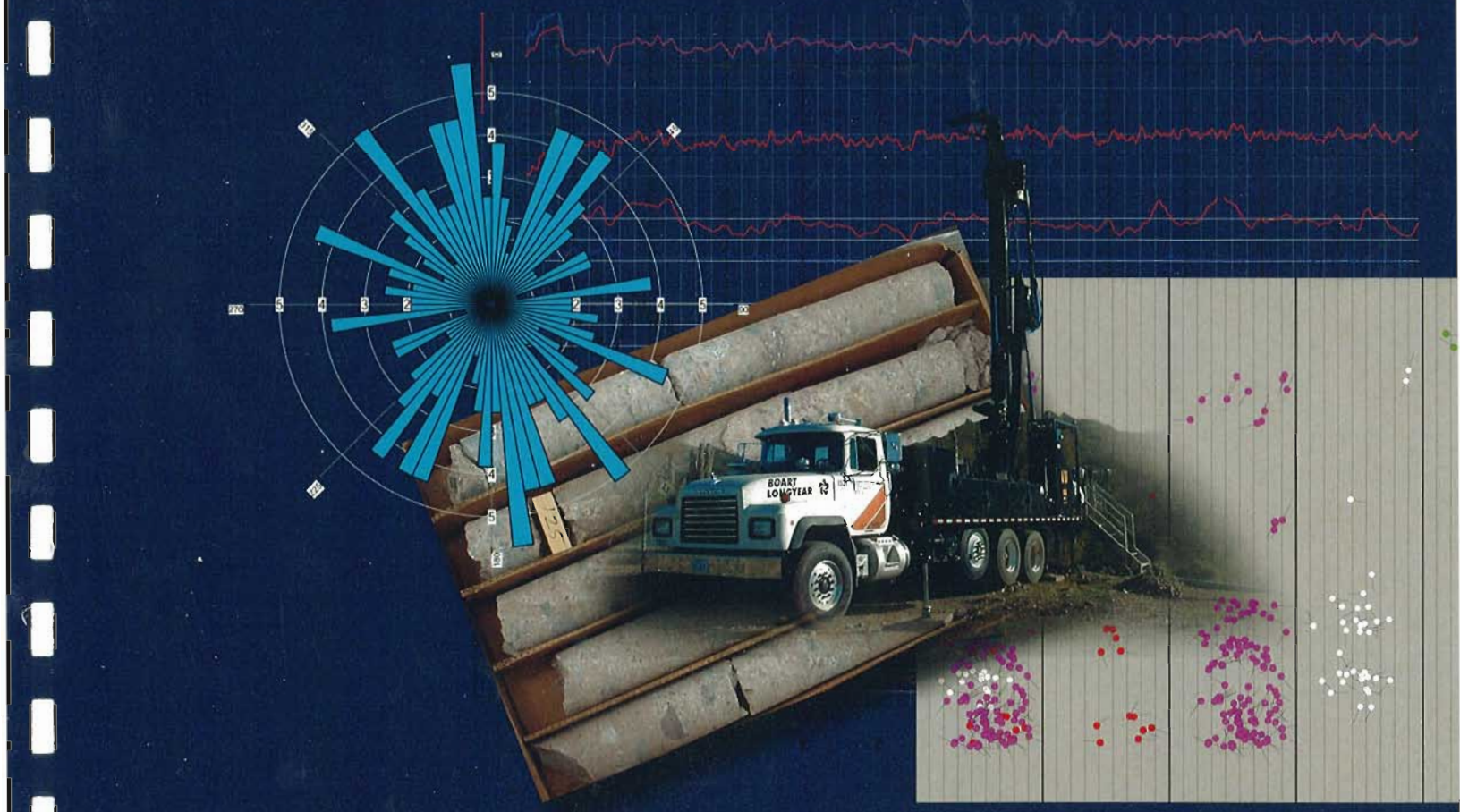
Universal Propulsion Co. Inc.

2009 ANNUAL MONITORING REPORT



DECEMBER 2010

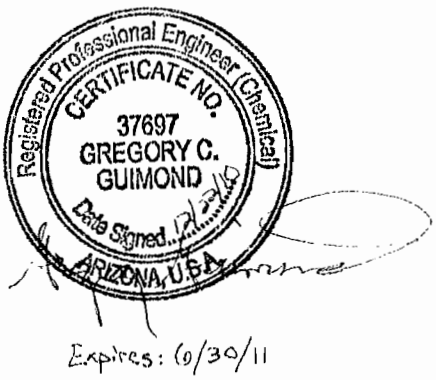
GOODRICH

MALCOLM PIRNIE

Universal Propulsion Company, Inc.
25401 North Central Avenue • Phoenix, Arizona 85085

2009 Annual Monitoring Report

December 2010



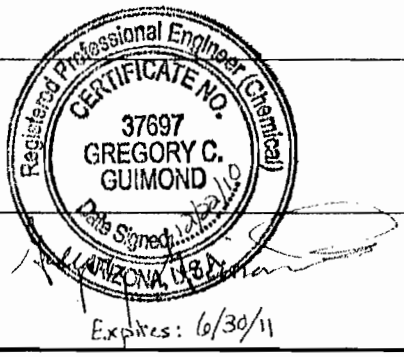
Report Prepared By:

Malcolm Pirnie, Inc.

4646 East Van Buren Street
Suite 400
Phoenix, Arizona 85008
602-241-1770

3994-003

MALCOLM PIRNIE



Contents

Tables

Figures

Appendices

1. Introduction

This Annual Monitoring Report (report) summarizes the monitoring activities and additional site investigations conducted at the Universal Propulsion Company, Inc. (UPCO) facility (site) in Phoenix, Arizona during 2009. The additional investigative activities included installation and monitoring of one site monitor well. This report continues to be part of an overall site characterization for soil and groundwater pursuant to Consent Order (Order) No. P-136-04 entered into between UPCO and the Arizona Department of Environmental Quality (ADEQ).

This report is supported by the Remedial Investigation Work Plan (Hargis+Associates, Inc. (H+A), 2004a), Quality Assurance Project Plan (QAPP) (H+A, 2004b), Groundwater Monitoring Plan (Malcolm Pirnie, 2004), Updated Groundwater Monitoring Plan (Malcolm Pirnie, 2008a) and the Addendum to the Supplemental Groundwater Investigation Work Plan (Malcolm Pirnie, 2009c). This report consists of the following:

- facility description;
- summary of previous groundwater investigations;
- additional site investigative activities;
- data evaluation and verification;
- summary of monitoring activities for the year;
- lists of wells that were sampled, including sample dates and analyses performed;
- table of water level measurements including, well identification, date and time of measurement, depth to water below measuring point and groundwater elevation above mean sea level;
- table of analytical data;
- hydrographs for the UPCO facility groundwater monitor wells;
- maps of groundwater elevation data;
- trend graphs of perchlorate concentrations for the UPCO facility groundwater monitor wells;
- investigation derived waste (IDW) documentation;
- copies of laboratory reports and data verification summaries; and
- recommendations for revisions to the monitoring plan.

1.1. Site Description

The UPCO operations were transferred to a facility in Fairfield, California in the fourth quarter of 2009. Demolition of the UPCO facility occurred throughout 2009 and was completed in January 2010. The site is located approximately two miles north of the Deer Valley Airport, Phoenix, Arizona (Figure 1). Specifically, the facility was at the intersection of Central Avenue and Happy Valley Road at an address of 25401 North Central Avenue. The site is within the southeast quarter of Section 5, Township 4 North, Range 3 East of the Gila and Salt River Baseline and Meridian. The UPCO operations were located on approximately 160 acres of land leased from the State of Arizona and consisted of numerous manufacturing and administrative buildings (Figure 2). A chain link fence surrounds the previous manufacturing areas and restricts general access. Locks secure each well vault and gate to limit access and deter vandalism.

2. Monitoring Network

The following types of wells were utilized for the monitoring program in 2009:

- UPCO monitor wells and a production well;
- private domestic wells; and
- a nested soil vapor monitor well.

The primary objective of groundwater monitoring is to provide data to assess groundwater quality at and near the facility for target chemical constituents. Groundwater elevation data is collected to evaluate local groundwater conditions. The study area for monitoring during 2009 included the site, some private residences along the northern property boundary, and areas approximately ½ mile to the west, south, and east of the property boundary.

The primary objective of the soil vapor monitoring is to monitor the vertical distribution of contaminants of potential concern (COPCs) in soil gas beneath the suspected volatile organic compound (VOC) source area in the B-Complex (Figure 2).

2.1. UPCO Groundwater Monitor Wells

The locations of the UPCO monitor wells are shown on Figure 3. Table 1 includes a summary of the location and well construction details for UPCO monitor wells and production well PW-1. Table 2 summarizes private wells that are included in the monitoring program. Additional information regarding drilling and well construction details for the UPCO groundwater monitor wells is provided in the following reports:

- Phase I Monitoring Well Construction Summary Report (H+A, 2004c)
- Phase II Monitoring Well Installation Report (Malcolm Pirnie, 2005)
- Phase III Monitoring Well Installation Report (Malcolm Pirnie, 2006)
- Draft Interim Remedial Investigation Report (Malcolm Pirnie, 2009a)

2.2. Private Domestic Wells

Beginning in 2004, UPCO collected groundwater samples from private wells located along Yearling Road in accordance with the Order. The Order specified that UPCO collect semi-annual groundwater samples from private wells located along Yearling Road

north of the site for perchlorate analysis for a period of two years. UPCO collected groundwater samples from various private wells, according to owner requests and authorization, beginning in 2004 and ending during the second quarter of 2006. After that period, UPCO agreed to extend the private well sampling program with the current agreement running through the completion of the Remedial Investigation (RI) activities. The locations of these private wells are shown on Figure 4. The private wells were sampled for perchlorate analysis during the second and fourth quarter of 2009.

2.3. Soil Vapor Monitor Well

Beginning in 2008, UPCO began collecting soil gas samples from a nested soil vapor monitor well (SVMW-1) in the B-Complex. The nested soil vapor monitor well is used to monitor for potential vertical migration of VOCs in soil vapor. The location of SVMW-1 is shown on Figure 3. Table 1 includes a summary of screened intervals for SVMW-1 and Appendix A provides as-built specifications. Additional information regarding drilling and well construction details for the soil vapor monitor well is provided in the draft Interim Remedial Investigation Report (Malcolm Pirnie, 2009a).

3. Monitoring Activities

3.1. Previous Groundwater Investigation Activities

A summary of previous groundwater investigation activities is presented below:

3.1.1. 2004 Activities

The UPCO facility production well (PW-1) and point of entry (POE) have been sampled periodically as part of county requirements for water service providers. During 2004, perchlorate was detected at concentrations ranging from non-detect to 2.1 micrograms per liter (µg/L).

Monitor wells MW-1 and MW-2 were installed in December 2003 and sampled three times during the first quarter of 2004. During those sampling events, perchlorate was detected in samples collected from MW-1 and MW-2 at concentrations ranging from 39 to 130 µg/L.

Monitor wells MW-3 through MW-6 were installed in August 2004 and sampled three times during the fourth quarter of 2004. Monitor wells MW-7 and MW-8 were installed in October 2004 and sampled twice during the second quarter of 2004. During those sampling events, perchlorate was detected in samples collected from MW-5 and MW-6 at concentrations of 6.4 and 18 µg/L, respectively. Perchlorate was not detected above the laboratory reporting limit (2 µg/L) in samples collected from MW-3, MW-4, MW-7, and MW-8.

UPCO and ADEQ sampled private domestic wells during the fourth quarter of 2004. ADEQ also sampled wells at the Arizona Department of Transportation (ADOT) facility located south west of the UPCO facility. Perchlorate was not detected above the laboratory reporting limit (2 µg/L) in samples collected from the private wells or at the ADOT facility.

Depth to groundwater measurements were collected monthly at each of the UPCO monitor wells during 2004.

3.1.2. 2005 Activities

Monitor wells MW-9 and MW-10 were installed in January 2005 and sampled quarterly during 2005. During those sampling events, perchlorate was not detected above the laboratory reporting limit (2 µg/L).

UPCO and ADEQ sampled private domestic wells semi-annually during 2005. Perchlorate was not detected above the laboratory reporting limit (2 µg/L) in samples collected from the private wells.

Depth to groundwater measurements were collected monthly at each of the UPCO monitor wells during 2005.

3.1.3. 2006 Activities

Monitor wells MW-11 and MW-12 were installed in December 2005 and initially sampled quarterly during 2006. During those sampling events, perchlorate was detected in samples collected from MW-11 at concentrations ranging from less than the laboratory reporting limit (2 µg/L) to 2.2 µg/L. Perchlorate was not detected above the laboratory reporting limit (2 µg/L) in samples collected from MW-12.

During the fourth quarter 2006 groundwater monitoring event conducted in November, the private wells were analyzed for perchlorate using two analytical methods. The two methods included EPA Method 314.0, which is specified in the Order, and EPA Method 332.0. This was performed for a comparative analysis between different perchlorate analytical testing methods. The results of the perchlorate comparative analysis showed concentration values ranging between 0.68 µg/L and 2.0 µg/L. The results of the perchlorate analysis for the UPCO monitor wells using both methods were analyzed for wells with perchlorate detection previously reported below 2 µg/L. Perchlorate analysis for UPCO monitor wells sampled during this quarter using Method 322.0 showed a range in concentration between 0.59 µg/L in monitor well MW-3 and 2.2 µg/L in monitor well MW-11. The HBGL specified in the Order for perchlorate is 14 µg/L.

3.1.4. 2007 Activities

In an effort to expand the evaluation of the hydrogeological conditions at the site, additional pressure transducers were installed on April 4, 2007 in four site wells (PW-1, MW-7, MW-8, and MW-10) and two private wells along Yearling Road (218 E. Yearling and 520 E. Yearling). Between the weeks of July 7 and August 6, 2007, UPCO conducted a geophysical survey and installed a pressure transducer at a third private well located along Yearling Road (18 E. Yearling). A review of groundwater level data collected to

date from the transducers indicate that the groundwater elevation in the private wells are currently lower than at the nearest site wells, MW-3 and MW-4. Wells MW-3 and MW-4 are completed in bedrock units, and both show an overall declining water level trend. More recently, some of the private well owners have also resorted to drilling deeper wells as water levels have continued to decline in the area.

During the 2007 monitoring period, perchlorate was detected in monitor wells MW-1, MW-2, MW-5, MW-6 and MW-11. Perchlorate was detected in groundwater samples collected from MW-1 at concentrations ranging from 70 µg/L to 76 µg/L; from MW-2 at concentrations ranging from 80 µg/L to 87 µg/L; from MW-5 at concentrations ranging from 19 µg/L to 22 µg/L; from MW-6 at concentrations ranging from 15 µg/L to 18 µg/L; and from MW-11 at concentrations ranging from less than 2 µg/L to 2.4 µg/L. Perchlorate was not detected at concentrations above the laboratory reporting limit (2 µg/L) in the remaining UPCO monitor wells, including the deep monitor well (MW-12) located near MW-1. Perchlorate was detected in samples collected from PW-1 and the POE at concentrations ranging from less than 2 µg/L to 3 µg/L.

Perchlorate was detected once in one of the private domestic wells at a concentration above the EPA Method 314.0 laboratory reporting limit of 2 µg/L. Perchlorate was detected in one sample collected from 520 East Yearling at a concentration of 2.4 µg/L. During the 2007 groundwater monitoring period, the site wells were analyzed for perchlorate using three analytical methods. The three methods included EPA Method 314.0, which is specified in the Order, and EPA Methods 332.0 and 6850. This was performed for a comparative analysis between different perchlorate analytical testing methods. The newer methods for perchlorate analysis were utilized in an attempt to obtain lower reporting limits and minimize potential false positives. Method 332.0 was promulgated by EPA and was approved by ADHS in January 2007.

3.1.5. 2008 Activities

Pressure transducers were removed from monitor wells MW-1, MW-6, MW-7, MW-8, MW-9 and MW-12 during the week of April 28, 2008. Additional pressure transducers were installed in monitor wells MW-14 and MW-15 during the week of September 22, 2008. Pressure transducers remained in private wells at 18 East Yearling, 218 East Yearling and 520 East Yearling, and site wells MW-3 and MW-4 based on ADEQ comments in a letter dated May 15, 2008 (Malcolm Pirnie, 2008c).

Groundwater monitor wells MW-13 through MW-15 were installed during May and June 2008 and sampled during the third and fourth quarters 2008 in accordance with the Updated Groundwater Monitoring Plan (Malcolm Pirnie, 2008a). At deep boring

location MW-13, a coring rig was used for retrieval of lithologic core samples. Zonal groundwater samples were collected at borehole locations MW-13 and MW-14 using a packer assembly or temporary well installation. Air rotary methods were used for completion of monitoring wells MW-13 through MW-15.

Geophysical testing was conducted in the MW-13 and MW-14 boreholes prior to each well installation. Geophysical logging was not conducted in borehole MW-15 due to its close proximity to the MW-14 borehole. Hydrophysical testing was conducted in the MW-14 borehole. A short duration aquifer test was also conducted at monitor well MW-14 after well installation. During the test, drawdown and recovery were monitored. Test results and summaries are presented in the draft Interim RI Report (Malcolm Pirnie, 2009a).

At soil vapor boring SVMW-1, a temporary well was constructed on October 23, 2008 from 218 to 238 feet below ground surface (bgs) for collection of a groundwater grab sample. Perchlorate was detected at 7.8 µg/L in the grab sample. Based on results from the groundwater grab sample, the borehole was backfilled below the water table and then completed as a vadose zone nested soil vapor monitor well (SVMW-1) on November 4, 2008.

During the 2008 monitoring period, perchlorate was detected in monitor wells MW-1, MW-2, MW-5, MW-6, MW-11, MW-13 and MW-14. Perchlorate was detected in groundwater samples collected from MW-1 at concentrations ranging from 73 µg/L to 76 µg/L; from MW-2 at concentrations ranging from 78 µg/L to 88 µg/L; from MW-5 at concentrations ranging from 22 µg/L to 25 µg/L; from MW-6 at concentrations ranging from 15 µg/L to 18 µg/L; and from MW-11 at concentrations ranging from <2.0 µg/L to 2.6 µg/L. Perchlorate was detected in samples collected from the production well, PW-1, and POE at concentrations ranging from less than 2.0 µg/L to 2.5 µg/L. Perchlorate was detected in samples collected from MW-13 at concentrations of 220 µg/L to 330 µg/L and from MW-14 at concentrations of less than 2.0 µg/L to 2.5 µg/L. The zonal sample collected from 247 to 269 feet bgs at MW-13 contained perchlorate at a concentration of 120,000 µg/L. Perchlorate was not detected at MW-3, MW-4, MW-7, MW-8, MW-9, MW-10, MW-12 or MW-15 above the laboratory reporting limit of 2.0 µg/L. Perchlorate concentrations in samples collected at MW-13 showed a declining trend in 2008.

During the 2008 monitoring period perchlorate was detected once in one of the private domestic wells at a concentration above the EPA Method 314.0 laboratory reporting limit of 2.0 µg/L. Perchlorate was detected in one sample collected from 25903 North 1st Street at a concentration of 2.2 µg/L. During the 2008 groundwater monitoring period, the

private wells were analyzed for perchlorate using two analytical test methods, EPA Method 314.0, which is specified in the Order, and EPA Method 332.0, which was performed for a comparative analysis between different perchlorate analytical testing methods. Perchlorate was detected in private wells located at 16 East Yearling Road, 412 East Yearling Road, 424 East Yearling Road, 520 East Yearling Road and 25903 North 1st Street using EPA Method 332.0 at a concentration greater than 2.0 µg/L.

Samples were collected from soil vapor monitor well, SVMW-1, on November 13, 2008. At SVMW-1 1,1-dichloroethene (1,1-DCE) was detected at concentrations ranging from 180 parts per billion by volume (ppbv) to 11,000 ppbv and acetone was detected at concentrations ranging from 530 ppbv to 1300 ppbv. Lower concentrations of 1,1-dichloroethane, 2-butanone (MEK), carbon disulfide, chloromethane, heptane, hexane, propene, tetrachloroethene, toluene and trichloroethene were also detected. Results are provided in the Final 2008 Annual Monitoring Report (Malcolm Pirnie, 2009d). The 2008 sampling activities were conducted in accordance with the schedule outlined in the 2007 Annual Groundwater Report (Malcolm Pirnie, 2008d).

3.2. 2009 Groundwater Monitoring

3.2.1. Water Level Measurements

An Updated Groundwater Monitoring Plan for UPCO was submitted to ADEQ in March 2008 (Malcolm Pirnie, 2008a). Following ADEQ's approval, groundwater measurements were collected on a monthly basis. Depth to water was measured to the nearest 0.01 foot with respect to a surveyed measurement point at the top of each well using a decontaminated electronic sounding device.

Pressure transducers were removed from private wells at 18 East Yearling Road, 218 East Yearling Road and 520 East Yearling Road on July 31, 2009 and August 24, 2009. Pressure transducers were removed from site monitor wells MW-3 and MW-4 on July 24, 2009 and July 31, 2009, and MW-14 and MW-15 on October 7, 2009 after at least one year of data was collected. Transducers have been removed from the site monitor wells and private wells. Monthly water level monitoring continues via manual measurements.

3.2.2. UPCO Facility Wells Sampling

2009 sampling activities were conducted in accordance with the schedule outlined in the Final 2008 Annual Groundwater Report (Malcolm Pirnie, 2009b). Project specific sampling procedures outlined in the Groundwater Monitoring Plan (Malcolm Pirnie, 2004), the Updated Groundwater Monitoring Plan (Malcolm Pirnie, 2008a), and industry standard methods were used. Groundwater samples were collected from UPCO

groundwater monitor wells MW-1 through MW-15 and facility production well PW-1, as outlined in the Final 2008 Annual Monitoring Report (Malcolm Pirnie, 2009b) in 2009. Installation of Phase V monitor well MW-18 was completed during the fourth quarter, 2009. Monitor well MW-18 was initially sampled on October 30, 2009. A sample was also collected at the POE on January 12, 2009. The location of the POE prior to site demolition, at the sink in the building A-1 lunchroom, no longer provided value-added data for monitoring groundwater quality at the UPCO site. Sampling at the POE for groundwater monitoring purposes was not performed beyond the first quarter 2009. UPCO continued to collect samples at the POE to remain in compliance with drinking water regulations. A list of UPCO monitor wells sampled, including dates and analysis performed, is provided in Table 3.

3.2.3. Private Wells Sampling

Private wells incorporated into the groundwater monitoring program were sampled using existing dedicated submersible pumps. Groundwater samples were collected semi-annually in the second and fourth quarters of 2009. A list of private wells that were sampled in 2009, including dates and analysis performed, is included in Table 5. The resident at 106 West Yearling was reportedly purchasing water due to insufficient well production prior to and during the scheduled fourth quarter 2009 sampling event, therefore a sample was not collected. The private well at 8 West Yearling Road was not sampled during the second quarter due to resident relocation with no forwarding contact information. The new resident at 8 West Yearling was contacted prior to the fourth quarter sampling event and the well was subsequently sampled.

