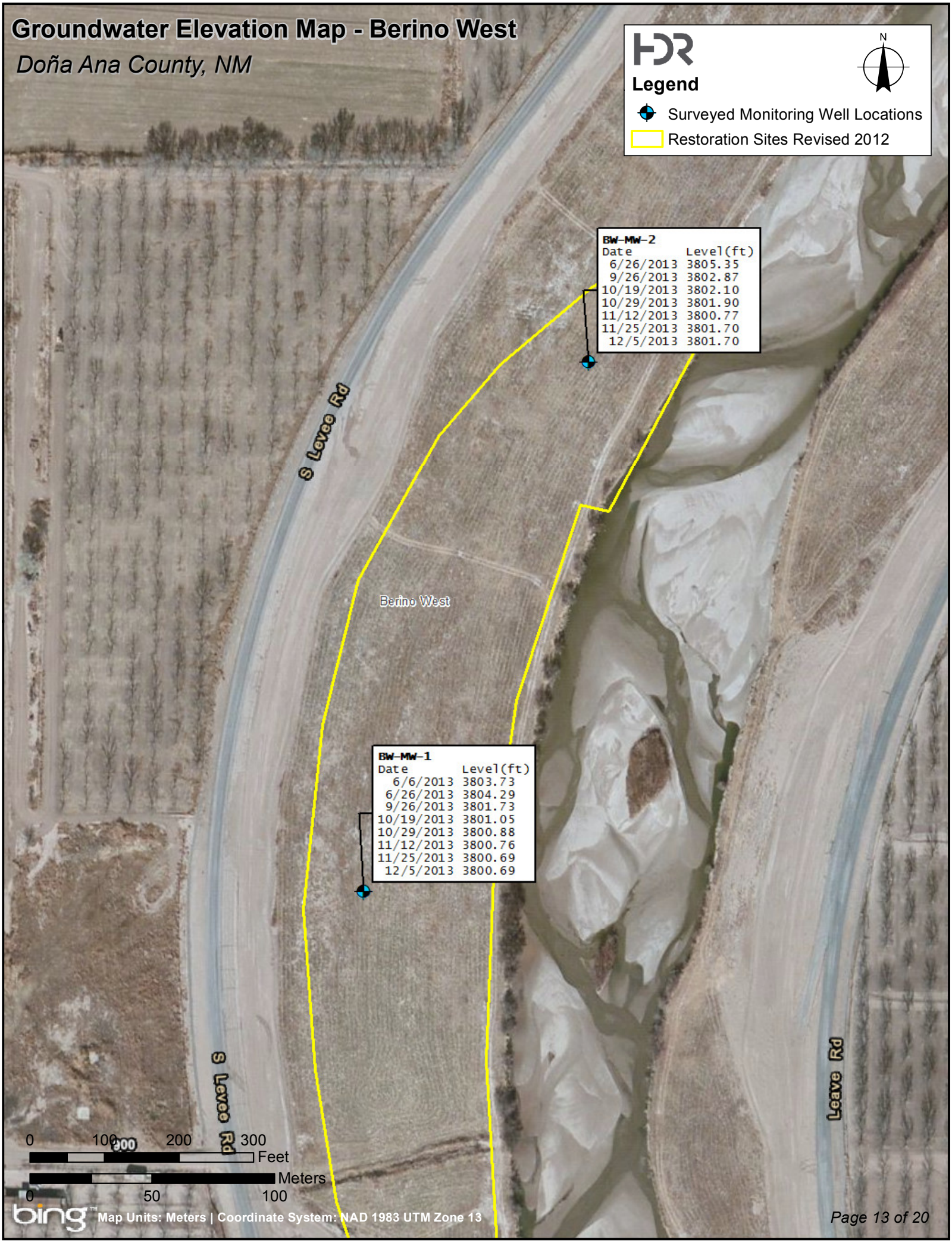
Groundwater Elevation Map - Below Mesilla Dam