3.2.4. Soil Vapor Monitor Well Sampling

Soil vapor monitor well, SVMW-1, was sampled quarterly in 2009 at intervals of 30 to 40 feet bgs; 90 to 100 feet bgs; 140 to 150 feet bgs and 190 to 200 feet bgs. A vacuum pump was used to purge approximately three well volumes at a flow rate of less than one cubic feet per minute. A one liter Summa canister fitted with a dedicated one liter per minute flow restrictor was used at each sample interval for time-integrated sample collection.

3.3. Additional Monitor Well Installation

This section summarizes the Phase V monitor well drilling and installation activities at UPCO in 2009, which included installation of monitor well MW-18. Monitor well MW-18 was installed to address potential perchlorate migration to the southwest of MW-1 between existing monitor wells MW-7 and MW-8.

Monitor well MW-18 was installed between August and September 2009. Well installation activities were completed in general accordance with the Monitor Well Construction Work Plan (H+A, 2004c), the Supplemental Groundwater Investigation Work Plan (Malcolm Pirnie, 2008e) and the Addendum to the Supplemental Groundwater Investigation Work Plan (Malcolm Pirnie, 2009c). The specifications and location of monitor well MW-18 were verified with ADEQ prior to well construction. The location of monitor well MW-18 is shown in Figure 3. Installation of Phase V monitor wells MW-16 and MW-17 was postponed in 2009, awaiting approval from the Arizona State Land Department.

3.3.1. Drilling Method

Drilling at borehole location MW-18 was accomplished using air rotary methods. A 20-foot section of low carbon steel conductor casing was grouted in place to provide a surface seal and prevent collapse of the borehole. Grab samples of the cuttings were collected at regular intervals and logged using the Unified Soil Classification System (USCS) method with United States Geological Survey (USGS) bedrock descriptions. The lithologic log for borehole MW-18 is provided in Appendix A.

The MW-18 boring was drilled to a depth of 400 feet for collection of deep zonal samples and backfilled with cement grout. Monitor well MW-18 was installed at 230 feet bgs.

3.3.2. Borehole Geophysics

Geophysical surveys were performed in the borehole for monitor well MW-18 on September 17, 2009 prior to well construction. The suite of geophysical techniques performed included:

- natural gamma ray;
- neutron;
- caliper;
- optical borehole televiewer; and
- induction resistivity.

The methods employed depended upon the stability of the borehole and potential of the borehole to produce and retain fluid. The geophysical data was collected by a variety of source and receivers. The geophysical data is presented in Appendix K.

3.3.3. Geophysical Fracture Analysis

Fracture analyses were performed in the boring for MW-18 to provide a quantitative assessment of the orientation and intensity of fractures. An optical televiewer geophysical tool collected fracture data from the boreholes. The data was digitized and reduced to conduct the fracture analyses. The orientation and depth interval were recorded for each fracture observed. Borehole geophysics collected in this boring, as well as others at the site, indicates there is not a strong preferential orientation of the fractures, as fractures are observed in a variety of orientations. A summary of the fracture analyses from the geophysical logs for MW-18 is provided in Appendix K.

3.3.4. Zonal Sampling

Depth specific (zonal) groundwater samples were collected during drilling of monitor well MW-18 at 195 feet bgs, 295 feet bgs and 390 feet bgs, on September 3, 2009, September 14, 2009, and September 16, 2009, respectively.

The MW-18 borehole was drilled to a depth of 200 feet for installation of a temporary well set with a screened interval of 175 feet to 195 feet bgs; the borehole was advanced to 303 feet bgs for installation of a temporary well set with a screened interval of 275 feet to 295 feet bgs and advanced to 396 feet bgs for installation of a temporary well set with a screened interval of 369.5 feet to 389.5 feet bgs. Temporary well sets for zonal sample collection were installed consistent with the draft Interim RI Report (Malcolm Pirnie, 2009a).

3.3.5. Monitor Well Installation

Monitor well MW-18 was installed following completion of drilling, zonal sampling and geophysical survey activities. The well was constructed in the manner outlined in the Addendum to the Supplemental Groundwater Investigation Work Plan (Malcolm Pirnie, 2009c). A summary of the well information for the UPCO facility monitor wells is included in Table 1. The as-built well construction diagram for MW-18 is provided in Appendix A.

3.3.6. Monitor Well Development

Monitor well MW-18 was developed within one week of installation. The monitor well was developed by surging and bailing. The well screen was surged in 10-foot sections from the top of the interval to the bottom for approximately 30 minutes. A bailer was used to remove settled solids that had entered the casing during surging. Approximately 40 gallons were bailed before monitoring well MW-18 was dewatered. Pumping was not used during development at monitor well MW-18 due to insufficient well recharge.

3.3.7. Well Head Completion

Following monitor well MW-18 construction and development activities a 4-inch removable well plug was installed on the open well pipe. A 12-inch diameter steel monument extending approximately 4-feet above grade surrounded by a 3-foot by 3-foot, at grade concrete pad was installed at MW-18 for surface completion on September 22, 2009. A stamped steel plate with the monitor well identification and Arizona Department of Water Resources registration number was attached to the top of the monument. Monitor well information is provided in Table 1.

3.3.8. Initial Monitor Well Sampling

Groundwater samples were collected from monitor well MW-18 on October 30, 2009 after further development with a disposable plastic bailer and a drop pump on October 7, 2009 and October 29, 2009, respectively. Results are provided in Appendix E and discussed in Section 4.

3.4. Well Head Modification Activities

Existing flush grade monitor well head vaults were converted to 4-foot above grade monument vaults to improve monitor well security. Flush grade monitor well completions at MW-1, MW-2, MW-5, MW-6, MW-12, MW-13 and SVMW-1 were converted to monument vaults during August and September, 2009. The well drop pipe, sounding tube and well pipe were extended on each well to maintain pre-modification pump intake and screened sounding tube depth bgs. Revised as-built well construction diagrams are provided in Appendix A.

Monitor well MW-13 was damaged during site demolition activities in December 2009. The surface completion, sounding tube and pump drop pipe were impacted near ground surface by demolition equipment. The surface damage was visually inspected on December 30, 2009. The sounding tube, drop pipe and pump were removed from MW-13 for inspection. A video log performed on January 4, 2010 indicated no apparent damage occurred to the below surface well casing of MW-13. The well casing, pump, drop pipe, sounding tube and surface completion were reinstalled at MW-13 on January 7, 2010.

3.5. Survey

A state registered land surveyor established horizontal and vertical control at Phase V monitor well MW-18 and the modified well heads discussed in Section 3.4. The vertical coordinates of the sounding port, top of casing, and ground surface were surveyed in the Arizona State Plane Coordinate System (NGVD 29) with units of international feet above mean sea level. The measuring point elevation of the PVC sounding tube port contained in the well seal was measured to the nearest 0.01 foot. The measuring point was marked on the north side of the port. The horizontal coordinates of the well were surveyed in the Arizona State Plane Coordinate System, Central Zone, North American Datum 1983 (NAD 83) with units of international feet. Survey information is provided in Table 1.

3.6. Investigative Derived Waste

Soil cuttings and water generated during the drilling, installation, development, and sampling of monitor well MW-18 were stored in roll-off bins or poly tanks. The soil and water were sampled and characterized prior to off-site disposal. Investigative Derived Waste (IDW) documentation related to groundwater sampling during 2009 is provided in Appendix B.

4. Data Evaluation

4.1. Groundwater Level Measurements

Groundwater elevations have been monitored at and near the UPCO facility to evaluate potential gradients. These measurements have been collected on a regular basis at UPCO site wide monitor wells and private wells located near the north property boundary at 18 East Yearling Road, 218 East Yearling Road and 520 East Yearling Road using electronic water level equipment and pressure transducers. Private well locations are shown in Figure 4.

Historic depth to groundwater measurements and groundwater elevations for site and private wells are summarized in Appendix C. Historic hydrographs are presented in Appendix D. Graphs of the transducer data collected to date are presented in Appendix D. Groundwater elevation maps for 2009 are provided on Figures 5 through 16.

The highest water elevations were observed in late 2004 to early 2005, and the lowest elevations for a majority of the wells were observed in 2009. A potential geologic structure (Malcolm Pirnie, 2009a) is located east of the area monitored by MW-6, MW-7, MW-10 and MW-18 and generally on the west side of the UPCO facility. Groundwater elevations on the west side of the structure are approximately 30 feet higher than on the east side of the structure. The wells located east of the potential geologic structure, with the exception of MW-3, MW-4, MW-14 and MW-15 showed a nearly static/slightly declining water level trend. The difference between the minimum and maximum groundwater elevations measured in each of these wells in 2009 (i.e., the groundwater elevation decline) varied between 0.33 feet in monitor well MW-9 and 1.09 feet in monitor well MW-12. Monitor wells MW-4, MW-3, MW-15 and MW-14 continue to show a generally larger decline in groundwater elevations with differences of groundwater elevations of 1.08, 1.53, 1.77, and 3.15 feet, respectively in 2009.

West of the potential geologic structure, groundwater elevations were also declining. However, monitor well MW-18 exhibited a rising trend during the last quarter 2009. The rise of 2.07 feet in MW-18 may be the result of low permeability leading to very slow recharge, and a small data set. The difference between the minimum and maximum groundwater elevations varied by 0.90 and 1.05 feet in monitor wells MW-7 and MW-10, and 1.39 feet in monitor well MW-6.

A review of groundwater elevation data collected with transducers at site and private wells indicate a general declining water level trend. The observed declining groundwater elevation trend in the transducers is in agreement with the manual measurements. Hydrographs for the private wells show pumping level drawdowns ranging from 10 to 50 feet below static levels, particularly during the on-cycles which may correlate with cumulative peak periods of use (Appendix D). This drawdown has not been observed in the nearest site wells showing, at a minimum, that the short term pumping-related drawdown does not extend very far. Although, as noted above, wells MW-3, MW-4, MW-14 and MW-15, on the north side of the site show steeper water level declines when compared to other onsite wells suggesting that the overall lowered water table to the north is propagating south toward the site. Steeper declines are also seen west of the potential geologic structure in monitor wells MW-6, MW-7 and MW-10.

4.2. Groundwater Quality Data

Tables presenting water quality analytical data for the UPCO monitor wells, UPCO production well PW-1 and the POE are summarized in Appendix E. The perchlorate results for the UPCO monitor wells are provided in Table 6. The perchlorate results for the private wells are provided in Table 7. A table presenting historic water quality analytical data for the private wells is provided in Appendix F. Perchlorate concentration trend plots for each UPCO monitor well are presented in Appendix G. Field parameter data collected during 2009 sampling events is provided in Appendix H. Figures 17 through 20 present perchlorate concentration maps for First Quarter 2009 through Fourth Quarter 2009.

4.2.1. Perchlorate

The Arizona Department of Health Services (ADHS) Health Based Guidance Level (HBGL) identified by ADEQ in the Order is 14 µg/L for perchlorate. The laboratory reporting limit using the Order-specified EPA Method 314.0 is 2.0 µg/L. During the 2009 monitoring period, perchlorate was detected in monitor wells MW-1, MW-2, MW-5, MW-6, MW-11, MW-13. Perchlorate was detected in groundwater samples collected from MW-1 at concentrations ranging from 70 µg/L to 83 µg/L; from MW-2 at concentrations ranging from 83 µg/L to 96 µg/L; from MW-5 at concentrations ranging from 23 µg/L to 27 µg/L; from MW-6 at concentrations ranging from 15 µg/L to 19 µg/L; from MW-13 at concentrations ranging from 30 µg/L to 190 µg/L and from MW-11 at concentrations ranging from less than 2.0 µg/L to 2.3 µg/L.

Perchlorate was not detected at concentrations above the laboratory reporting limit (2.0 µg/L) in the remaining UPCO monitor wells. Perchlorate was detected in samples collected from PW-1 at concentrations ranging from less than 2 µg/L to 4.8 µg/L.

During the 2009 monitoring period perchlorate was not detected in the private domestic wells at a concentration above the EPA Method 314.0 laboratory reporting limit of 2.0 µg/L.

Some of the site wells that typically did not detect perchlorate at concentrations above 2.0 µg/L, and each of the private domestic wells, were analyzed for perchlorate using two analytical test methods. The two methods included EPA Method 314.0, which is specified in the Order, and EPA Method 332.0. Two methods were performed for a comparative analysis between different perchlorate analytical testing methods. The results of the perchlorate comparative analyses for the site wells are included in Table 6, and show Method 332.0 concentration values ranging between 0.62 µg/L in monitor well MW-7 and 2.1 µg/L in monitor well MW-11. The results of the perchlorate comparative analysis for the private wells are included in Table 7, and show Method 332.0 concentration values ranging between 0.63 µg/L and 1.9 µg/L.

4.2.2. VOCs

Five VOCs were detected during 2009 groundwater sampling activities including 1,1-DCE, 1,1-DCA, 1,4-dioxane, bromoform and chloroform. These detections were at concentrations below the applicable Arizona Aquifer Water Quality Standard (AWQS). 1,1-DCE was detected in groundwater samples collected from PW-1 at concentrations ranging from less than the laboratory reporting limit of 0.5 µg/L to 6.0 µg/L. The AWQS for 1,1-DCE is 7 µg/L. 1,1-DCA was detected in groundwater samples collected from PW-1 at concentrations ranging from less than the laboratory reporting limit of 0.50 µg/L to 0.62 µg/L. A numeric standard has not been established for 1,1-DCA. 1,4-Dioxane was detected in samples collected from MW-2 and PW-1 at concentrations ranging from less than 2.0 µg/L to 2.9 µg/L. 1,4-Dioxane does not have an applicable AWQS; however, EPA Region 3, Region 6 and Region 9 have combined to form regional screening levels (RSLs), formerly known as preliminary remediation goals (PRGs). The RSL for 1,4-dioxane remains at 6.1 µg/L. Bromoform and chloroform were detected in samples collected from PW-1. These chemicals are classified as trihalomethanes and were detected below the AWQS for total trihalomethanes, which is 100 µg/L. Results for monitor well groundwater quality are provided in Appendix E.

4.2.3. Metals

Barium was detected in each of the UPCO monitor wells and ranged in concentration from 0.0044 mg/L to 0.27 mg/L. The AWQS for barium is 2 mg/L. Arsenic was detected in each of the UPCO monitor wells and ranged in concentration from 0.0020 mg/L to 0.062 mg/L in monitor well MW-18. The AWQS for arsenic is 0.05 mg/L. Arsenic concentrations at the remaining site wells were less than 0.050 mg/L. Chromium was detected in monitor wells MW-1, MW-2, MW-5, MW-7, MW-8, MW-10, MW-11, MW-12, MW-13, MW-18 and PW-1 and ranged in concentration from 0.0012 mg/L to 0.029 mg/L. The AWQS for chromium is 0.1 mg/L. Lead was detected in monitor wells MW-1, MW-2, MW-3, MW-4, MW-6, MW-7, MW-8, MW-9, MW-10, MW-14, MW-15 and PW-1 and ranged in concentration from 0.001 mg/L to 0.0042 mg/L. The AWQS for lead is 0.050 mg/L. Selenium was detected in monitor wells MW-6 and MW-11 and ranged in concentration from 0.0024 mg/L to 0.0042 mg/L. The AWQS for selenium is 0.05 mg/L. Mercury was detected in production well PW-1 at 0.00083 mg/L. The AWQS for mercury is 0.002 mg/L. Calcium, potassium, sodium, and magnesium were detected in PW-1 and MW-18. However, no AWQS have been established for these metals. No other metals analyzed during the monitoring period were detected above the laboratory detection limits.

4.3. Zonal Groundwater Data

Zonal samples were collected from the MW-18 borehole prior to well completion. The zonal samples collected at MW-18 were analyzed for perchlorate by EPA Method 314. Table 8 summarizes the zonal sampling analytical data for perchlorate.

Perchlorate was detected at a concentration of 2.8 µg/L in the shallow zonal sample. The detection may have been influenced by water added during vadose zone drilling for cuttings management and dust control. The source of the water added during drilling was the production well (PW-1) which has historically contained low concentrations of perchlorate. A sample collected from the water stored in the driller's support truck contained perchlorate at a concentration of 3.2 µg/L, similar to the shallow zonal sample. Water from PW-1 was not added during the installation of the temporary wells at 295 feet and 390 feet bgs. Perchlorate was not detected above the laboratory reporting limit of 2.0 µg/L in groundwater zonal samples collected at 295 feet and 390 feet bgs. Perchlorate was not detected in monitoring well MW-18 during fourth quarter 2009 monitoring.

4.4. Soil Vapor Quality Data

Soil gas samples were collected from soil vapor monitor well SVMW-1 during 2009 monitoring and analytical results are provided in Table 9. The primary contaminant of concern, 1,1-DCE, ranged from 210 parts per billion by volume (ppbv) at 200 feet bgs to 23,000 ppbv at 100 feet bgs. Acetone ranged from less than 99 ppbv at 40 feet bgs to 3,500 ppbv at 200 feet bgs. Other VOCs detected in the soil gas samples, at a lower concentration, included 1,1-DCA, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,3-butadiene, 2,2,4-trimethylpentane, 2-butanone (MEK), 2-hexanone, 4-ethyltoluene, benzene, bromomethane, carbon disulfide, chloroform, chloromethane, cyclohexane, dichlorodifluoromethane, ethylbenzene, Freon 113, hexane, m,p-xylenes, o-xylenes, methylene chloride and tetrachloroethene were detected. Soil vapor monitoring well results are provide in Table 9.

5. Quality Assurance and Data Verification

Analytical data provided by the laboratories were subjected to data review for quality control/quality assurance. A summary of the data verification is presented in Appendix I. Copies of the analytical data reports are provided in Appendix J.

Groundwater monitoring activities followed the quality assurance procedures outlined in the QAPP (H+A, 2004b). The project specific QAPP establishes procedures and guidance for the following:

- data quality objectives;
- sample documentation and custody;
- sample container requirements;
- quality control procedures; and
- quality assurance management including, data management and data verification/validation procedures.

Samples were collected and submitted to the laboratory in a manner that provides data that are representative of site conditions. Laboratory analyses were conducted according to analytical methods described in EPA guidance manuals. Field quality control (QC) samples included field duplicates and trip blanks. Laboratory QC samples included method blanks, laboratory control samples (LCS), and matrix spike/matrix spike duplicate (MS/MSD) samples.

Laboratory deliverables consist of Level II data packages (including a QC summary). Data reported by the laboratory has been verified that the data meets the data quality objectives. The results were considered usable for the intended purposes, and the project data quality objectives (DQOs) specified in the QAPP (H+A, 2004b) were met.

6. Future Monitoring Activities

The 2009 monitoring program was conducted in accordance with the procedures and methods outlined in the Updated Groundwater Monitoring Plan (Malcolm Pirnie, 2008a). UPCO revised the monitoring program to include the quarterly monitoring requirements for the new groundwater monitoring well MW-18, and planned monitoring wells MW-16 and MW-17. Former production well PW-1 will continue to be utilized as a site monitor well. Since PW-1 no longer functions as a drinking water supply well, As, Ag, Ba, Cd, Cr, Hg, Pb, Se, Ca, Mg, K, and Na will be not be analyzed in 2010. PW-1 will be sampled for perchlorate using EPA Method 314.0 in 2010. Private domestic wells will continue to be monitored on a semi-annual basis, in the second and fourth quarters of 2010. The 2010 sampling and analysis schedule is summarized in Table 10.

7. References

Hargis + Associates, Inc. (H+A), 2004a. Draft Remedial Investigation Work Plan, Volume I of II, Goodrich Universal Propulsion Company, Inc., June 11, 2004.

_____, 2004b. Quality Assurance Project Plan, Goodrich Universal Propulsion Company, Inc., July 16, 2004.

_____, 2004c. Monitoring Well Construction Summary Report, Goodrich Universal Propulsion Company, Inc., July 16, 2004.

Malcolm Pirnie, Inc., 2004. Groundwater Monitoring Plan, Universal Propulsion Company, Inc., December 16, 2004.

_____, 2005. Phase II Monitoring Well Installation Report, Universal Propulsion Company, Inc., January 7, 2005.

_____, 2006. Phase III Monitoring Well Installation Report, Universal Propulsion Company, Inc., April 2006.

_____, 2008a. Updated Groundwater Monitoring Plan, Universal Propulsion Company, Inc., March 14, 2008.

_____, 2008b. Supplemental Soil and Soil Gas Investigation Work Plan, Universal Propulsion Company, Inc., March 2008.

_____, 2008c. Groundwater Monitoring Pressure Transducer Assessment, Universal Propulsion Company, Inc., March, 2008.

_____, 2008d. 2007 Annual Groundwater Report, Universal Propulsion Company, Inc., May 15, 2008.

_____, 2008e. Supplemental Groundwater Investigation Work Plan, Universal Propulsion Company, Inc., March 14, 2008.

_____, 2009a. draft Interim RI Report, Universal Propulsion Company, Inc., February 13, 2009.

_____, 2009b. Final 2008 Annual Monitoring Report, Universal Propulsion Company, Inc., December 18, 2009.

_____, 2009c. Addendum to the Supplemental Groundwater Investigation Work Plan, Universal Propulsion Company, Inc., April 10, 2009.

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

Tables

Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Tables

3994-003

MALCOLM PIRNIE

Table 1
UPCO Monitor Well Information

Well ID	Longitude	Latitude	ADWR Number	Total Casing Depth (feet bgs)	Screened Interval (feet bgs)	Measuring Point Elevation *** (feet amsl)
MW-1	112°04'13.76"W	33°42'47.61"N	55-201495	240	190-240	1557.22 [1560.43]
MW-2	112°04'13.03"W	33°42'53.39"N	55-201494	250	200-250	1567.62 [1571.22]
MW-3	112°04'20.91"W	33°43'03.49"N	55-204197	271	221-271	1583.59
MW-4	112°04'01.27"W	33°43'06.49"N	55-204196	300	245-295	1620.34
MW-5	112°04'04.97"W	33°42'58.13"N	55-204195	285	230-280	1590.45 [1594.08]
MW-6	112°04'25.09"W	33°42'50.47"N	55-204194	210	155-205	1548.22 [1551.65]
MW-7	112°04'26.79"W	33°42'42.34"N	55-205001	210	155-205	1541.35
MW-8	112°04'11.43"W	33°42'38.66"N	55-205002	235	180-230	1542.18
MW-9	112°04'00.37"W	33°42'38.46"N	55-901548	255	200-250	1565.60
MW-10	112°04'36.07"W	33°42'47.49"N	55-901549	205	150-200	1536.11
MW-11	112°04'02.46"W	33°42'54.85"N	55-903736	315	260-310	1603.35
MW-12	112°04'13.93"W	33°42'88.09"N	55-903737	480	450-480	1557.46 [1560.91]
MW-13	112°04'02.97"W	33°42'59.55"N	55-217221	490	440-490	1595.77 [1599.52]
MW-14	112°04'13.66"W	33°43'10.34"N	55-217222	500	445-495	1602.48
MW-15	112°04'13.82"W	33°43'09.86"N	55-217223	325	270-320	1600.48
MW-18	112°04'21.74"W	33°42'37.32"N	55-911047	230	175-225	1533.53
SVMW-1*	112°04'17.61"W	33°42'52.99"N	55-909947	200**	30 - 40 90 - 100 140 - 150 190 - 200	NA
Production Well (PW-1)	112°04'24.00"W	33°42'51.40"N	55-500290	500	420-480	1554.55

Notes:

Monitor wells MW-16 and MW-17 installation proposed but not installed.