Doña Ana County, NM

Map Units: Meters | Coordinate System: NAD 1983 UTM Zone 13

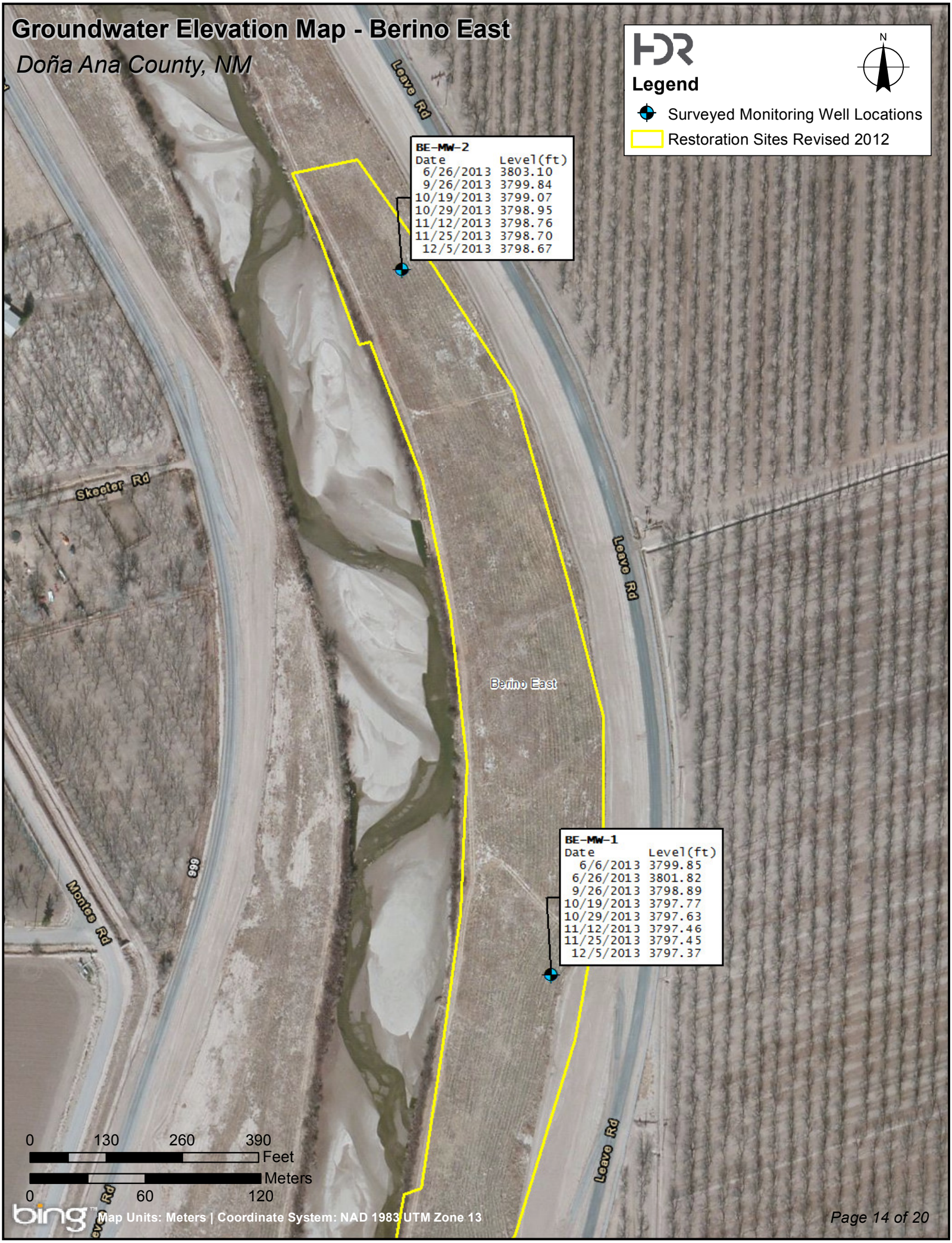
Groundwater Elevation Map - Berino West

Doña Ana County, NM



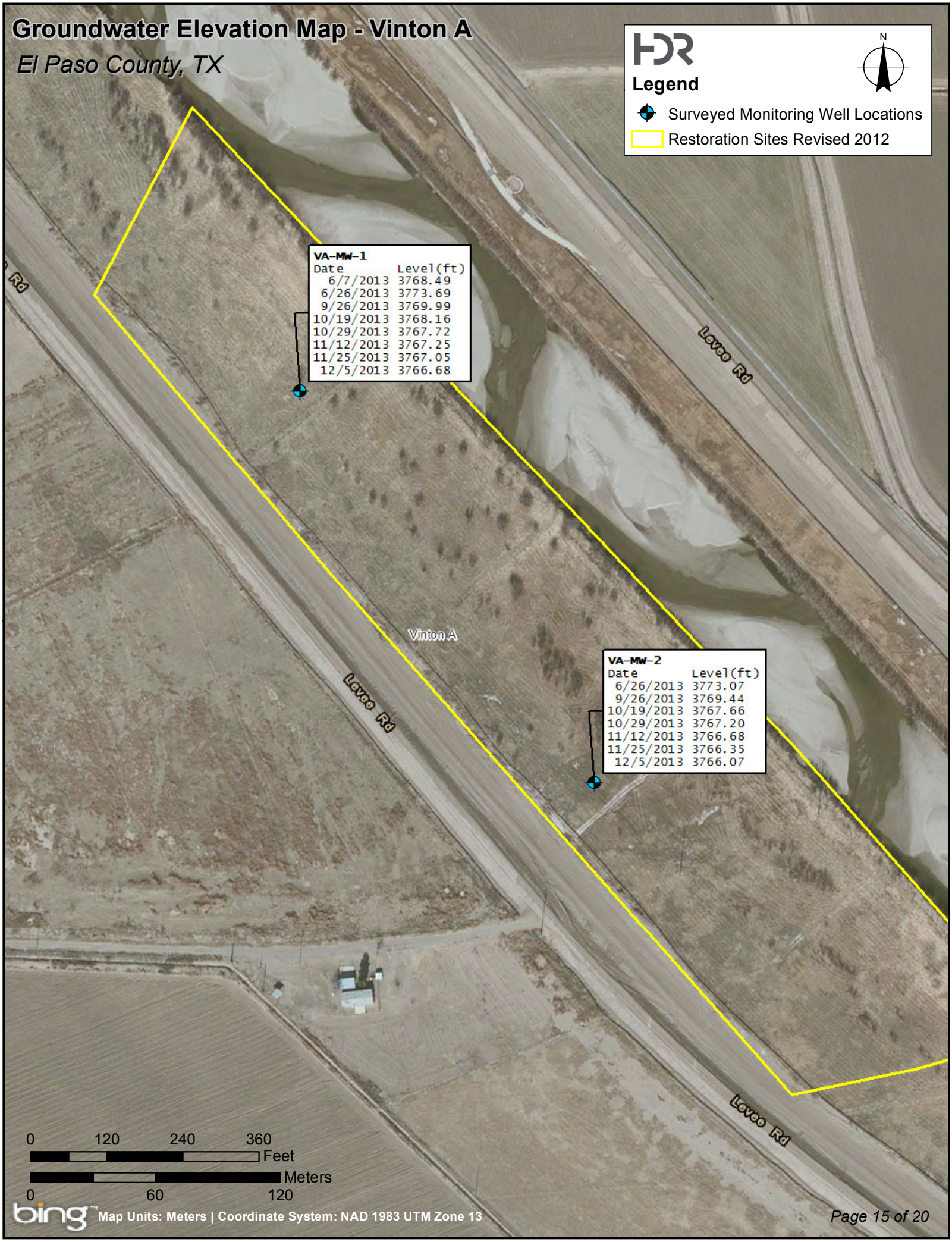
Groundwater Elevation Map - Berino East