NA = Not applicable

* = SVMW-1 is a Soil Vapor Montioring Well constructed above groundwater level

amsl = Above mean sea level

** = Total depth of the nested well

*** = Measuring points were resurveyed on September 28, 2009 at wells MW-1, MW-2, MW-5, MW-6, MW-12, and MW-13 after monument installation, revised elevation is indicated in brackets.

Table 2
Private Well Information

ADDRESS	ADWR Well Registraiton ID	Well Use	Date Installed	Well Depth (Feet)	Measuring Point Elevation (feet amsl)
616/604 E. YEARLING	NA	Domestic	NA	NA	NA
520 E. YEARLING	NA	Domestic	NA	NA	1635.71
424 E. YEARLING	NA	Domestic	NA	NA	NA
412 E. YEARLING	NA	Domestic	NA	NA	NA
218 E. YEARLING	55-207497*	Domestic	2/28/2006	415	1617.01
204 E. YEARLING	NA	Domestic	NA	NA	NA
25903 N. 2ND ST	NA	Domestic	NA	NA	NA
25825 N. 1ST PLACE	55-557685	Domestic	7/22/1996	495	NA
16 E. YEARLING	55-578534	Domestic	1/26/2000	738	NA
18 E. YEARLING	55-212662	Domestic	5/14/2007	520	1596.79
8 W. YEARLING	55-205738	Domestic	12/2/2005	260	NA
106 W. YEARLING	55-583418	Domestic	1/9/2001	440	NA
122 W. YEARLING	NA	Domestic	NA	NA	NA

Notes:
NA = not available or corresponding ADWR registry number could not be identified with the current owner or address.
* = Repplacement well installed in 2006

Table 3
UPCO Monitor Wells Sampled and Analyses Performed in 2009

Sample ID	Date	Laboratory ID	Analytes and EPA Method										
			Metals			Perchlorate		Volatile Organic Compounds			General Chemistry		
			200.7	200.8	245.1	314	332	524.2	8260B	8260B-SIM	M2320 B	M2540 C	300
MW-1	01/23/09	PSA1171-01		X	X				X	X			
	01/23/09	PSA1171-01RE1				X							
	04/15/09	PSD0912-05RE1				X							
	08/14/09	PSH0843-04							X	X			
	08/14/09	PSH0843-04RE1				X							
	11/02/09	PSK0024-01				X							
MW-2	01/23/09	PSA1171-02		X	X				X	X			
	01/23/09	PSA1171-02RE1				X							
	04/15/09	PSD0912-06RE1				X							
	08/14/09	PSH0843-05							X	X			
	08/14/09	PSH0843-05RE1				X							
	11/02/09	PSK0024-02				X							
MW-3	01/14/09	PSA0670-06		X	X	X			X	X			
	01/14/09	PSA0675-01					X						
	08/18/09	PSH0987-02				X							
	08/18/09	PSH0991-01					X						
MW-4	01/14/09	PSA0670-05		X	X	X			X	X			
	01/14/09	PSA0674-01					X						
	08/18/09	PSH0987-01				X							
	08/18/09	PSH0992-01					X						
MW - 5	01/16/09	PSA0837-02		X	X	X			X	X			
	04/15/09	PSD0912-04				X							
	08/17/09	PSH0903-01				X							
	10/28/09	PSJ1782-01				X							
MW-6	01/14/09	PSA0670-07		X	X	X			X	X			
	04/15/09	PSD0912-03				X							
	08/18/09	PSH0987-07				X							
	10/30/09	PSJ1782-06				X							

Table 3
UPCO Monitor Wells Sampled and Analyses Performed in 2009

Sample ID	Date	Laboratory ID	Analytes and EPA Method										
			Metals			Perchlorate		Volatile Organic Compounds			General Chemistry		
			200.7	200.8	245.1	314	332	524.2	8260B	8260B-SIM	M2320 B	M2540 C	300
MW-7	01/15/09	PSA0777-01					X						
	01/15/09	PSA0776-02		X	X	X			X	X			
	08/18/09	PSH0990-01					X						
	08/18/09	PSH0987-05				X							
MW-8	01/14/09	PSA0672-01					X						
	01/14/09	PSA0670-03		X	X	X			X	X			
	08/18/09	PSH0989-01					X						
	08/18/09	PSH0987-06		X	X	X							
MW-9	01/14/09	PSA0671-01					X						
	01/14/09	PSA0670-02		X	X	X			X	X			
	08/18/09	PSH0988-01					X						
	08/18/09	PSH0987-08				X							
MW-10	01/14/09	PSA0673-01					X						
	01/14/09	PSA0670-04		X	X	X			X	X			
	08/18/09	PSH0993-01					X						
	08/18/09	PSH0987-03				X							
MW-11	01/15/09	PSA0779-01					X						
	01/15/09	PSA0776-04		X	X	X			X	X			
	08/18/09	PSH0994-01					X						
	08/18/09	PSH0987-04				X							
MW-12	01/23/09	PSA1174-01					X						
	01/23/09	PSA1171-03		X	X	X			X	X			
	08/14/09	PSH0845-01					X						
	08/14/09	PSH0843-03				X							
MW - 13	01/16/09	PSA0837-05RE1				X							
	01/16/09	PSA0837-05	X	X	X				X	X	X	X	X
	04/16/09	PSD1030-01				X							
	08/13/09	PSH0759-01				X							
	10/29/09	PSJ1782-03				X							

Table 3
UPCO Monitor Wells Sampled and Analyses Performed in 2009

Sample ID	Date	Laboratory ID	Analytes and EPA Method										
			Metals			Perchlorate		Volatile Organic Compounds			General Chemistry		
			200.7	200.8	245.1	314	332	524.2	8260B	8260B-SIM	M2320 B	M2540 C	300
MW-14	01/16/09	PSA0843-01					X						
	01/16/09	PSA0837-03	X	X	X	X			X	X	X	X	X
	08/13/09	PSH0760-01					X						
	08/13/09	PSH0759-03				X							
MW-15	01/15/09	PSA0778-01					X						
	01/15/09	PSA0776-03RE1				X							
	01/15/09	PSA0776-03	X	X	X				X	X	X	X	X
	08/13/09	PSH0761-01					X						
	08/13/09	PSH0759-02				X							
MW-18	10/30/09	PSJ1782-02RE1					X						X
	10/30/09	PSJ1782-02	X	X	X	X	X		X	X	X		
POE	01/12/09	PSA0574-02	X	X	X	X		X		X			
PW-1	01/12/09	PSA0574-03	X	X	X	X			X	X			
	04/15/09	PSD0912-07	X	X	X	X			X	X			
	07/06/09	PSG0211-01	X	X	X	X			X	X			
	10/30/09	PSJ1782-07	X	X	X	X			X	X			

Notes:
EPA test methods 200.7 and 200.8 used for arsenic, barium, cadium, chromium, lead, selenium, silver, calcium, magnesium, potasium and sodium analyses
EPA test method 245.1 used for mercury analysis
EPA test methods 314.0 and 332.0 used for perchlorate analyses
EPA test methods 524.2 and 8260B used for volatile organic compound analyses
EPA test method 8260B-SIM used for 1,4-dioxane analysis
EPA test methods 300, M2320 B, and M2540 C used for general chemistry, alkalinity and total dissolved solids respectively
Monitor wells MW-16 and MW-17 are proposed but not installed

Table 4
2009 UPCO Monitor Well Water Levels

Well ID	Date	Depth to Water (ft)	Measuring Point Elevation (ft)	Groundwater Elevation (ft amsl)
MW-1	1/12/2009	208.41	1557.22	1348.81
	2/16/2009	208.47	1557.22	1348.75
	3/17/2009	208.42	1557.22	1348.80
	4/13/2009	208.38	1557.22	1348.84
	5/20/2009	208.71	1557.22	1348.51
	6/15/2009	208.58	1557.22	1348.64
	7/6/2009	208.58	1557.22	1348.64
	8/13/2009	208.68	1557.22	1348.54
	9/28/2009	211.92	1560.43	1348.51
	10/27/2009	211.98	1560.43	1348.45
	11/25/2009	212.29	1560.43	1348.14
	12/18/2009	212.35	1560.43	1348.08
MW-2	1/12/2009	218.81	1567.62	1348.81
	2/16/2009	218.85	1567.62	1348.77
	3/17/2009	218.48	1567.62	1349.14
	4/13/2009	218.73	1567.62	1348.89
	5/20/2009	219.05	1567.62	1348.57
	6/15/2009	218.95	1567.62	1348.67
	7/6/2009	218.95	1567.62	1348.67
	8/13/2009	219.03	1567.62	1348.59
	9/28/2009	222.74	1571.22	1348.48
	10/27/2009	222.71	1571.22	1348.51
	11/25/2009	223.06	1571.22	1348.16
	12/18/2009	223.08	1571.22	1348.14
MW-3	1/12/2009	236.6	1583.59	1346.99
	2/16/2009	236.86	1583.59	1346.73
	3/17/2009	237.00	1583.59	1346.59
	4/13/2009	237.07	1583.59	1346.52
	5/20/2009	237.24	1583.59	1346.35
	6/15/2009	237.31	1583.59	1346.28
	7/6/2009	237.35	1583.59	1346.24
	8/12/2009	237.47	1583.59	1346.12
	9/28/2009	237.81	1583.59	1345.78
	10/27/2009	237.82	1583.59	1345.77
	11/25/2009	238.13	1583.59	1345.46
	12/18/2009	238.13	1583.59	1345.46

Table 4
2009 UPCO Monitor Well Water Levels

Well ID	Date	Depth to Water (ft)	Measuring Point Elevation (ft)	Groundwater Elevation (ft amsl)
MW-4	1/12/2009	274.93	1620.34	1345.41
	2/16/2009	274.78	1620.34	1345.56
	3/17/2009	275.07	1620.34	1345.27
	4/13/2009	275.04	1620.34	1345.30
	5/20/2009	275.19	1620.34	1345.15
	6/15/2009	275.23	1620.34	1345.11
	7/6/2009	275.26	1620.34	1345.08
	8/12/2009	275.39	1620.34	1344.95
	9/28/2009	275.50	1620.34	1344.84
	10/27/2009	275.50	1620.34	1344.84
	11/25/2009	275.86	1620.34	1344.48
	12/18/2009	275.82	1620.34	1344.52
MW-5	1/12/2009	241.42	1590.45	1349.03
	2/16/2009	241.45	1590.45	1349.00
	3/17/2009	241.43	1590.45	1349.02
	4/13/2009	241.43	1590.45	1349.02
	5/20/2009	241.53	1590.45	1348.92
	6/15/2009	241.57	1590.45	1348.88
	7/6/2009	241.54	1590.45	1348.91
	8/12/2009	241.58	1590.45	1348.87
	9/28/2009	245.32	1594.08	1348.76
	10/27/2009	245.38	1594.08	1348.70
	11/25/2009	245.54	1594.08	1348.54
	12/18/2009	245.59	1594.08	1348.49
MW-6	1/12/2009	162.28	1548.22	1385.94
	2/16/2009	162.43	1548.22	1385.79
	3/17/2009	162.81	1548.22	1385.41
	4/13/2009	162.83	1548.22	1385.39
	5/20/2009	162.78	1548.22	1385.44
	6/15/2009	162.57	1548.22	1385.65
	7/6/2009	162.50	1548.22	1385.72
	8/12/2009	162.64	1548.22	1385.58
	9/28/2009	166.25	1551.65	1385.40
	10/27/2009	166.33	1551.65	1385.32
	11/25/2009	167.02	1551.65	1384.63
	12/18/2009	167.10	1551.65	1384.55

Table 4
2009 UPCO Monitor Well Water Levels

Well ID	Date	Depth to Water (ft)	Measuring Point Elevation (ft)	Groundwater Elevation (ft amsl)
MW-7	1/12/2009	161.39	1541.35	1379.96
	2/16/2009	161.17	1541.35	1380.18
	3/17/2009	161.42	1541.35	1379.93
	4/13/2009	161.39	1541.35	1379.96
	5/20/2009	161.49	1541.35	1379.86
	6/15/2009	161.57	1541.35	1379.78
	7/6/2009	161.58	1541.35	1379.77
	8/12/2009	161.71	1541.35	1379.64
	9/28/2009	161.71	1541.35	1379.64
	10/27/2009	161.70	1541.35	1379.65
	11/25/2009	162.06	1541.35	1379.29
	12/18/2009	162.07	1541.35	1379.28
MW-8	1/12/2009	193.34	1542.18	1348.84
	2/16/2009	193.37	1542.18	1348.81
	3/17/2009	193.38	1542.18	1348.80
	4/13/2009	193.33	1542.18	1348.85
	5/20/2009	193.55	1542.18	1348.63
	6/15/2009	193.51	1542.18	1348.67
	7/6/2009	193.49	1542.18	1348.69
	8/12/2009	193.52	1542.18	1348.66
	9/28/2009	193.70	1542.18	1348.48
	10/27/2009	193.80	1542.18	1348.38
	11/25/2009	193.99	1542.18	1348.19
	12/18/2009	194.08	1542.18	1348.10
MW-9	1/12/2009	216.53	1565.6	1349.07
	2/16/2009	216.52	1565.60	1349.08
	3/17/2009	216.56	1565.60	1349.04
	4/13/2009	216.54	1565.60	1349.06
	5/20/2009	216.58	1565.60	1349.02
	6/15/2009	216.60	1565.60	1349.00
	7/6/2009	216.61	1565.60	1348.99
	8/12/2009	216.62	1565.60	1348.98
	9/28/2009	216.68	1565.60	1348.92
	10/27/2009	216.62	1565.60	1348.98
	11/25/2009	216.80	1565.60	1348.80
	12/18/2009	216.85	1565.60	1348.75

Table 4
2009 UPCO Monitor Well Water Levels

Well ID	Date	Depth to Water (ft)	Measuring Point Elevation (ft)	Groundwater Elevation (ft amsl)
MW-10	1/12/2009	153.14	1536.11	1382.97
	2/16/2009	152.95	1536.11	1383.16
	3/17/2009	153.23	1536.11	1382.88
	4/13/2009	153.24	1536.11	1382.87
	5/20/2009	153.28	1536.11	1382.83
	6/15/2009	153.35	1536.11	1382.76
	7/6/2009	153.42	1536.11	1382.69
	8/12/2009	153.61	1536.11	1382.50
	9/28/2009	153.62	1536.11	1382.49
	10/27/2009	153.64	1536.11	1382.47
	11/25/2009	153.98	1536.11	1382.13
	12/18/2009	154.00	1536.11	1382.11
MW-11	1/12/2009	254.22	1603.35	1349.13
	2/16/2009	254.20	1603.35	1349.15
	3/17/2009	254.25	1603.35	1349.10
	4/13/2009	254.24	1603.35	1349.11
	5/20/2009	254.32	1603.35	1349.03
	6/15/2009	254.35	1603.35	1349.00
	7/6/2009	254.35	1603.35	1349.00
	8/12/2009	254.38	1603.35	1348.97
	9/28/2009	254.52	1603.35	1348.83
	10/27/2009	254.61	1603.35	1348.74
	11/25/2009	254.73	1603.35	1348.62
	12/18/2009	254.80	1603.35	1348.55
MW-12	1/12/2009	209.46	1557.46	1348
	2/16/2009	209.52	1557.46	1347.94
	3/17/2009	209.48	1557.46	1347.98
	4/13/2009	209.45	1557.46	1348.01
	5/20/2009	209.79	1557.46	1347.67
	6/15/2009	209.64	1557.46	1347.82
	7/6/2009	209.66	1557.46	1347.80
	8/13/2009	209.75	1557.46	1347.71
	9/28/2009	213.59	1560.91	1347.32
	10/27/2009	213.61	1560.91	1347.30
	11/25/2009	213.94	1560.91	1346.97
	12/18/2009	213.99	1560.91	1346.92

Table 4
2009 UPCO Monitor Well Water Levels

Well ID	Date	Depth to Water (ft)	Measuring Point Elevation (ft)	Groundwater Elevation (ft amsl)
MW-13	1/12/2009	246.79	1595.77	1348.98
	2/16/2009	246.81	1595.77	1348.96
	3/17/2009	246.80	1595.77	1348.97
	4/13/2009	246.80	1595.77	1348.97
	5/20/2009	246.90	1595.77	1348.87
	6/15/2009	246.95	1595.77	1348.82
	7/6/2009	246.89	1595.77	1348.88
	8/12/2009	246.98	1595.77	1348.79
	9/28/2009	250.74	1599.52	1348.78
	10/27/2009	250.71	1599.52	1348.81
	11/25/2009	250.98	1599.52	1348.54
	12/18/2009	251.00	1599.52	1348.52
MW-14	1/12/2009	263.57	1602.48	1338.91
	2/16/2009	263.66	1602.48	1338.82
	3/17/2009	264.03	1602.48	1338.45
	4/13/2009	264.08	1602.48	1338.40
	5/20/2009	264.55	1602.48	1337.93
	6/15/2009	264.65	1602.48	1337.83
	7/6/2009	264.89	1602.48	1337.59
	8/12/2009	265.10	1602.48	1337.38
	9/28/2009	265.59	1602.48	1336.89
	10/27/2009	265.78	1602.48	1336.70
	11/25/2009	266.72	1602.48	1335.76
	12/18/2009	265.98	1602.48	1336.50
MW-15	1/12/2009	262.51	1600.48	1337.97
	2/16/2009	262.53	1600.48	1337.95
	3/17/2009	262.60	1600.48	1337.88
	4/13/2009	262.72	1600.48	1337.76
	5/20/2009	262.96	1600.48	1337.52
	6/15/2009	263.03	1600.48	1337.45
	7/6/2009	263.19	1600.48	1337.29
	8/12/2009	263.36	1600.48	1337.12
	9/28/2009	263.69	1600.48	1336.79
	10/27/2009	263.80	1600.48	1336.68
	11/25/2009	264.20	1600.48	1336.28
	12/18/2009	264.28	1600.48	1336.20

Table 4
2009 UPCO Monitor Well Water Levels

Well ID	Date	Depth to Water (ft)	Measuring Point Elevation (ft)	Groundwater Elevation (ft amsl)
MW-18	10/27/2009	132.18	1533.53	1401.35
	11/25/2009	131.17	1533.53	1402.36
	12/18/2009	130.11	1533.53	1403.42

Notes:
Measuring points were resurveyed on September 28, 2009 at wells MW-1, MW-2, MW-5, MW-6, MW-12, and MW-13
Monitor wells MW-16 and MW-17 are proposed but not installed
ft = feet
amsl = Above mean sea level

Table 5
Private Wells Sampled and Analyses Performed in 2009

Sample ID	Date Collected	Laboratory ID	EPA Method	
			314.0	332.0
616/604 E. Yearling	04/16/09	PSD1034-01	X	
	04/16/09	PSD1020-01		X
	10/30/09	PSJ1785-01	X	
	10/30/09	PSJ1797-01		X
520 E. Yearling	04/16/09	PSD1029-01	X	
	04/16/09	PSD1016-01		X
	10/30/09	PSJ1786-01	X	
	10/30/09	PSJ1798-01		X
424 E. Yearling	04/16/09	PSD1032-01	X	
	04/16/09	PSD1018-01		X
	10/30/09	PSJ1787-01	X	
	10/30/09	PSJ1799-01		X
412 E. Yearling	04/16/09	PSD1028-01	X	
	04/16/09	PSD1021-01		X
	10/30/09	PSJ1788-01	X	
	10/30/09	PSJ1800-01		X
218 E. Yearling	04/16/09	PSD1027-01	X	
	04/16/09	PSD1022-01		X
	10/30/09	PSJ1789-01	X	
	10/30/09	PSJ1801-01		X
204 E. Yearling	04/16/09	PSD1026-01	X	
	04/16/09	PSD1023-01		X
	10/30/09	PSJ1783-01	X	
	10/30/09	PSJ1795-01		X
25903 N. 2nd St.	04/16/09	PSD1033-01	X	
	04/16/09	PSD1019-01		X
	10/30/09	PSJ1790-01	X	
	10/30/09	PSJ1802-01		X
25825 N. 1st Pl.	04/16/09	PSD1031-01	X	
	04/16/09	PSD1017-01		X
	10/30/09	PSJ1784-01	X	
	10/30/09	PSJ1796-01		X
16 E. Yearling	04/17/09	PSD1070-01	X	
	04/17/09	PSD1068-01		X
	10/30/09	PSJ1791-01	X	
	10/30/09	PSJ1803-01		X
18 E. Yearling	04/16/09	PSD1035-01	X	
	04/16/09	PSD1024-01		X
	10/30/09	PSJ1792-01	X	
	10/30/09	PSJ1804-01		X

Table 5
Private Wells Sampled and Analyses Performed in 2009

Sample ID	Date Collected	Laboratory ID	EPA Method	
			314.0	332.0
8 W. Yearling	10/30/09	PSJ1793-01	X	
	10/30/09	PSJ1805-01		X
106 W. Yearling	04/16/09	PSD1025-01	X	
	04/16/09	PSD1014-01		X
122 W. Yearling	04/16/09	PSD1036-01	X	
	04/16/09	PSD1015-01		X
	10/30/09	PSJ1794-01	X	
	10/30/09	PSJ1806-01		X

Notes:
8 West Yearling was not sampled in the second quarter due to resident relocation with no forwarding contact information.
8 West Yearling provides water to 20 West Yearling
106 West Yearling was not sampled in the fourth quarter due to insufficient well production

Table 6
2009 UPCO Monitor Well Perchlorate Results

Sample ID	Date	Perchlorate (ug/L)	
		EPA 314.0	EPA 332.0
MW-1	01/23/09	76	NA
	04/15/09	76	NA
	08/14/09	83	NA
	11/02/09	70	NA
MW-2	01/23/09	92	NA
	04/15/09	88	NA
	08/14/09	96	NA
	11/02/09	83	NA
MW-3	01/14/09	<2.0	0.73
	08/18/09	<2.0	0.64 J
MW-4	01/14/09	<2.0	0.72
	08/18/09	<2.0	0.71 J
MW-5	01/16/09	24	NA
	04/15/09	23	NA
	08/17/09	27	NA
	10/28/09	26	NA
MW-6	01/14/09	18	NA
	04/15/09	17	NA
	08/18/09	19	NA
	10/30/09	15	NA
MW-7	01/15/09	<2.0	0.62
	08/18/09	<2.0	0.70 J
MW-8	01/14/09	<2.0	1.1
	08/18/09	<2.0	1.0 J
MW-9	01/14/09	<2.0	0.84
	08/18/09	<2.0	0.78 J
MW-10	01/14/09	<2.0	0.96
	08/18/09	<2.0	0.93 J
MW-11	01/15/09	2.0	2.0
	08/18/09	2.3	2.1 J
MW-12	01/23/09	<2.0	1.2
	08/14/09	<2.0	0.78 J
MW - 13	01/16/09	190	NA
	04/16/09	81	NA
	08/13/09	40	NA
	10/29/09	30	NA

Table 6
2009 UPCO Monitor Well Perchlorate Results

Sample ID	Date	Perchlorate (ug/L)	
		EPA 314.0	EPA 332.0
MW - 14	01/16/09	<2.0	1.1
	08/13/09	<2.0	1.1 J
MW-15	01/15/09	<2.0	0.82
	08/13/09	<2.0	0.83 J
MW-18	10/30/09	<2.0	1.5
POE	01/12/09	<2.0	NA
PW-1	01/12/09	4.8	NA
	04/15/09	2.6	NA
	07/06/09	2.4	NA
	10/30/09	<2.0	NA

Notes:
NA = Not analyzed
< = Analyte not detected above the listed laboratory reporting limit
J = Estimated value
ug/L = Micrograms per liter

Table 7
2009 Private Well Perchlorate Results

Sample ID	Date	Perchlorate (ug/L)	
		EPA 314.0	EPA 332.0
616/604 E. Yearling	04/16/09	<2.0	0.98
	10/30/09	<2.0	1.6
520 E. Yearling	04/16/09	<2.0	1.3
	10/30/09	<2.0	1.9
424 E. Yearling	04/16/09	<2.0	1.2
	10/30/09	<2.0	1.8
412 E. Yearling	04/16/09	<2.0	1.1
	10/30/09	<2.0	1.5
218 E. Yearling	04/16/09	<2.0	0.68
	10/30/09	<2.0	1.2
204 E. Yearling	04/16/09	<2.0	0.64
	10/30/09	<2.0	1.3
25903 N. 2nd St.	04/16/09	<2.0	0.88
	10/30/09	<2.0	1.3
25825 N. 1st Pl.	04/16/09	<2.0	0.89
	10/30/09	<2.0	1.2
16 E. Yearling	04/17/09	<2.0	0.63
	10/30/09	<2.0	1.0
18 E. Yearling	04/16/09	<2.0	0.86
	10/30/09	<2.0	1.1
8 W. Yearling**	10/30/09	<2.0	1.1
106 W. Yearling*	04/16/09	<2.0	0.65
122 W. Yearling	04/16/09	<2.0	0.67
	10/30/09	<2.0	1.2

Notes:
* = 106 West Yearling was not sampled in the fourth quarter due to insufficient well production
** = 8 West Yearling was not sampled in the second quarter due to resident relocation with no forwarding contact information
ug/L = Micrograms per liter
< = Analyte not detected above the listed laboratory reporting limit

Table 8
MW-18 Zonal Sampling Results

Sample ID	Interval Sampled (ft bgs)	Date	Perchlorate (ug/L)
			EPA 314.0
MW-18-195	175-195	09/03/09	2.8
MW-18-295	275-295	09/14/09	<2.0
MW-18-390	370-390	09/16/09	<2.0

Notes:
< = Analyte not detected above the listed laboratory reporting limit
ug/L = Micrograms per liter
bgs = Below ground surface
ft = feet

Table 9
Soil Vapor Monitor Well (SVMW-1) Results

Parameter	SVMW-1-30-40				SVMW-1-90-100				SVMW-1-140-150				SVMW-1-190-200			
	1/19/2009	4/14/2009	8/19/2009	10/27/2009	1/19/2009	4/14/2009	8/19/2009	10/27/2009	1/19/2009	4/14/2009	8/19/2009	10/27/2009	1/19/2009	4/14/2009	8/19/2009	10/27/2009
Volatile Organic Compounds (ppbv)																
1,1,1-Trichloroethane	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
1,1,2,2-Tetrachloroethane	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
1,1,2-Trichloroethane	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
1,1-Dichloroethane	<9.9	<50	15	<25	<9.9	<250	34	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
1,1-Dichloroethene	1600	2200	1900	3200	450	22000	23000	23000	3000	3500	240	910	210	360	260	320
1,2,4-Trichlorobenzene	<39	<200	<10	<100	<40	<1000	<10	<400	<40	<400	<10	<40	<40	<200	<2.0	<39
1,2,4-Trimethylbenzene	<9.9	<50	2.6	86	<9.9	<250	<2.5	<100	<10	<99	<2.5	16	<10	<50	2.4	<9.7
1,2-Dibromoethane (EDB)	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
1,2-Dichlorobenzene	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
1,2-Dichloroethane	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
1,2-Dichloropropane	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
1,3,5-Trimethylbenzene	<9.9	<50	<2.5	26	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	0.57	<9.7
1,3-Butadiene	13	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
1,3-Dichlorobenzene	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
1,4-Dichlorobenzene	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
2,2,4-Trimethylpentane	<9.9	<50	<2.5	26	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	1.8	<9.7
2-Butanone (MEK)	<20	<100	76	<50	<20	<500	35 J	<200	<20	<200	29 J	<20	<20	<100	490	<19
2-Hexanone	<20	<100	12	<50	<20	<500	6.9	<200	<20	<200	6.5	<20	<20	<100	7.2	<19
2-Propanol	<39	<200	<10	<100	<40	<1000	<10	<400	<40	<400	<10	<40	<40	<200	<2.0	<39
4-Ethyltoluene	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	1.1	<9.7
4-Methyl-2-pentanone (MIBK)	<20	<100	<5.0	<50	<20	<500	<5.0	<200	<20	<200	<5.0	<20	<20	<100	<1.0	<19
Acetone	<99	1100	610 J	650 J	<99	<2500	240 J	<1000	180	1300	390 J	570 J	210	3500	970	150 J
Allyl Chloride	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Benzene	<9.9	<50	<2.5	<25	<9.9	<250	3.4	<100	<10	<99	<2.5	<10	<10	<50	1.9	<9.7
Benzyl Chloride	<39	<200	<10	<100	<40	<1000	<10	<400	<40	<400	<10	<40	<40	<200	<2.0	<39
Bromodichloromethane	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Bromoethene(Vinyl Bromide)	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Bromoform	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Bromomethane	<9.9	<50	2.7	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Carbon disulfide	<9.9	<50	2.6	<25	<9.9	<250	5.2	<100	72	<99	8.9	12	<10	<50	2.8	<9.7
Carbon tetrachloride	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Chlorobenzene	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Chloroethane	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Chloroform	<9.9	<50	4.1	<25	<9.9	<250	3.2	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Chloromethane	<9.9	<50	4.4	<25	<9.9	<250	<2.5	<100	46	<99	<2.5	<10	81	<50	4.8	<9.7
cis-1,2-Dichloroethene	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
cis-1,3-Dichloropropene	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Cyclohexane	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	0.76 J	<9.7
Dibromochloromethane	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Dichlorodifluoromethane	<9.9	<50	3.0	<25	<9.9	<250	8.1	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Dichlorotetrafluoroethane(F-114)	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Ethyl Acetate	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Ethylbenzene	<9.9	<50	<2.5	35	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	0.69	<9.7
Freon 113	<9.9	<50	2.8	<25	<9.9	<250	8.8	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Heptane	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Hexachlorobutadiene	<20	<100	<5.0	<50	<20	<500	<5.0	<200	<20	<200	<5.0	<20	<20	<100	<1.0	<19
Hexane	<9.9	<50	<2.5	<25	<9.9	<250	2.9	<100	<10	<99	<2.5	<10	<10	<50	5.0	<9.7
m,p-Xylenes	<20	<100	<5.0	150	<20	<500	<5.0	<200	<20	<200	<5.0	<20	<20	<100	2.4	<19

Table 9
Soil Vapor Monitor Well (SVMW-1) Results

Parameter	SVMW-1-30-40				SVMW-1-90-100				SVMW-1-140-150				SVMW-1-190-200			
	1/19/2009	4/14/2009	8/19/2009	10/27/2009	1/19/2009	4/14/2009	8/19/2009	10/27/2009	1/19/2009	4/14/2009	8/19/2009	10/27/2009	1/19/2009	4/14/2009	8/19/2009	10/27/2009
Volatile Organic Compounds (ppbv)																
Methylene Chloride	<9.9	<50	3.2 J	79 J	<9.9	<250	3.7 J	190 J	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Methyl-tert-butyl Ether (MTBE)	<20	<100	<5.0	<50	<20	<500	<5.0	<200	<20	<200	<5.0	<20	<20	<100	<1.0	<19
o-Xylene	<9.9	<50	<2.5	56	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	1.3	<9.7
Propene	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Styrene	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Tetrachloroethene	<9.9	70	13	33	<9.9	<250	37	<100	<10	<99	2.8	<10	<10	<50	0.68	<9.7
Tetrahydrofuran	<39	<200	<10	<100	<40	<1000	<10	<400	<40	<400	<10	<40	<40	<200	<2.0	<39
Toluene	<9.9	<50	3.7	68	<9.9	<250	4.8	<100	<10	<99	<2.5	11	<10	<50	1.8	<9.7
trans-1,2-Dichloroethene	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
trans-1,3-Dichloropropene	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Trichloroethene	13	<50	24	35	9.9	<250	90	220	14	<99	<2.5	<10	<10	<50	<0.50	<9.7
Trichlorofluoromethane	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7
Vinyl Acetate	<20	<50	<2.5	<25	<20	<250	<2.5	<100	<20	<99	<2.5	<10	<20	<50	<0.50	<9.7
Vinyl chloride	<9.9	<50	<2.5	<25	<9.9	<250	<2.5	<100	<10	<99	<2.5	<10	<10	<50	<0.50	<9.7

Notes:
< = Analyte was not detected above the listed laboratory reporting limit
J = Analyte was positively identified, however the result should be considered an estimated value
ppbv = Parts per billion by volume

Table 10
Proposed 2010 UPCO Sampling and Analysis Schedule

Well ID	Quarter Sampled in 2010	Analyses Performed		
		Perchlorate	Metals	VOCs
MW-1	1	X (314.0)	X (200.8)	X
	2	X (314.0)		
	3	X (314.0)		X
	4	X (314.0)		
MW-2	1	X (314.0)	X (200.8)	X
	2	X (314.0)		
	3	X (314.0)		X
	4	X (314.0)		
MW-3	1	X (314.0 & 332)	X (200.8)	X
	2			
	3	X (314.0 & 332)		
	4			
MW-4	1	X (314.0 & 332)	X (200.8)	X
	2			
	3	X (314.0 & 332)		
	4			
MW-5	1	X (314.0)	X (200.8)	X
	2	X (314.0)		
	3	X (314.0)		
	4	X (314.0)		
MW-6	1	X (314.0)	X (200.8)	X
	2	X (314.0)		
	3	X (314.0)		
	4	X (314.0)		
MW-7	1	X (314.0 & 332)	X (200.8)	X
	2			
	3	X (314.0 & 332)		
	4			
MW-8	1	X (314 & 332)	X (200.8)	X
	2			
	3	X (314.0 & 332)	X (200.8)	
	4			

Table 10
Proposed 2010 UPCO Sampling and Analysis Schedule

Well ID	Quarter Sampled in 2010	Analyses Performed		
		Perchlorate	Metals	VOCs
MW-9	1	X (314.0 & 332)	X (200.8)	X
	2			
	3	X (314.0 & 332)		
	4			
MW-10	1	X (314.0 & 332)	X (200.8)	X
	2			
	3	X (314.0 & 332)		
	4			
MW-11	1	X (314.0 & 332)	X (200.8)	X
	2			
	3	X (314.0 & 332)		
	4			
MW-12	1	X (314.0 & 332)	X (200.8)	X
	2			
	3	X (314.0 & 332)		
	4			
MW-13	1	X (314.0)	X (200.8)	X
	2	X (314.0)		
	3	X (314.0)		
	4	X (314.0)		
MW-14	1	X (314.0 & 332)	X (200.8)	X
	2			
	3	X (314.0 & 332)		
	4			
MW-15	1	X (314.0 & 332)	X (200.8)	X
	2			
	3	X (314.0 & 332)		
	4			
MW-16 ***	1	X (314.0 & 332)	X (200.8)	X
	2			
	3	X (314.0 & 332**)		
	4			

Table 10
Proposed 2010 UPCO Sampling and Analysis Schedule

Well ID	Quarter Sampled in 2010	Analyses Performed		
		Perchlorate	Metals	VOCs
MW-17 ***	1	X (314.0 & 332)	X (200.8)	X
	2			
	3	X (314.0 & 332**)		
	4			
MW-18	1	X (314.0 & 332)	X (200.8)	X
	2			
	3	X (314.0 & 332)	X (200.8)	
	4			
PW-1	1	X (314.0)	X (200.8)	X
	2	X (314.0)		
	3	X (314.0)		X
	4	X (314.0)		
SVMW-1*	1			X (TO-15)
	2			X (TO-15)
	3			X (TO-15)
	4			X (TO-15)
Private Wells	1			
	2	X (314.0 & 332)		
	3			
	4	X (314.0 & 332)		

Notes:
Perchlorate = Test as indicated
Metals = Arsenic, barium, cadmium, chromium, lead, mercury (245.1), selenium, silver, and as noted
VOCs = Volatile organic compounds include 8260B list and 1,4-dioxane. Soil gas samples analyzed by Method TO-15
* = Soil vapor monitoring well with sample collection in 1 liter Summa cannisters
** = Perchlorate analysis using EPA Method 332 is dependent on initial results < 2.0 micrograms per liter
*** = MW-16 and MW-17 will be sampled for Ca, Mg, K, Na, (200.7); Cl, SO4, NO3/NO2 (E300); carbonate/bicarbonate/hydroxide alkalinity (M2320 B); and total dissolved solids (M2540 C) during the first scheduled sampling event after well installation.

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

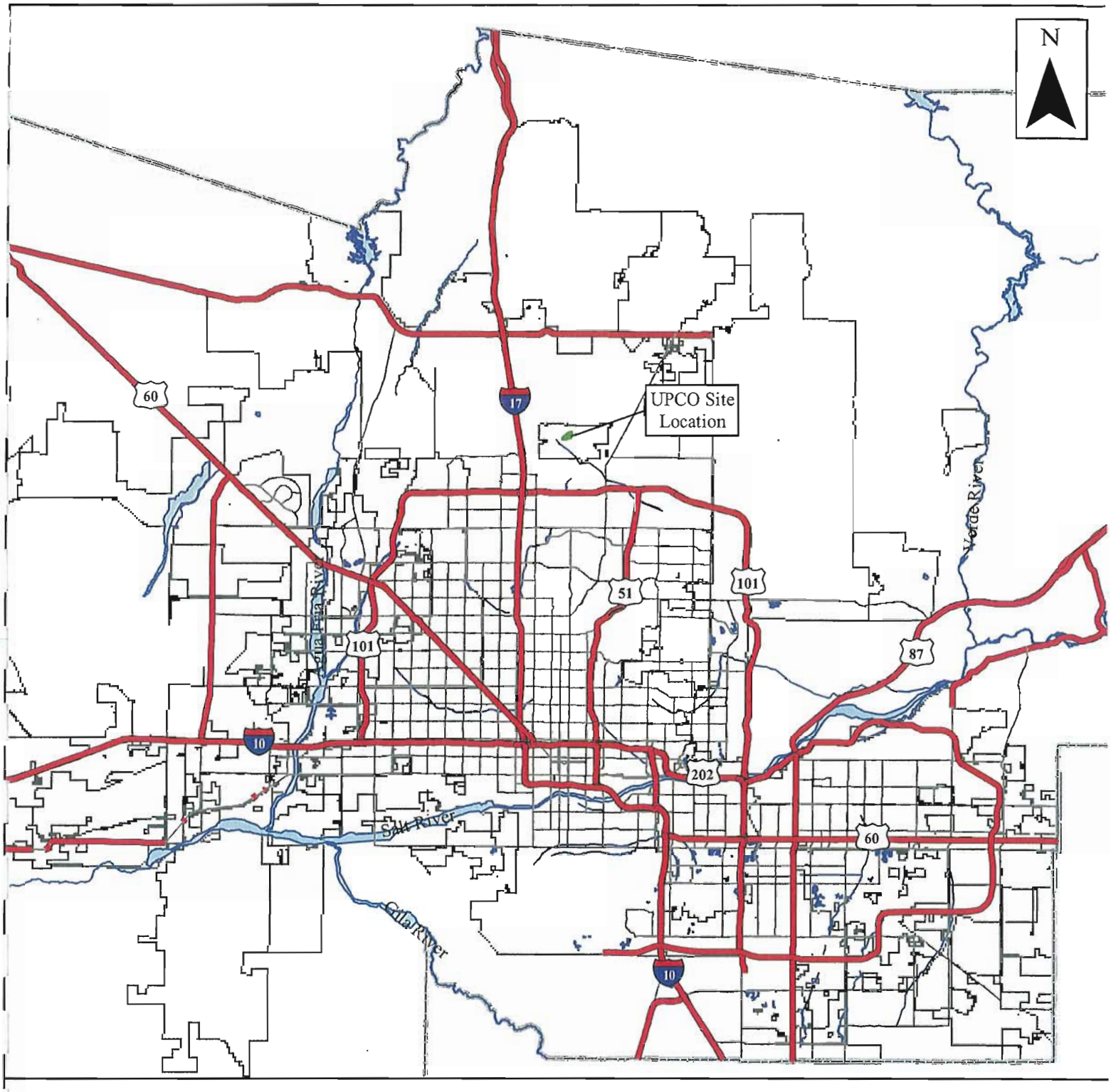
Figures

Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Figures

3994-003

MALCOLM PIRNIE



Legend

- Highways, Freeways
- Primary Roads
- Rivers
- Site Location
- County Boundaries
- Lakes
- City Boundaries

0 2.5 5 10 15

Miles

MALCOLM PIRNIE

4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Site Location Map
2009 Annual Monitoring Report

December 2010

Figure 1

Legend

- A-Complex
- B-Complex
- C-Complex
- D-Complex
- E-Complex
- F-Complex
- Open Burn Unit
- Lease Property Boundary

0 200 400 600 800

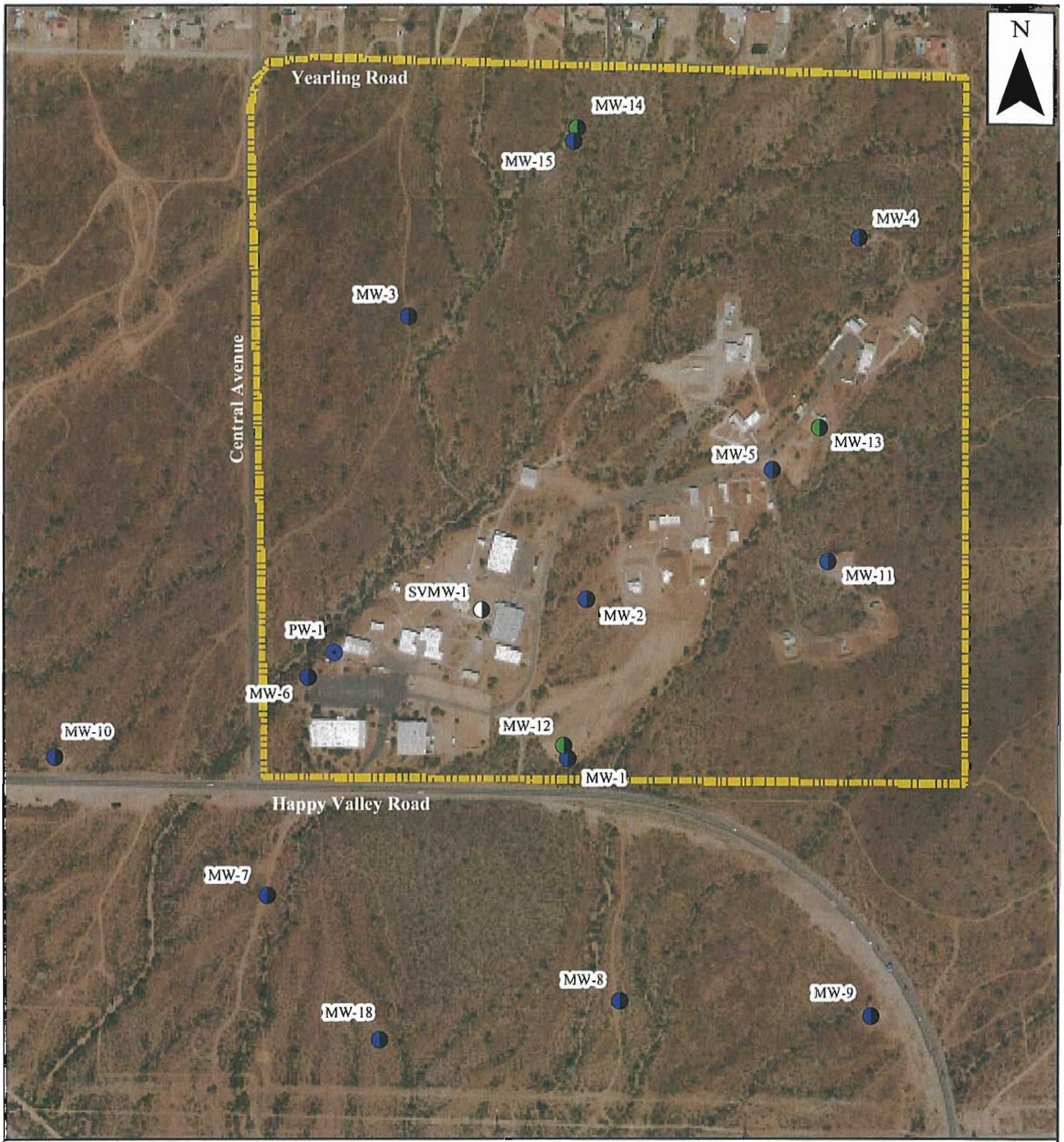
Feet

MALCOLM PIRNIE
4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Site Facilities Map
2009 Annual Monitoring Report

December 2010 | **Figure 2**

M:\2004003\GIS\Projects_MXD\Annual_Groundwater_Report\2009 Report\Figure 2.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