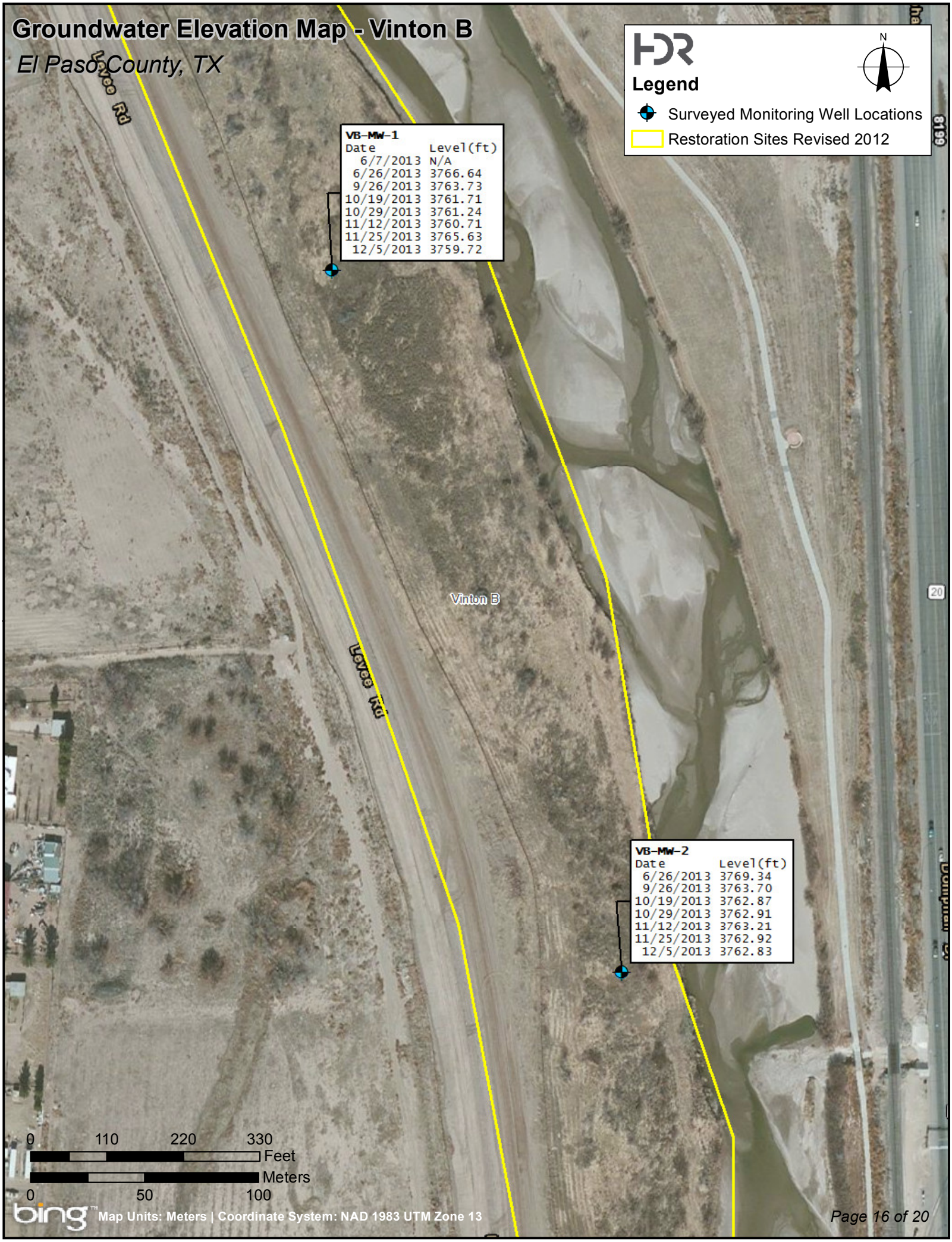
Doña Ana County, NM

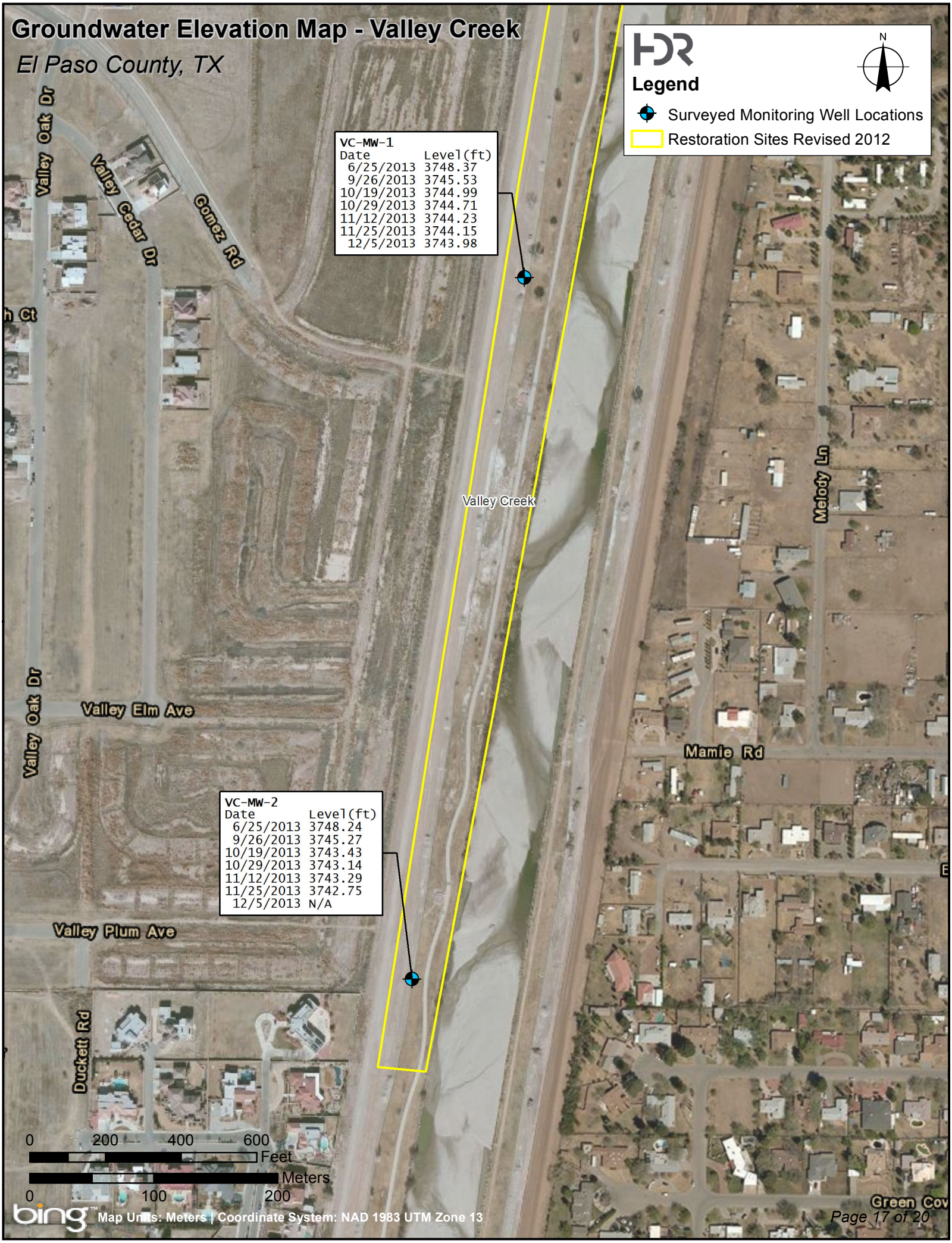


Groundwater Elevation Map - Vinton A

El Paso County, TX



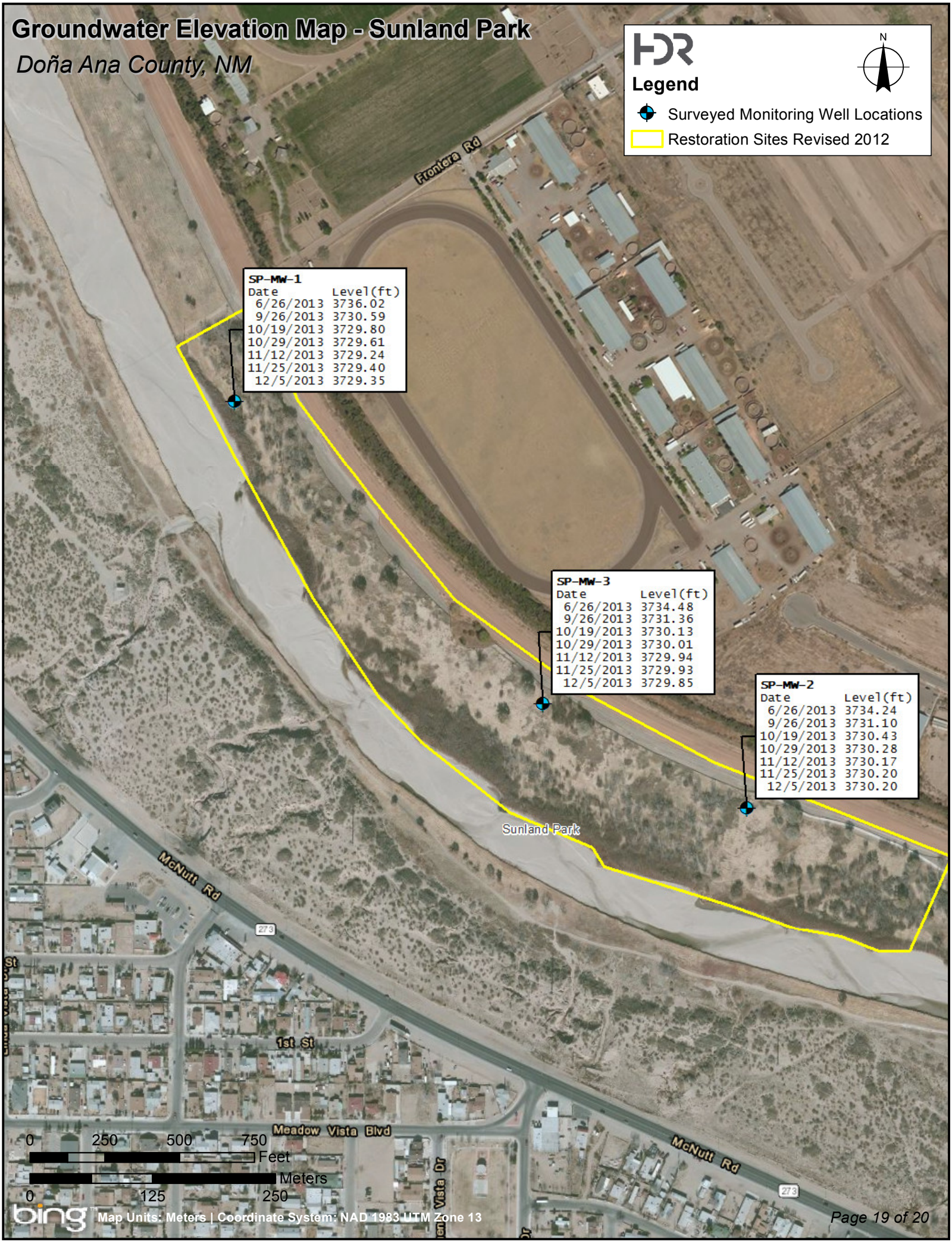

Groundwater Elevation Map - Vinton B
El Paso County, TX
Legend
Surveyed Monitoring Well Locations
Restoration Sites Revised 2012
N
VB-MW-1
Date Level(ft)
6/7/2013 N/A
6/26/2013 3766.64
9/26/2013 3763.73
10/19/2013 3761.71
10/29/2013 3761.24
11/12/2013 3760.71
11/25/2013 3765.63
12/5/2013 3759.72
VB-MW-2
Date Level(ft)
6/26/2013 3769.34
9/26/2013 3763.70
10/19/2013 3762.87
10/29/2013 3762.91
11/12/2013 3763.21
11/25/2013 3762.92
12/5/2013 3762.83
Vinton B
Levee Rd
Levee Rd
20
0 110 220 330
Feet
0 50 100
Meters
bing
Map Units: Meters | Coordinate System: NAD 1983 UTM Zone 13

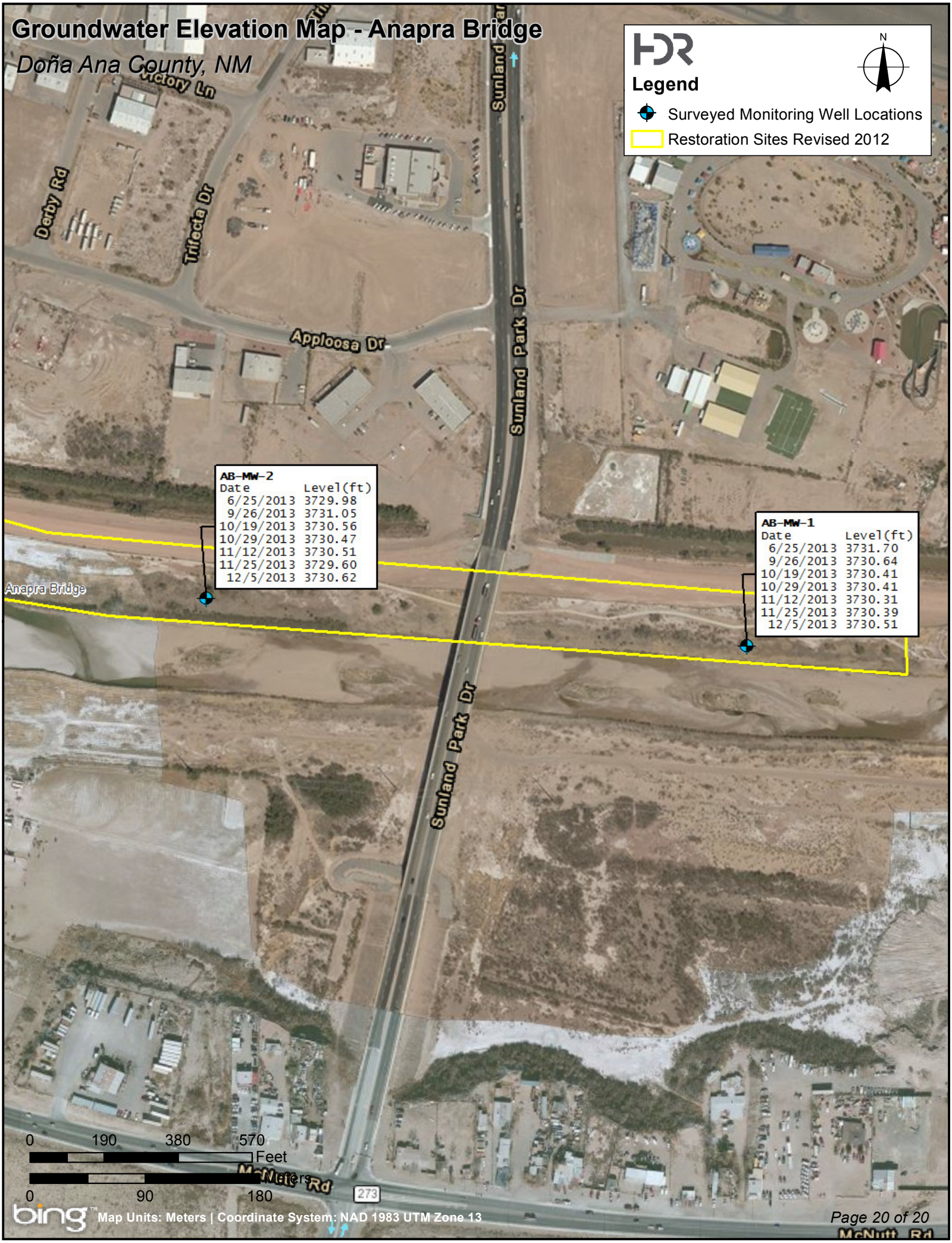

Groundwater Elevation Map - Valley Creek
El Paso County, TX
Legend
Surveyed Monitoring Well Locations
Restoration Sites Revised 2012
N
VC-MW-1
Date Level(ft)
6/25/2013 3748.37
9/26/2013 3745.53
10/19/2013 3744.99
10/29/2013 3744.71
11/12/2013 3744.23
11/25/2013 3744.15
12/5/2013 3743.98
VC-MW-2
Date Level(ft)
6/25/2013 3748.24
9/26/2013 3745.27
10/19/2013 3743.43
10/29/2013 3743.14
11/12/2013 3743.29
11/25/2013 3742.75
12/5/2013 N/A
Valley Creek
Valley Oak Dr
Valley Cedar Dr
Gomez Rd
Valley Elm Ave
Valley Plum Ave
Duckett Rd
Melody Ln
Mamie Rd
0 200 400 600
Feet
0 100 200
Meters
Map Units: Meters | Coordinate System: NAD 1983 UTM Zone 13


Groundwater Elevation Map - Country Club East
Doña Ana County, NM and El Paso County, TX
Legend
Surveyed Monitoring Well Locations
Restoration Sites Revised 2012
N
Nemexas Siphon
Country Club East
CCE-MW-2
Date Level(ft)
6/25/2013 3742.57
9/26/2013 3740.52
10/19/2013 3739.30
10/29/2013 3739.00
11/12/2013 3738.70
11/25/2013 3736.80
12/5/2013 3738.49
CCE-MW-3
Date Level(ft)
6/6/2013 3735.39
6/26/2013 3740.11
9/26/2013 3737.74
10/19/2013 3736.70
10/29/2013 3736.46
11/12/2013 3736.37
11/25/2013 3737.19
12/5/2013 3736.36
CCE-MW-1
Date Level(ft)
6/6/2013 3735.50
6/26/2013 3739.80
9/26/2013 3743.33
10/19/2013 3736.58
10/29/2013 3736.39
11/12/2013 3736.39
11/25/2013 3736.25
12/5/2013 3736.21
Meadowlark Dr
Rosinante
Dover Ct
Don Quixote Ct
Yorkshire Ct
Camino de Paz Ct
Portsmouth Blvd
Wakefield Ct
Dulcinea Ct
Waltham Ct
Rosinante Rd
La Mancha Ct
Jacaranda Ln
McNutt Rd
273
0 320 640 960
Feet
0 150 300
Meters
bing
Map Units: Meters | Coordinate System: NAD 1983 UTM Zone 13

Groundwater Elevation Map - Sunland Park

Doña Ana County, NM




Groundwater Elevation Map - Anapra Bridge
Doña Ana County, NM
Legend
Surveyed Monitoring Well Locations
Restoration Sites Revised 2012