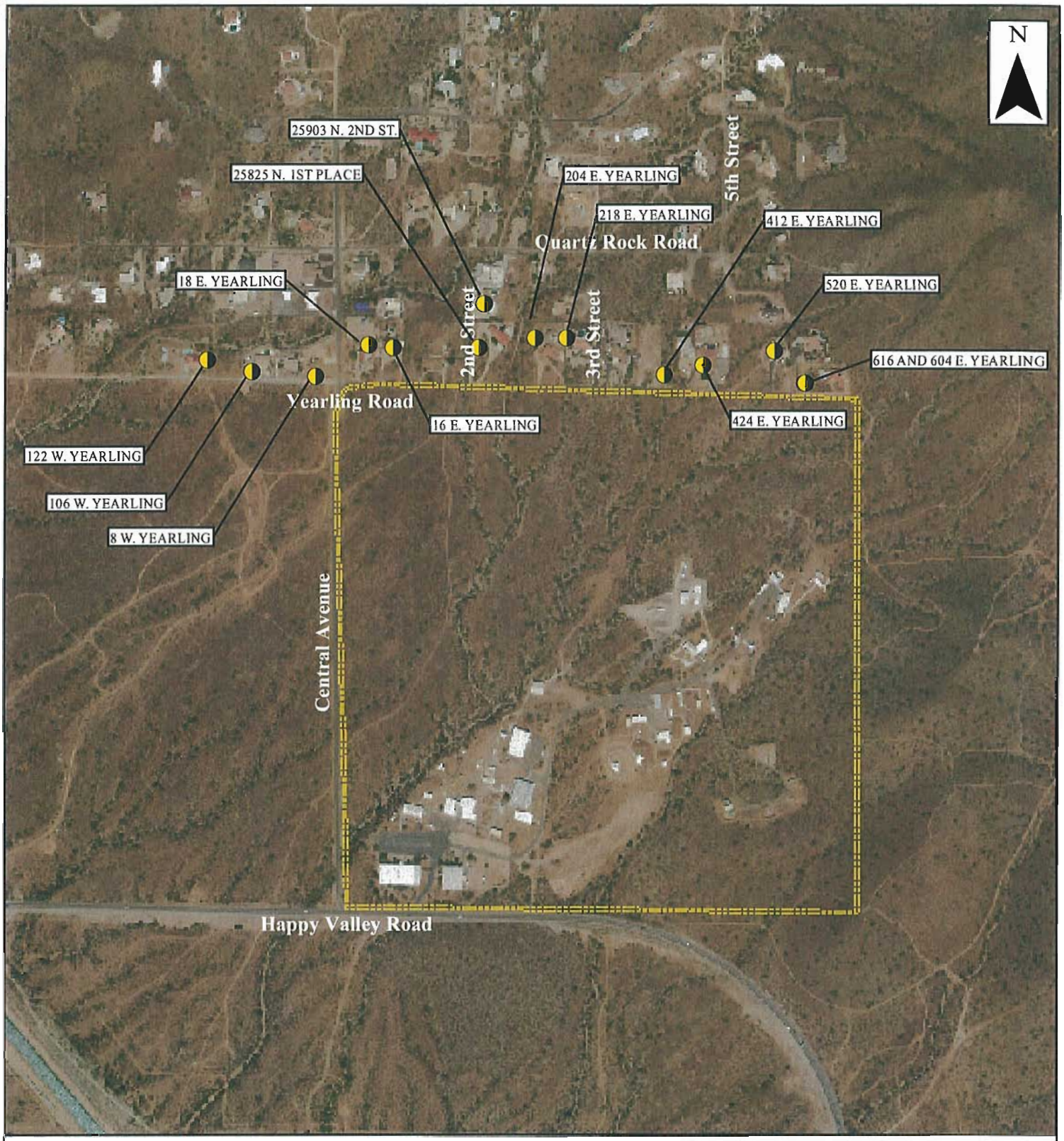
Note: SVMW-1 is a soil vapor monitoring well installed above water level.

0 250 500 750 1,000
Feet

MALCOLM PIRNIE
4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

UPCO Monitor Wells
2009 Annual Monitoring Report

December 2010 | **Figure 3**



Legend

- Private Domestic Wells
- Lease Property Boundary

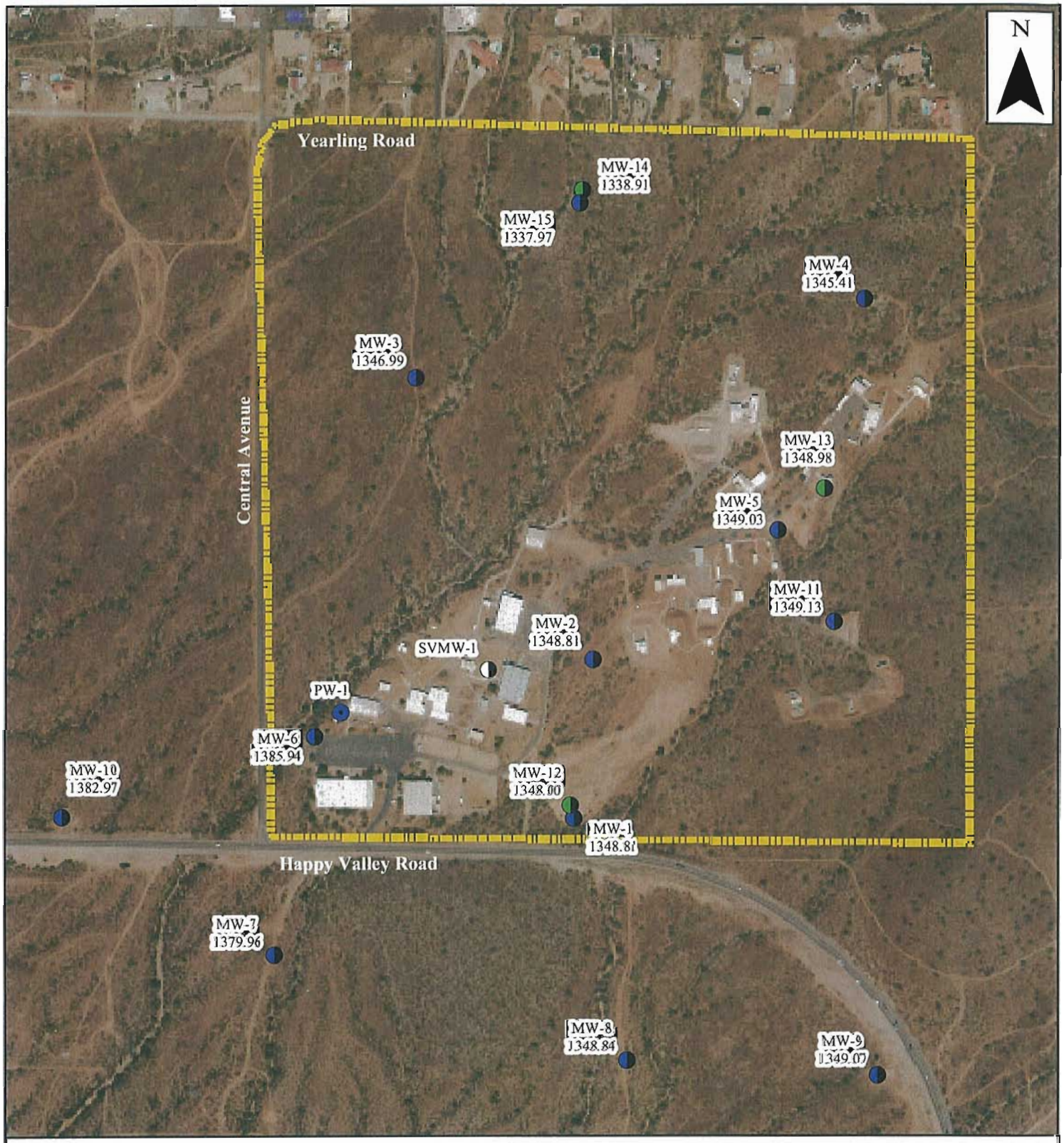
0 250 500 750 1,000
Feet

MALCOLM PIRNIE
4646 E. Van Buren St.,
Suite 400
Phoenix, AZ 85008

Private Wells
2009 Annual Monitoring Report

December 2010 | **Figure 4**

M:\3994003\GIS\Projects MXD\Annual Groundwater Report\2009 Report\ Figure 4



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

MW-1 / 1348.81 — Well ID / Groundwater Elevation (ft amsl)

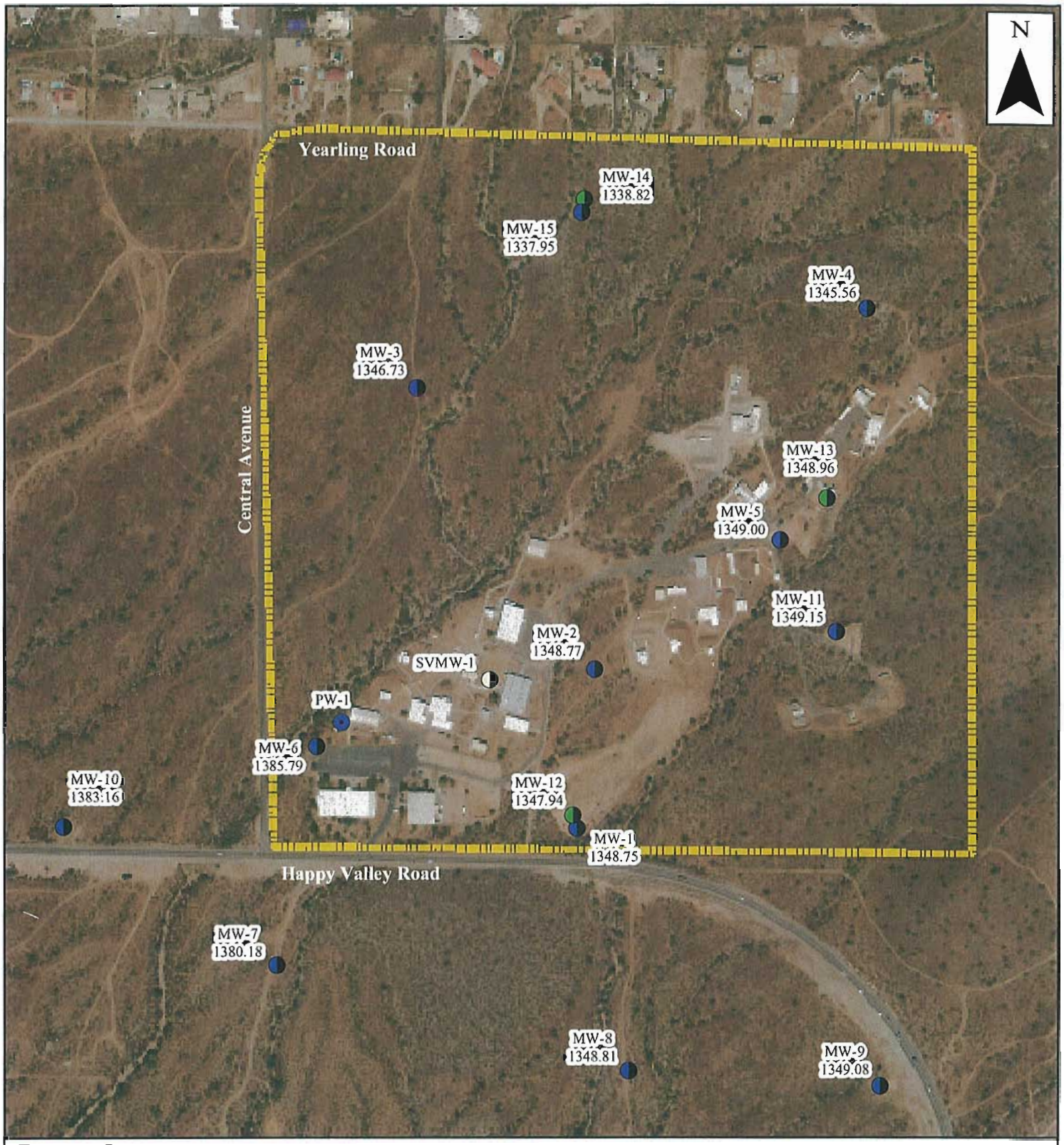
0 250 500 750 1,000
Feet

MALCOLM PIRNIE
4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Groundwater Elevations
January 12, 2009
2009 Annual Monitoring Report

December 2010 | **Figure 5**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2009 report



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

MW-1 — Well ID
1348.75 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

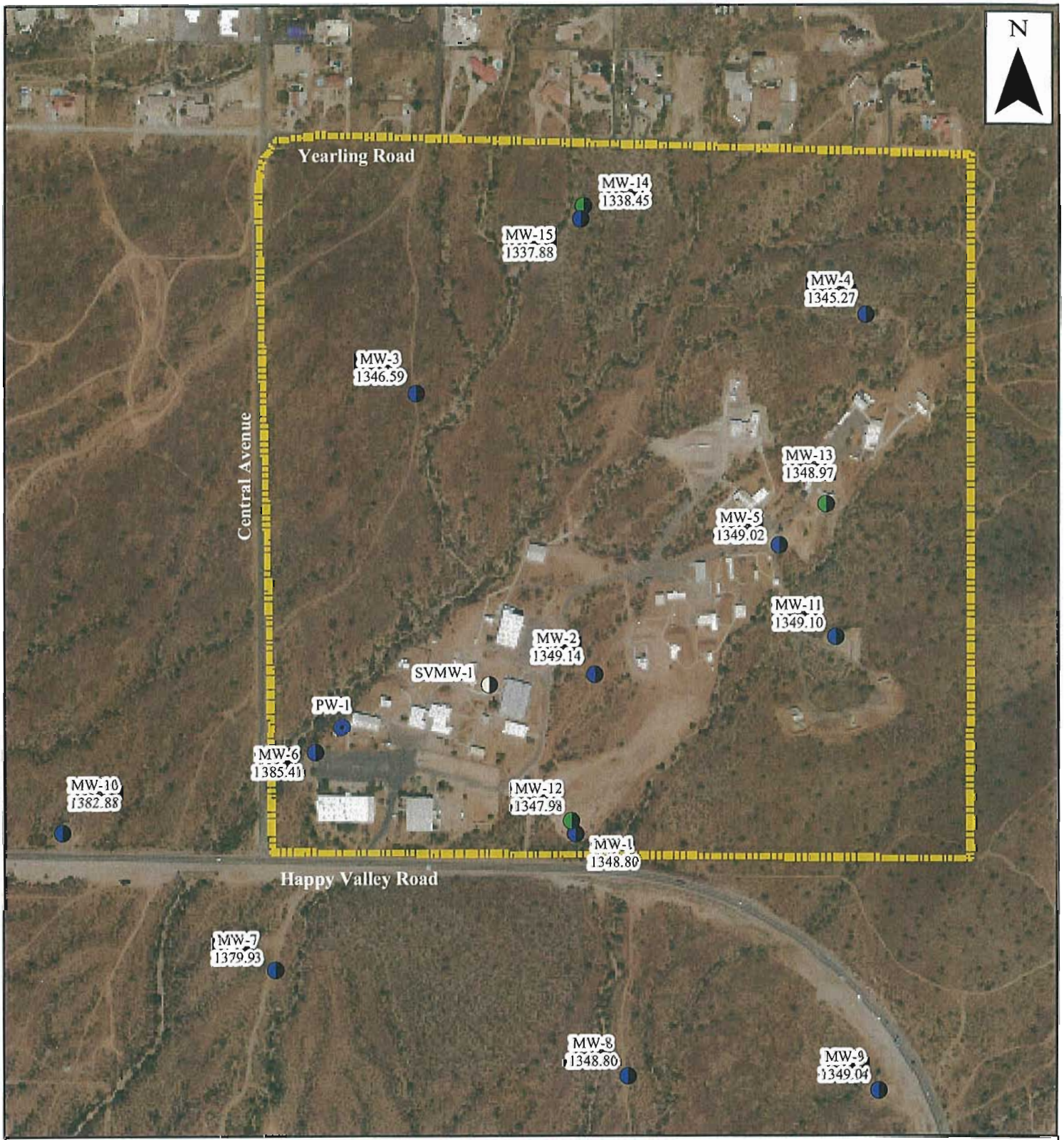
MALCOLM PIRNIE

4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Groundwater Elevations
February 16, 2009
2009 Annual Monitoring Report

December 2010 | **Figure 6**

M:\3994003\GIS\Projects MXD\Annual Groundwater Report\2009 report



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

MW-1 / 1348.80 — Well ID / Groundwater Elevation (ft amsl)

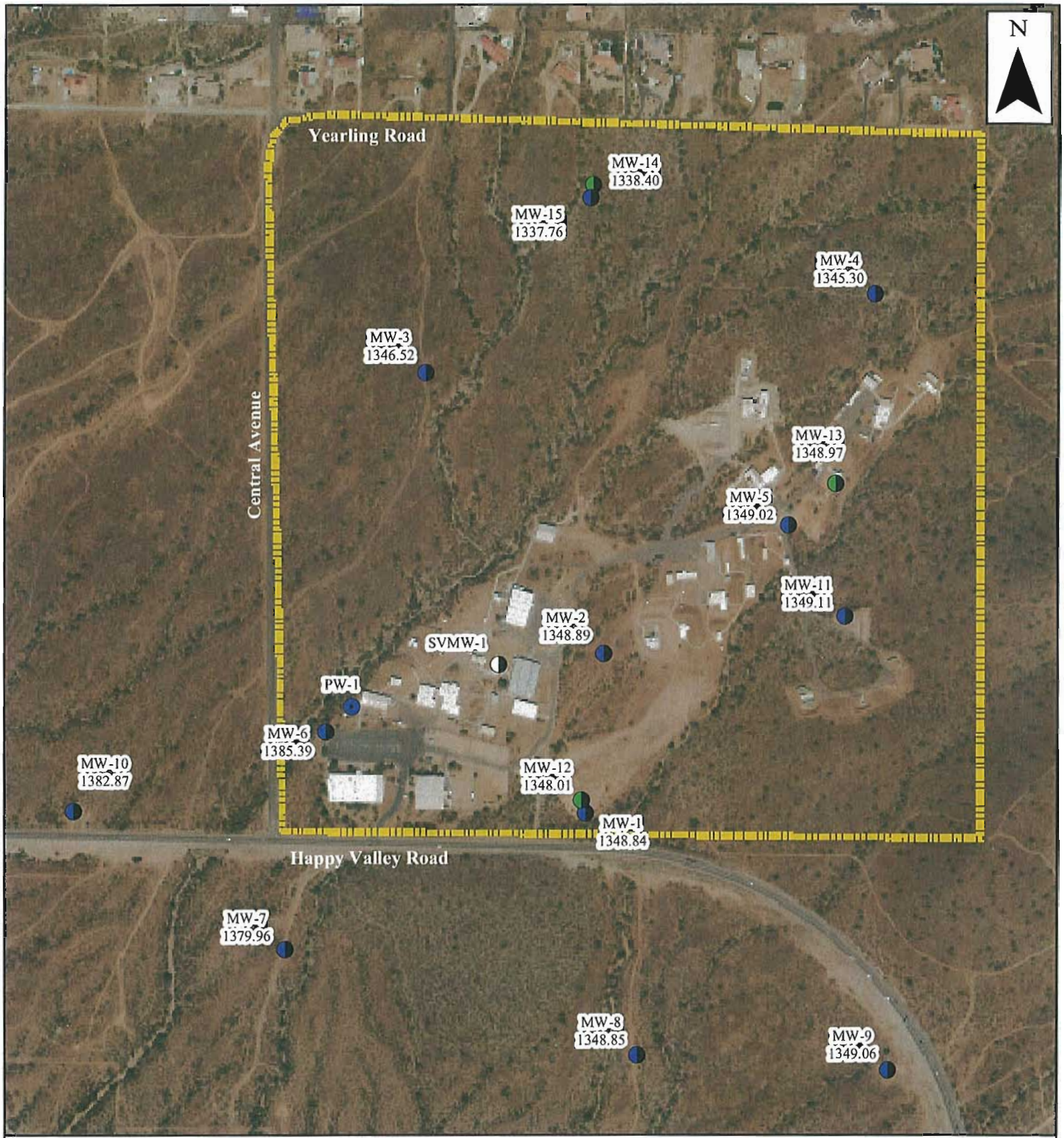
0 250 500 750 1,000
Feet

MALCOLM PIRNIE
4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Groundwater Elevations
March 17, 2009
2009 Annual Monitoring Report

December 2010 | **Figure 7**

M:\3994003\GIS\Projects MXD\Annual Groundwater Report\2009 report



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

MW-1 — Well ID
1348.84 — Groundwater Elevation (ft amsl)

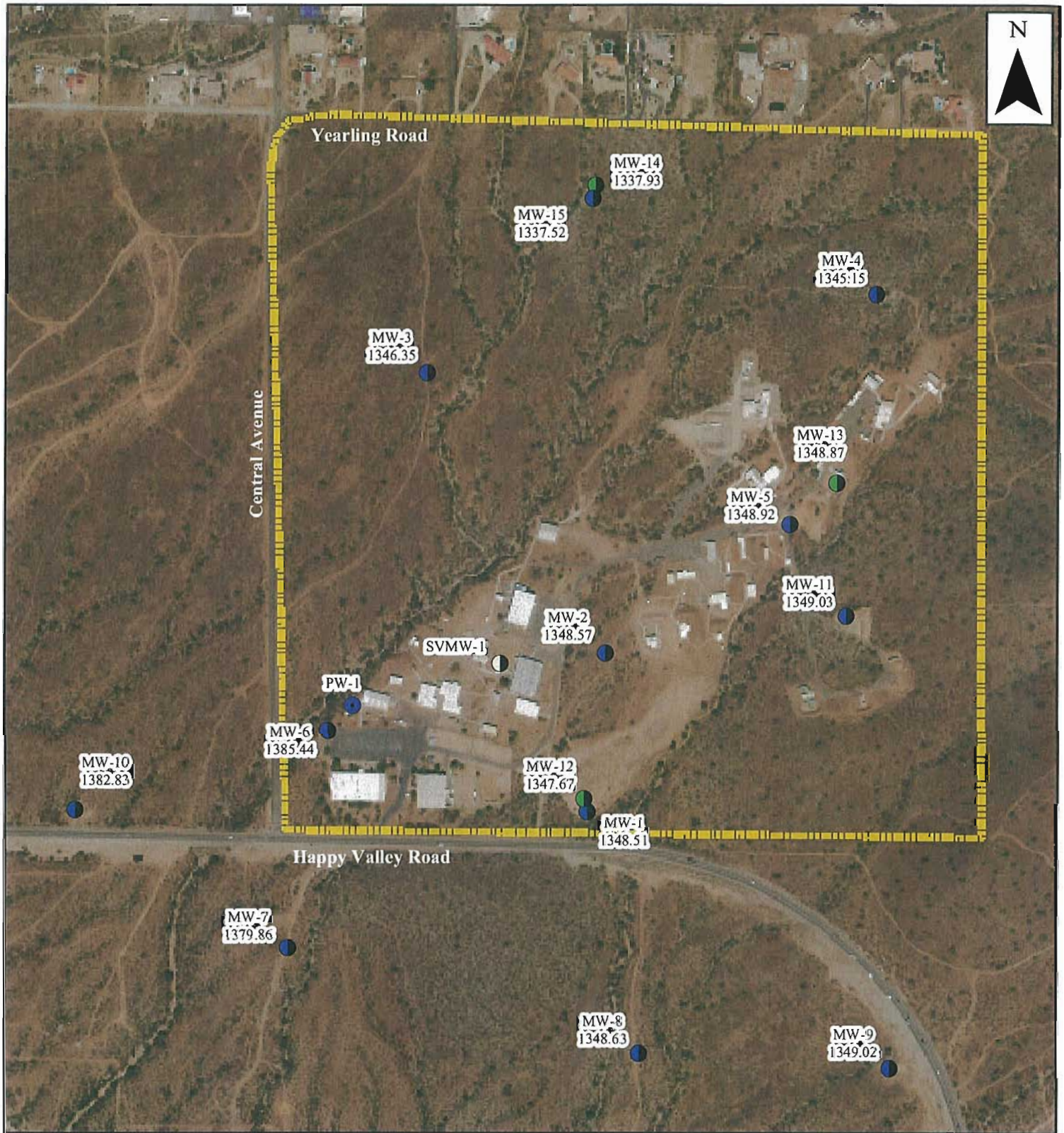
0 250 500 750 1,000
Feet

MALCOLM PIRNIE
4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Groundwater Elevations
April 13, 2009
2009 Annual Monitoring Report