N
Victory Ln
Derby Rd
Trifecta Dr
Sunland Park Dr
Apploosa Dr
Anapra Bridge
McNutt Rd
273
AB-MW-2
Date Level(ft)
6/25/2013 3729.98
9/26/2013 3731.05
10/19/2013 3730.56
10/29/2013 3730.47
11/12/2013 3730.51
11/25/2013 3729.60
12/5/2013 3730.62
AB-MW-1
Date Level(ft)
6/25/2013 3731.70
9/26/2013 3730.64
10/19/2013 3730.41
10/29/2013 3730.41
11/12/2013 3730.31
11/25/2013 3730.39
12/5/2013 3730.51
0 190 380 570 Feet
0 90 180 Meters
Map Units: Meters | Coordinate System: NAD 1983 UTM Zone 13

APPENDIX L

WELL RECORDS FOR WELL PERMIT

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
	LRG15537
WELL OWNER NAME(S): International Boundary and Water Commission, U.S. Section	PHONE (OPTIONAL)
WELL OWNER MAILING ADDRESS: 4171 N. Mesa St., Suite 310	CITY: El Paso STATE: TX ZIP: 79902

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE				N
LONGITUDE				W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHJIP, RANGE) WHERE AVAILABLE

See attachment for all well locations

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1522	Branden Sanders	Geomechanics Southwest, Inc. on behalf

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
6/1/13	5/7/14	12 ft	12 ft	

COMPLETED WELL IS: ○ ARTESIAN ○ DRY HOLE ◉ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT):

DRILLING FLUID: ○ AIR ○ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ○ ROTARY ○ HAMMER ○ CABLE TOOL ◉ OTHER – SPECIFY: Direct Push Technology

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0 ft	12 ft	2.375"	Steel (outside)/PVC (inside)	Flush Thread	1.5"		0.01"

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0 ft	2 ft	2.375"	Bentonite	0.04 cubic feet	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
				○ Y ◉ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ○ PUMP ○ AIR LIFT ○ BAILER ○ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm):

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

David Atteberry and Gregg Mitchell, HDR

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Patrick D. Solomon

Digitally signed by patrick.solomon@hdrinc.com
DN: cn=patrick.solomon@hdrinc.com
Date: 2014.09.30 12:19:20 -04'00'

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
	LRG15537
WELL OWNER NAME(S): International Boundary and Water Commission, U.S. Section	PHONE (OPTIONAL)
WELL OWNER MAILING ADDRESS: 4171 N. Mesa St., Suite 310	CITY: El Paso STATE: TX ZIP: 79902

WELL LOCATION (FROM GPS): DEGREES MINUTES SECONDS
LATITUDE N
LONGITUDE W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHJIP, RANGE) WHERE AVAILABLE

See attachment for all well locations

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1522	Branden Sanders	Geomechanics Southwest, Inc. on behalf

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
6/1/13	5/7/14	16 ft	16 ft	

COMPLETED WELL IS: ○ ARTESIAN ○ DRY HOLE ◉ SHALLOW (UNCONFINED) — STATIC WATER LEVEL IN COMPLETED WELL (FT):

DRILLING FLUID: ○ AIR ○ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ○ ROTARY ○ HAMMER ○ CABLE TOOL ◉ OTHER – SPECIFY: Direct Push Technology

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0 ft	16 ft	2.375"	Steel (outside)/PVC (inside)	Flush Thread	1.5"		0.01"

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0 ft	2 ft	2.375"	Bentonite	0.04 cubic feet	

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
				○ Y ◉ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ○ PUMP ○ AIR LIFT ○ BAILER ○ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm):

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

David Atteberry and Gregg Mitchell, HDR

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Patrick D. Solomon

Digitally signed by patrick.solomon@hdrinc.com
DN: cn=patrick.solomon@hdrinc.com
Date: 2014.09.29 12:28:12 -04'00'

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
	LRG15537
WELL OWNER NAME(S)	PHONE (OPTIONAL)
International Boundary and Water Commission, U.S. Section	
WELL OWNER MAILING ADDRESS	CITY / STATE / ZIP
4171 N. Mesa St., Suite 310	El Paso / TX / 79902

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
	LATITUDE			N
	LONGITUDE			W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHJIP, RANGE) WHERE AVAILABLE

See attachment for all well locations

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1522	Branden Sanders	Geomechanics Southwest, Inc. on behalf

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
6/1/13	5/7/14	20 ft	20 ft	

COMPLETED WELL IS: ○ ARTESIAN ○ DRY HOLE ◉ SHALLOW (UNCONFINED) — STATIC WATER LEVEL IN COMPLETED WELL (FT):

DRILLING FLUID: ○ AIR ○ MUD — ADDITIVES – SPECIFY:

DRILLING METHOD: ○ ROTARY ○ HAMMER ○ CABLE TOOL ◉ OTHER – SPECIFY: Direct Push Technology

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0 ft	20 ft	2.375"	Steel (outside)/PVC (inside)	Flush Thread	1.5"		0.01"

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0 ft	2 ft	2.375"	Bentonite	0.04 cubic feet	

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
				○ Y ◉ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
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				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ○ PUMP ○ AIR LIFT ○ BAILER ○ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm):

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

David Atteberry and Gregg Mitchell, HDR

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Patrick D. Solomon

Digitally signed by patrick.solomon@hdrinc.com
DN: cn=patrick.solomon@hdrinc.com
Date: 2014.09.30 12:18:46 -04'00'

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
WELL OWNER NAME(S): International Boundary and Water Commission, U.S. Section	PHONE (OPTIONAL)
WELL OWNER MAILING ADDRESS: 4171 N. Mesa St., Suite 310	CITY: El Paso STATE: TX ZIP: 79902

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	See attachme			N
LONGITUDE				W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHJIP, RANGE) WHERE AVAILABLE

See attachment for 2 well locations

2. DRILLING & CASING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1522	Branden L. Sanders	Geomechanics Southwest, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
5/7/14	5/7/14	20 ft	20 ft	15.7 ft

COMPLETED WELL IS: ○ ARTESIAN ○ DRY HOLE ◉ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 18.4 ft

DRILLING FLUID: ○ AIR ○ MUD ADDITIVES – SPECIFY: None

DRILLING METHOD: ○ ROTARY ○ HAMMER ○ CABLE TOOL ◉ OTHER – SPECIFY: Hollow-stem auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0 ft	20 ft	2.375"	Steel (outside)/PVC (inside)	Flush Thread	1.5"		0.01"

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0 ft	3 ft	2.375"	Bentonite	0.04 cubic feet	

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
				○ Y ◉ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
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				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	
				○ Y ○ N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: ○ PUMP ○ AIR LIFT ○ BAILER ◉ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm): N/A

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Xavier Juarez

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Branden L. Sanders — 10/6/14

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/08/2012)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2