December 2010 | **Figure 8**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2009 report



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

MW-1 — Well ID
1348.51 — Groundwater Elevation (ft amsl)

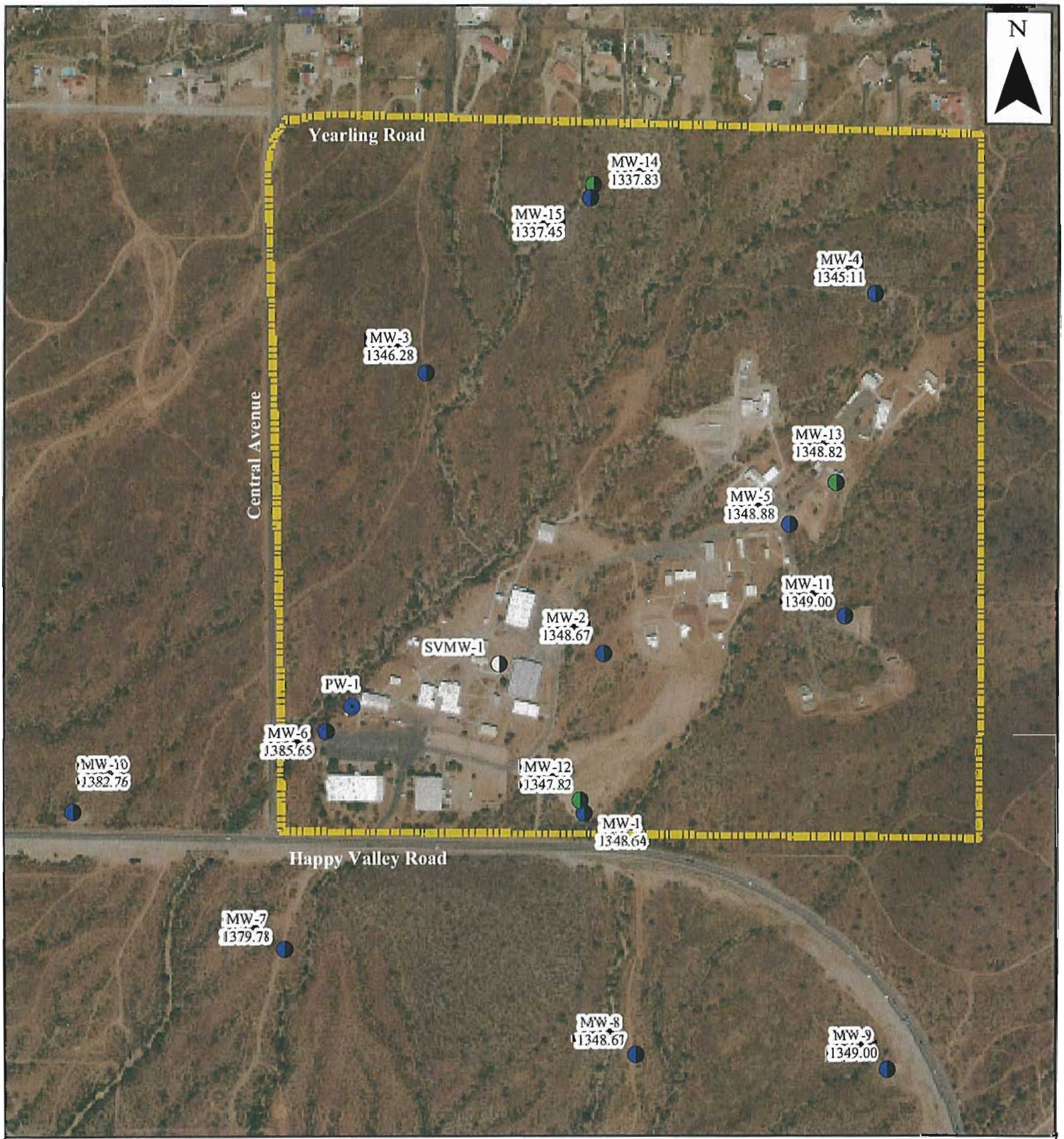
0 250 500 750 1,000
Feet

MALCOLM PIRNIE
4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Groundwater Elevations
May 20, 2009
2009 Annual Monitoring Report

December 2010 | **Figure 9**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater Report\2009 report



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

MW-1 — Well ID
1348.64 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

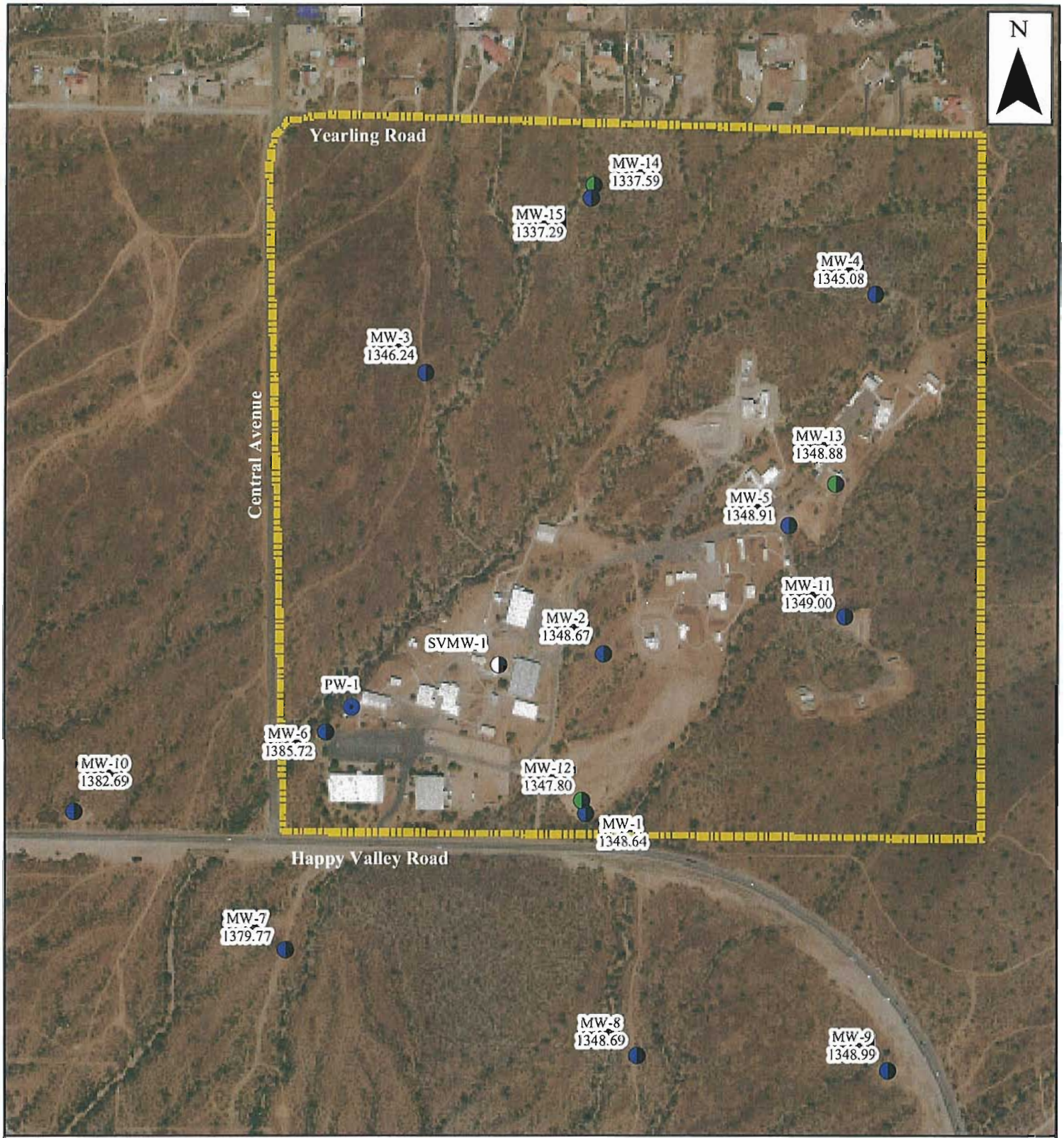
MALCOLM PIRNIE

4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Groundwater Elevation
June 15, 2009
2009 Annual Monitoring Report

December 2010 | **Figure 10**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2009 report



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

MW-1 — Well ID
1348.64 — Groundwater Elevation (ft amsl)

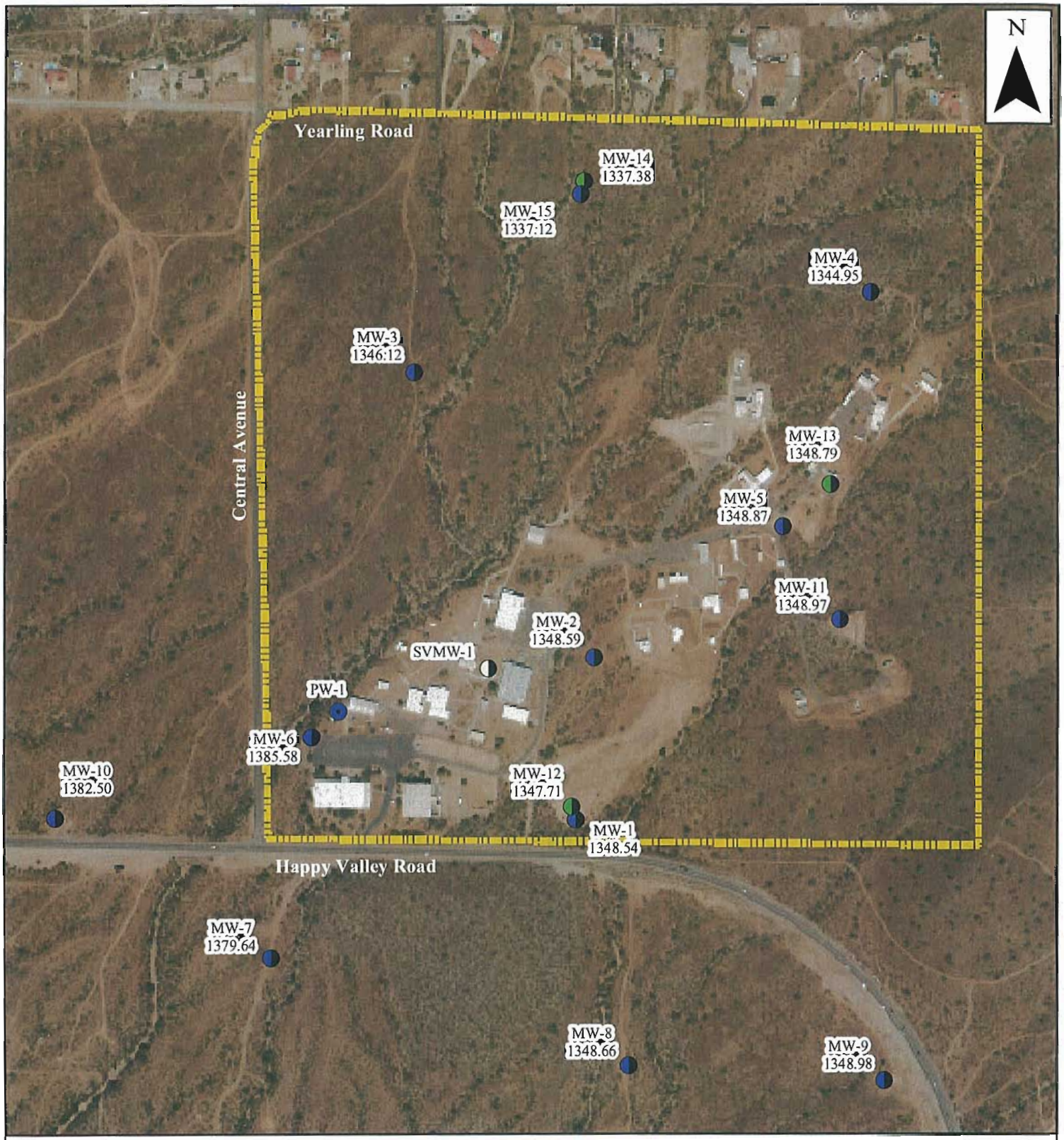
0 250 500 750 1,000
Feet

MALCOLM PIRNIE
4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Groundwater Elevations
July 6, 2009
2009 Annual Monitoring Report

December 2010 | **Figure 11**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2009 report



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

MW-1 / 1348.54 — Well ID / Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

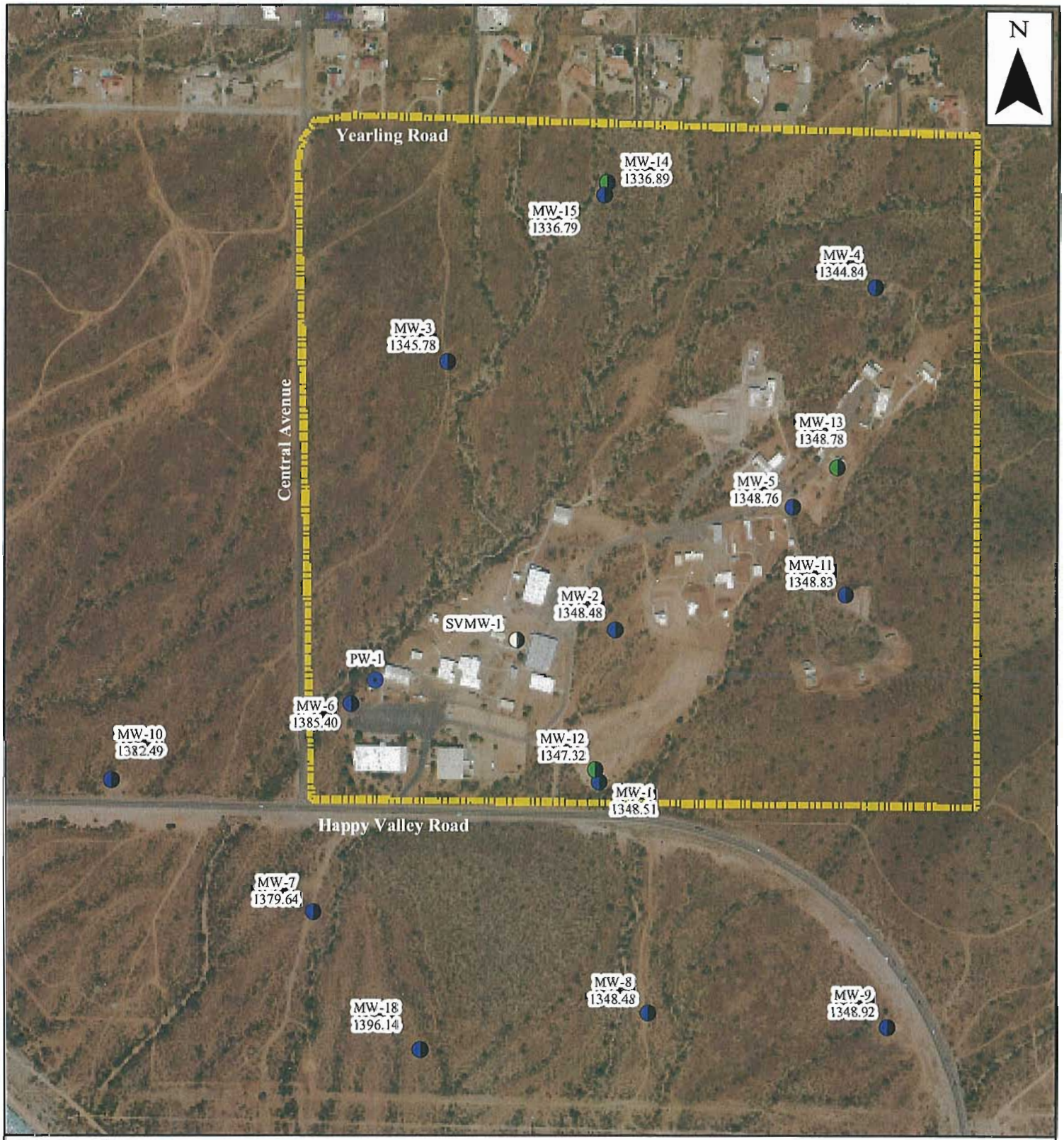
MALCOLM PIRNIE

4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Groundwater Elevations
August 12 - 13, 2009
2009 Annual Monitoring Report

December 2010 | **Figure 12**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2009 report



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

Note: MW-18 static water level recorded on October 7, 2009, due to slow recharge after well installation.

MW-1 — Well ID
1348.51 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

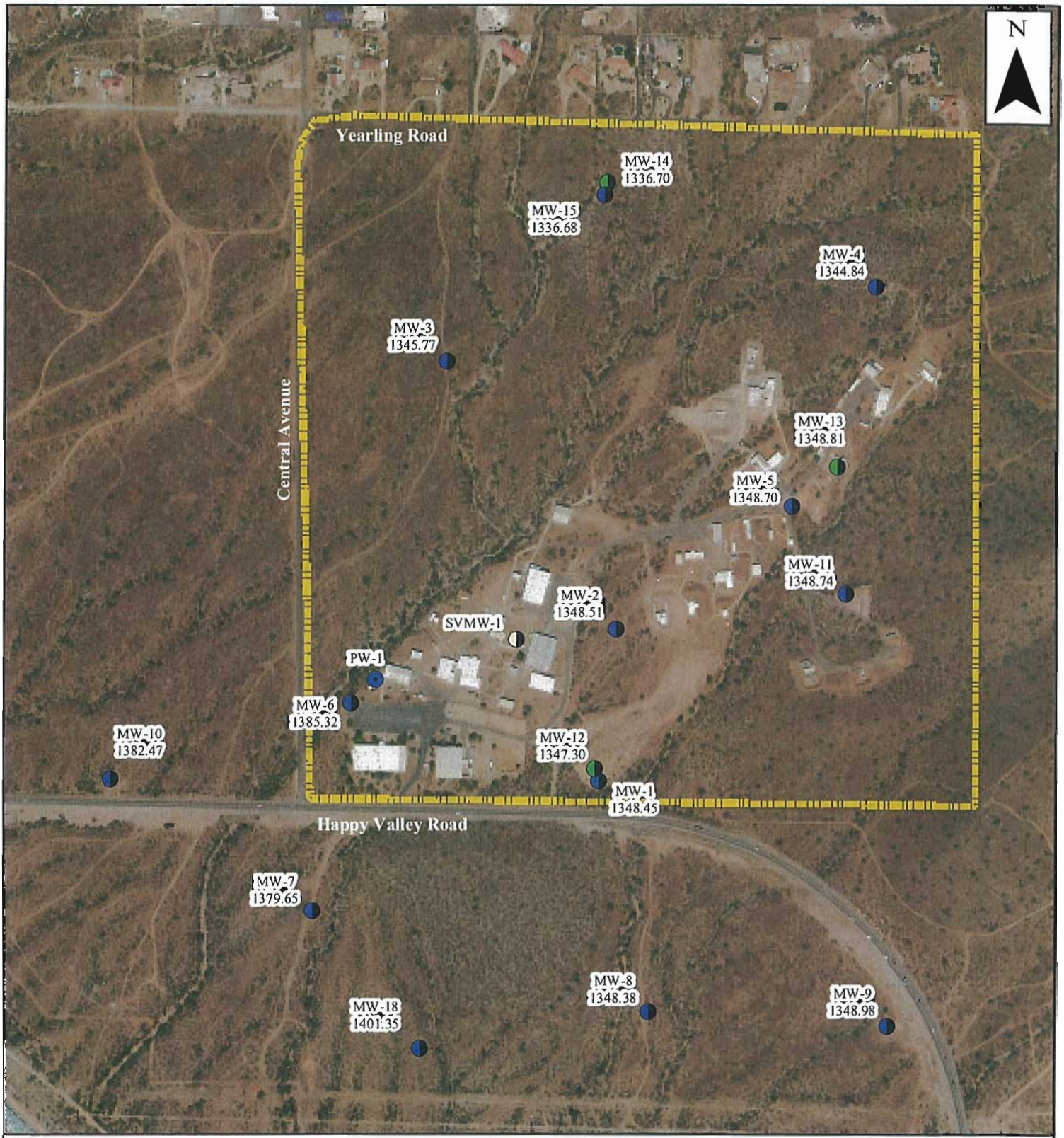
MALCOLM PIRNIE

4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Groundwater Elevations
September 28, 2009
2009 Annual Monitoring Report

December 2010 | **Figure 13**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2009 report



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

MW-1 — Well ID
1348.45 — Groundwater Elevation (ft amsl)

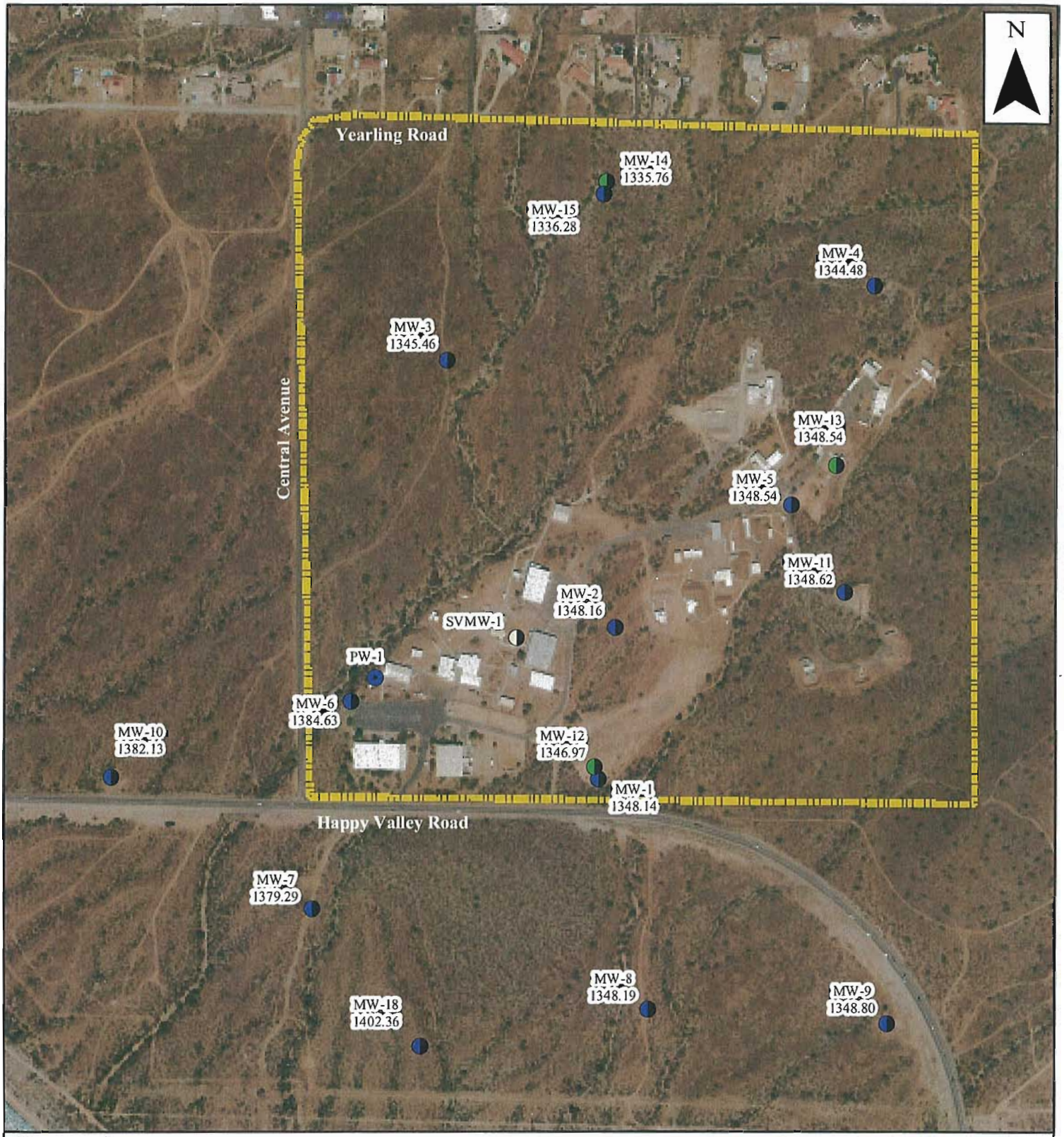
0 250 500 750 1,000
Feet

MALCOLM PIRNIE
4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Groundwater Elevations
October 27, 2009
2009 Annual Monitoring Report

December 2010 | **Figure 14**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2009 report



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

MW-1 — Well ID
1348.14 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

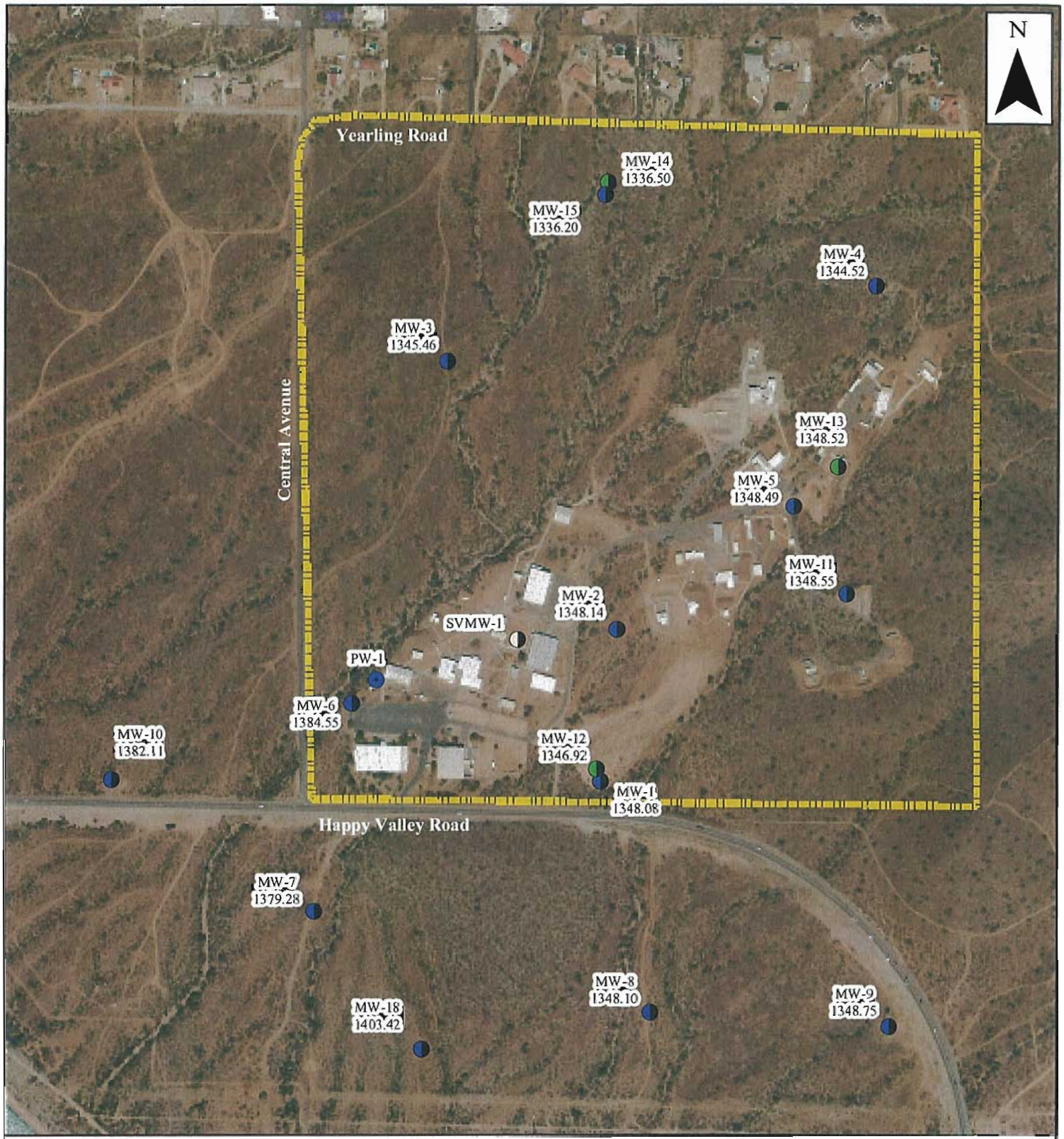
MALCOLM PIRNIE

4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Groundwater Elevations
November 25, 2009
2009 Annual Monitoring Report

December 2010 | **Figure 15**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2009 report



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Soil Vapor Monitor Well
- Lease Property Boundary

MW-1 — Well ID
1348.08 — Groundwater Elevation (ft amsl)

0 250 500 750 1,000
Feet

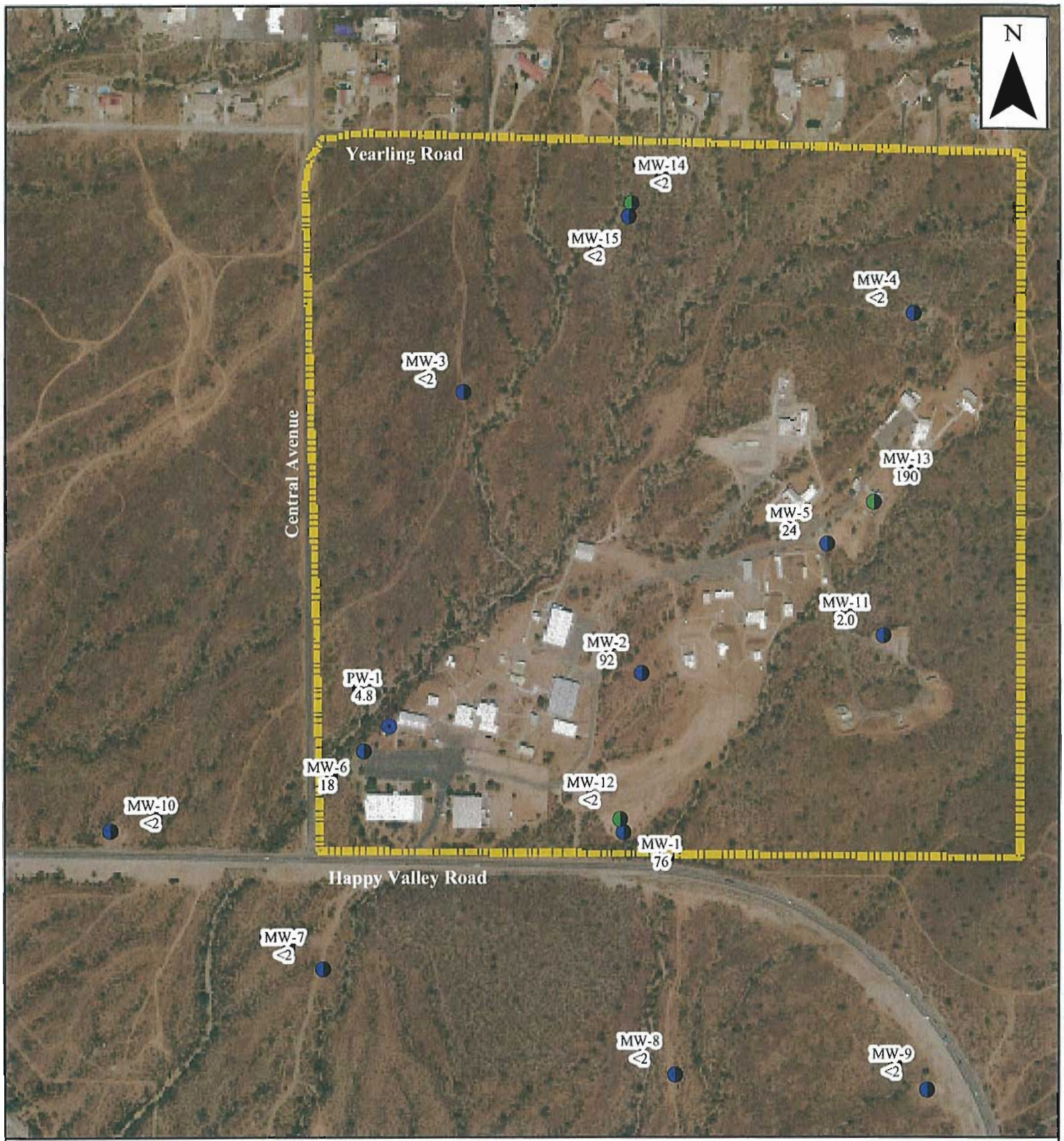
MALCOLM PIRNIE

4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Groundwater Elevation
December 18, 2009
2009 Annual Monitoring Report

December 2010 | **Figure 16**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2009 report



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Lease Property Boundary

MW-1 / 76 — Well ID / Perchlorate Concentration (µg/L)

0 250 500 750 1,000

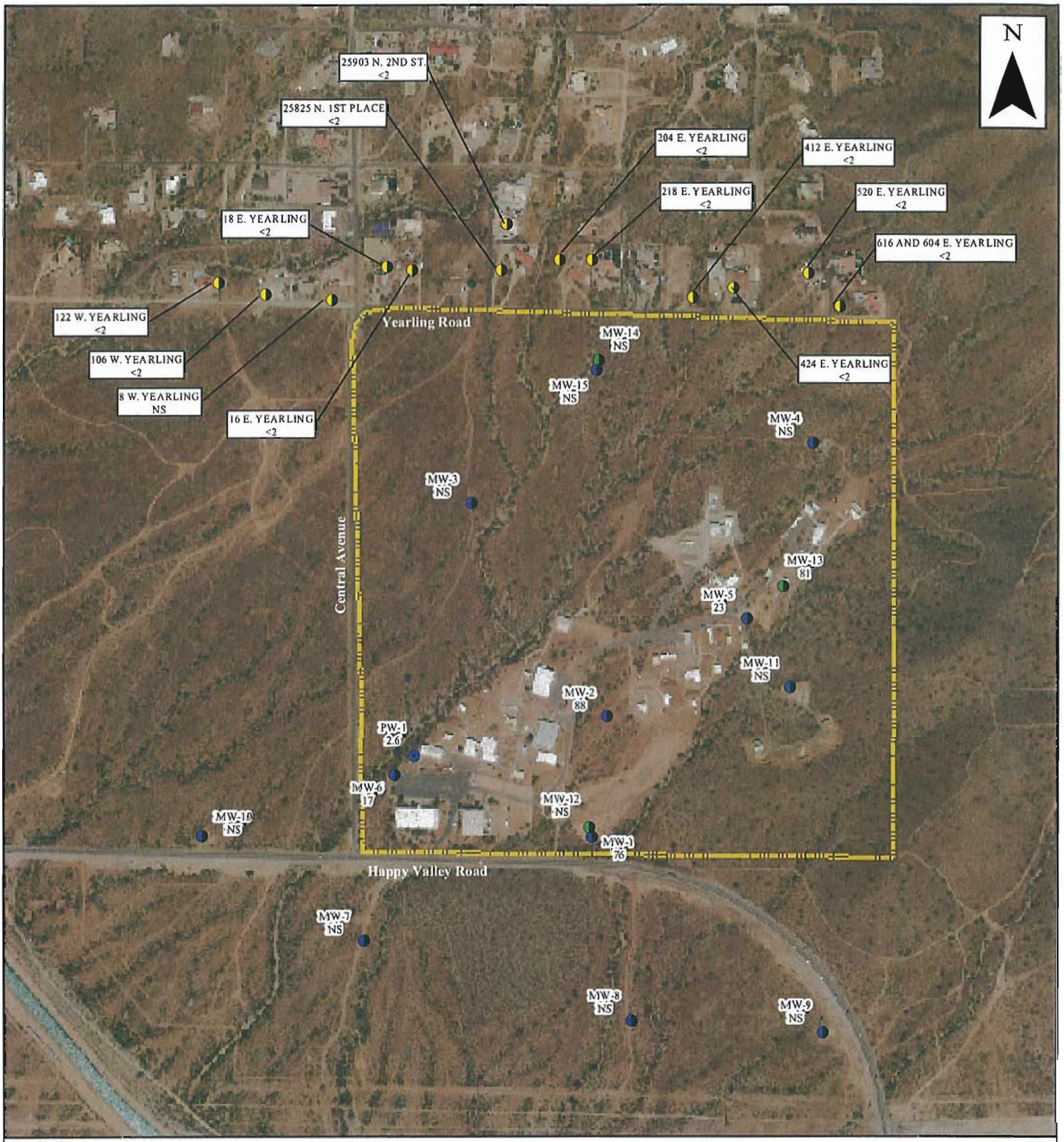
Feet

MALCOLM PIRNIE
4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

First Quarter 2009
Perchlorate Concentration Map
2009 Annual Monitoring Report

December 2010 | **Figure 17**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2009 Report\Figure_17.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Private Domestic Wells
- Lease Property Boundary

MW-1 / 76 — Well ID / Perchlorate Concentration (µg/L)

0 250 500 750 1,000
Feet

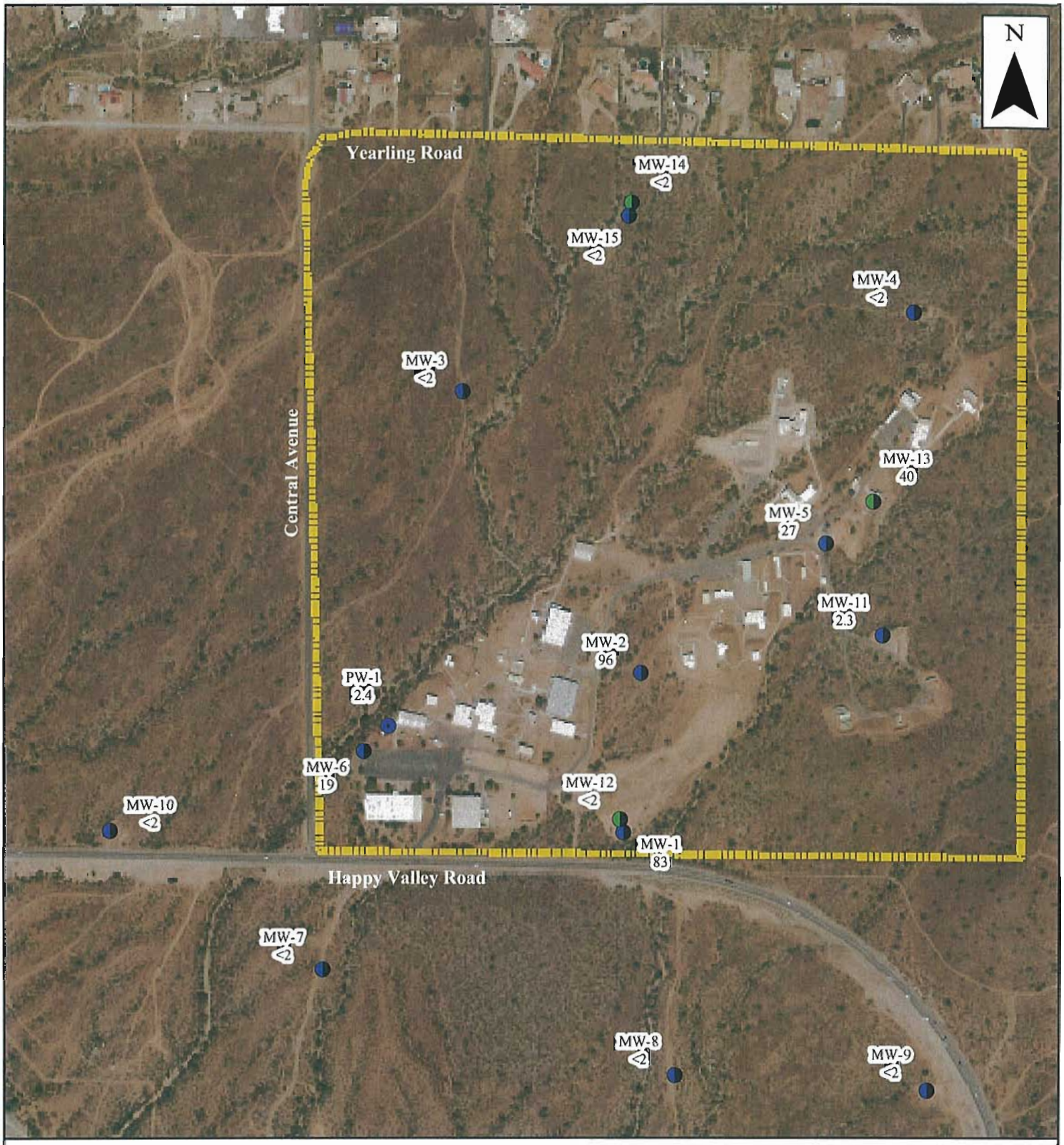
MALCOLM PIRNIE

4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Second Quarter 2009
Perchlorate Concentration Map
2009 Annual Monitoring Report

December 2010 | **Figure 18**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2009 Report\Figure_18.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Lease Property Boundary

MW-1 / 83 — Well ID / Perchlorate Concentration (µg/L)

0 250 500 750 1,000
Feet

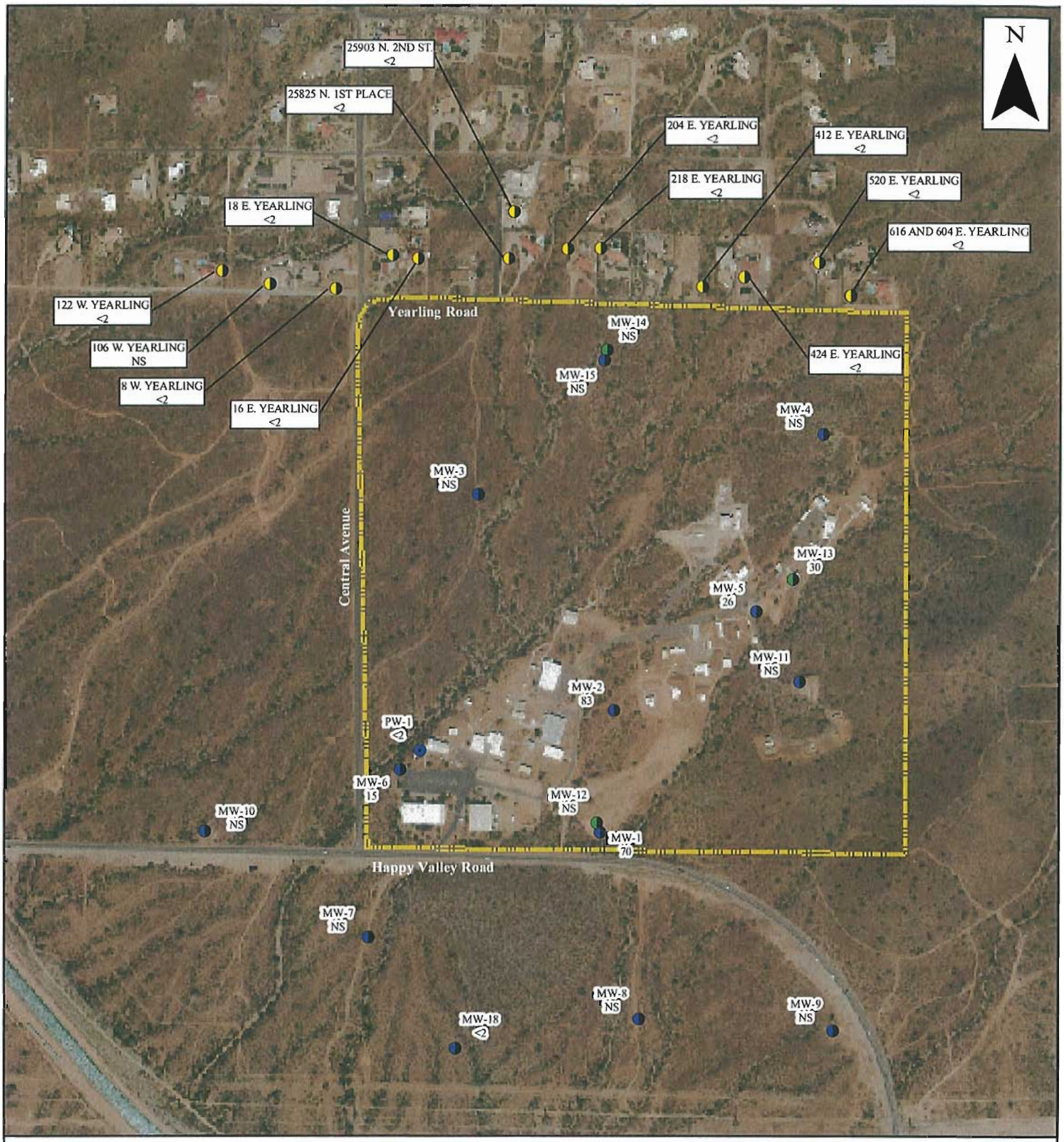
MALCOLM PIRNIE

4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Third Quarter 2009
Perchlorate Concentration Map
2009 Annual Monitoring Report

December 2010 | **Figure 19**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2009 Report\Figure_19.mxd



Legend

- Deep Monitor Well
- Monitor Well
- Production Well
- Private Domestic Wells
- Lease Property Boundary

MW-1 / 70 — Well ID / Perchlorate Concentration (µg/L)

0 250 500 750 1,000
Feet

MALCOLM PIRNIE
4646 E. Van Buren St.
Suite 400
Phoenix, AZ 85008

Fourth Quarter 2009
Perchlorate Concentration Map
2009 Annual Monitoring Report

December 2010 | **Figure 20**

M:\3994003\GIS\Projects_MXD\Annual_Groundwater_Report\2009 Report\Figure_20.mxd

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

A

APPENDIX

Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix A
Lithologic Logs and Well Construction Diagrams

3994-003

MALCOLM PIRNIE

MALCOLM PIRNIE GOODRICH

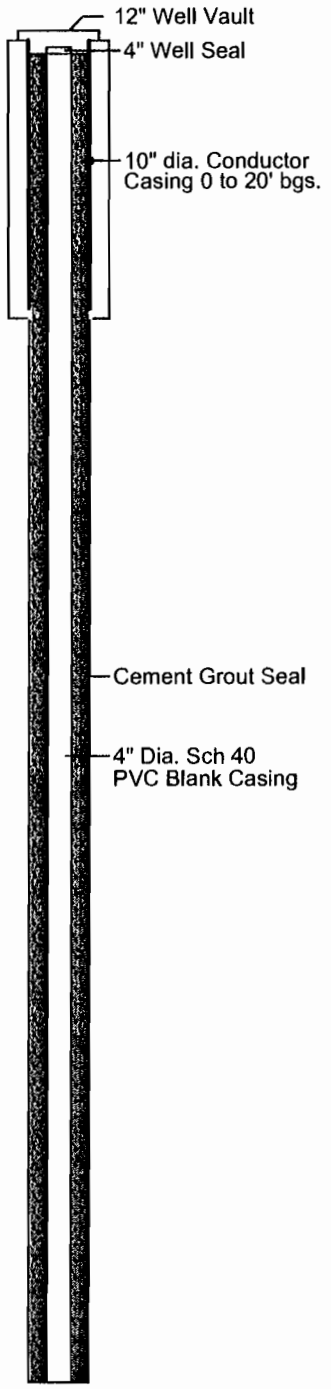
Lithologic Log for Monitor Well MW-18

Phase V Drilling
September 2009

Start Date	: August 27, 2009	Drill Rig	: Air Rotary
Finish Date	: September 23, 2009	Driller & Helper	: Chad, Tom, and Dan
Location	: UPCO		
Logged By	: Matt/Adrian	Latitude	: 33 42' 48"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 13"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	CUTTINGS % Gravel	% Sand	% Fines	Date/Time
0							8/28/09
10	SW		Well graded SAND with Gravel, trace to little Silt, reddish brown. Sand is medium to coarse-grained, Gravel is subrounded to subangular.	30	65	5	09:15
20	GP		Poorly graded GRAVEL with Sand, trace to little Silt, light grey. Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	60	30	10	10:10
30	GW		Well graded GRAVEL with Sand, trace to little Silt, trace cobble, light grey. Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	60	30	10	8/31/09 11:15
40			Well graded GRAVEL with Sand, light gray. Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	60	40	T	11:35
50				60	35	5	14:00
60				60	35	5	14:10
70			Well graded GRAVEL with Sand, dark gray. Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	50	45	5	14:25
80			Well graded GRAVE with Sand, light gray, WET (driller adding water). Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	60	35	T	14:35
90				60	40	T	14:50
100							

Well Name: MW-18
Borehole Dia: Nom. 10"



MALCOLM PIRNIE GOODRICH

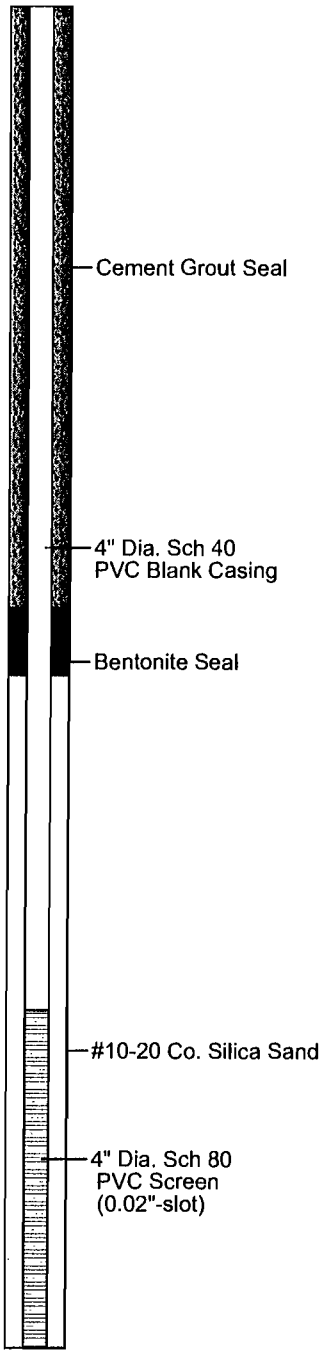
Lithologic Log for Monitor Well MW-18

Phase V Drilling
September 2009

Start Date	: August 27, 2009	Drill Rig	: Air Rotary
Finish Date	: September 23, 2009	Driller & Helper	: Chad, Tom, and Dan
Location	: UPCO		
Logged By	: Matt/Adrian	Latitude	: 33 42' 48"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 13"

Well Name: MW-18
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	CUTTINGS % Gravel	% Sand	% Fines	Date/Time
100			Well graded GRAVEL, dark gray to reddish brown.	55	45	T	15:00
110			Well graded GRAVEL, dark gray.	55	40	5	15:16
120				60	35	5	15:26
130			Well graded GRAVEL with Sand, dark gray to reddish brown. Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	55	40	5	15:36
140				55	40	5	15:55
150	GW		Well graded GRAVEL with Sand, dark gray to reddish brown. Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	65	30	5	16:10
160				60	35	5	16:25
170			Well graded GRAVEL, dark gray to reddish brown.	55	40	5	16:45
180				60	35	5	17:00
190			Well graded GRAVEL with Sand, dark gray to reddish brown. Sand is medium to coarse-grained, Gravel clasts are subangular to subrounded.	60	35	5	17:20 9/01/09 12:00
200				50	40	10	9/3/09 12:25



MALCOLM PIRNIE GOODRICH

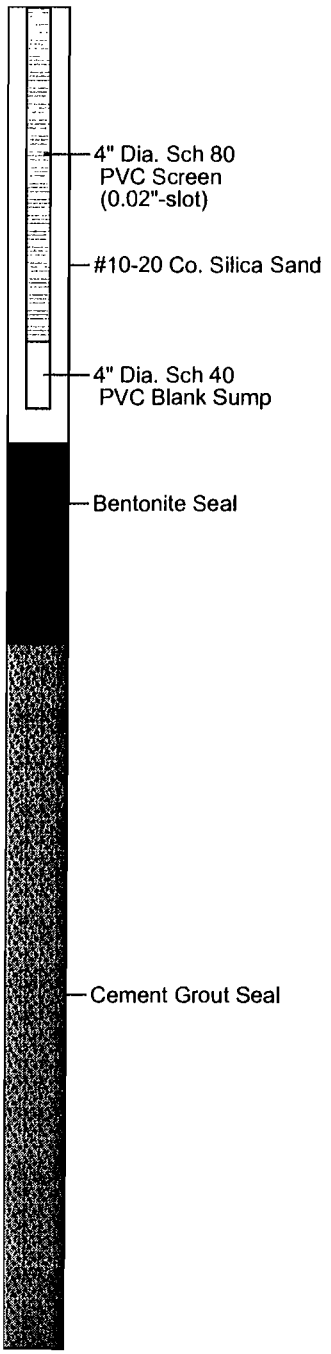
Lithologic Log for Monitor Well MW-18

Phase V Drilling
September 2009

Start Date	: August 27, 2009	Drill Rig	: Air Rotary
Finish Date	: September 23, 2009	Driller & Helper	: Chad, Tom, and Dan
Location	: UPCO		
Logged By	: Matt/Adrian	Latitude	: 33 42' 48"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 13"

Well Name: MW-18
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	CUTTINGS % Gravel	% Sand	% Fines	Date/Time
200							
210							15:50
220							16:10
230	GW						
240							16:50
250							11:00
260							
270	BR		DIORITE Bedrock, few Granodiorite cuttings, greenish gray, texture is fine grained, cutings are subangular to subrounded.				11:30
280			DIORITE Bedrock, reddish brown, cuttings are subrounded to rounded.				
290	BR						
300							9/14/09



MALCOLM PIRNIE GOODRICH

Lithologic Log for Monitor Well MW-18

Phase V Drilling
September 2009

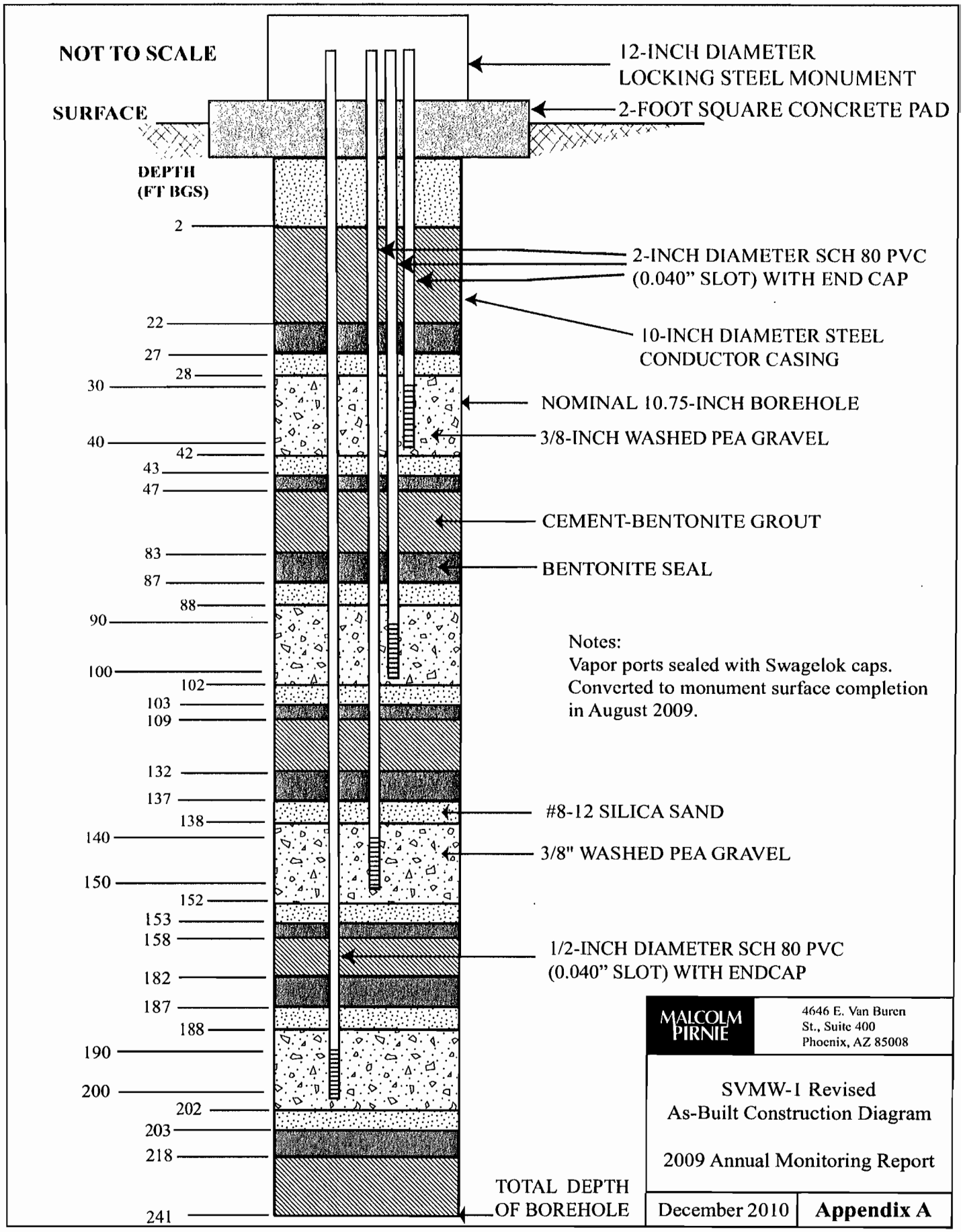
Start Date	: August 27, 2009	Drill Rig	: Air Rotary
Finish Date	: September 23, 2009	Driller & Helper	: Chad, Tom, and Dan
Location	: UPCO		
Logged By	: Matt/Adrian	Latitude	: 33 42' 48"
Drilling Subcontractor	: Yellow Jacket Drilling	Longitude	: 112 04' 13"

Well Name: MW-18
Borehole Dia: Nom. 10"

Depth in Feet	USCS	GRAPHIC	DESCRIPTION of Cuttings	CUTTINGS % Gravel	CUTTINGS % Sand	CUTTINGS % Fines	Date/Time
300							11:50
310							
320			DIORITE Bedrock, reddish brown, cuttings are subrounded to rounded.				12:10
330							
340							12:30
350	BR						
360			DIORITE Bedrock, reddish brown, cuttings are subrounded to rounded.				12:50
370							14:00
380							14:30
390							15:05
400			Total Depth.				

Cement Grout Seal

03-31-2010 M:\39940003\300 Monitor Well Install\Borehole_logs\Lithologic Logs\MW-18.bor



Notes:
Vapor ports sealed with Swagelok caps.
Converted to monument surface completion in August 2009.

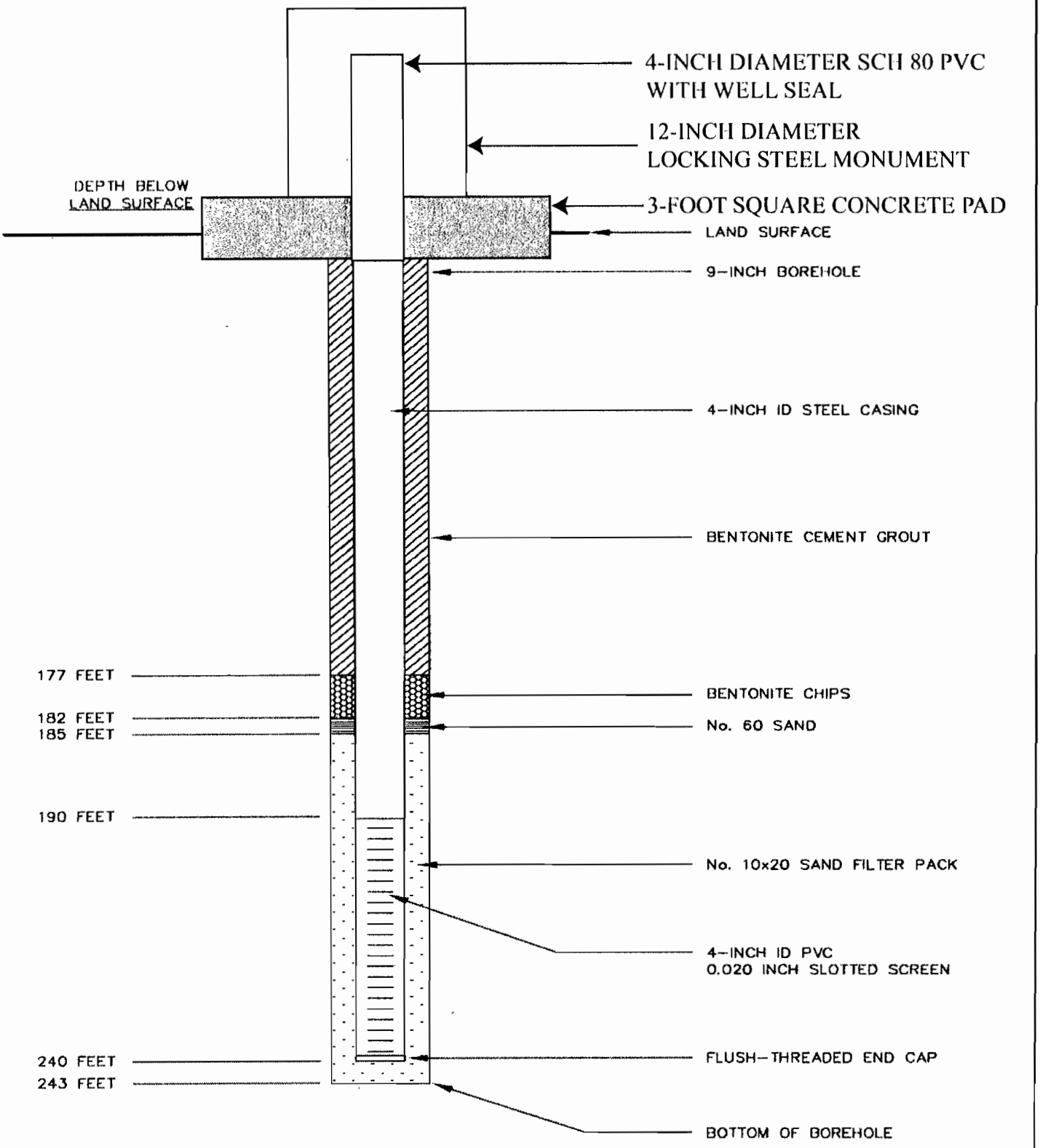
MALCOLM PIRNIE
4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

SVMW-1 Revised
As-Built Construction Diagram

2009 Annual Monitoring Report

December 2010 | **Appendix A**

M:\3994003\300 Monitor Well Install\As Builts



NOT TO SCALE

From Hargis + Associates, Inc.
Monitor Well Construction
Summary Report, July 2004

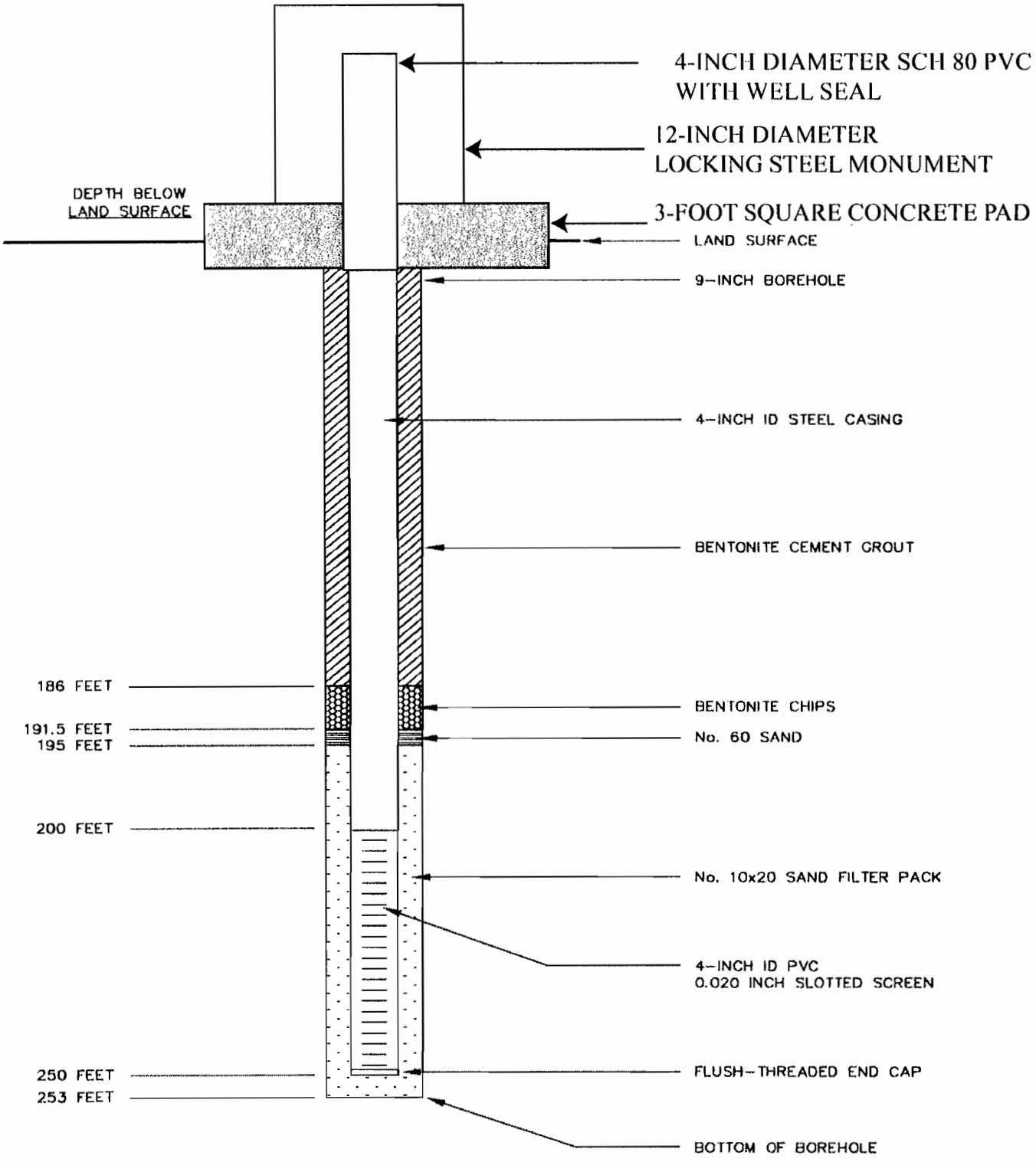
Note: MW-1 conversion to monument surface completion in September 2009

MALCOLM PIRNIE
4646 E. Van Buren St., Suite 400
Phoenix, AZ 85008

MW-1 Revised
As-Built Construction Diagram

2009 Annual Monitoring Report

December 2010 | **Appendix A**



NOT TO SCALE

From Hargis + Associates, Inc.
Monitor Well Construction
Summary Report, July 2004

Note: MW-2 conversion to monument surface completion in September 2009

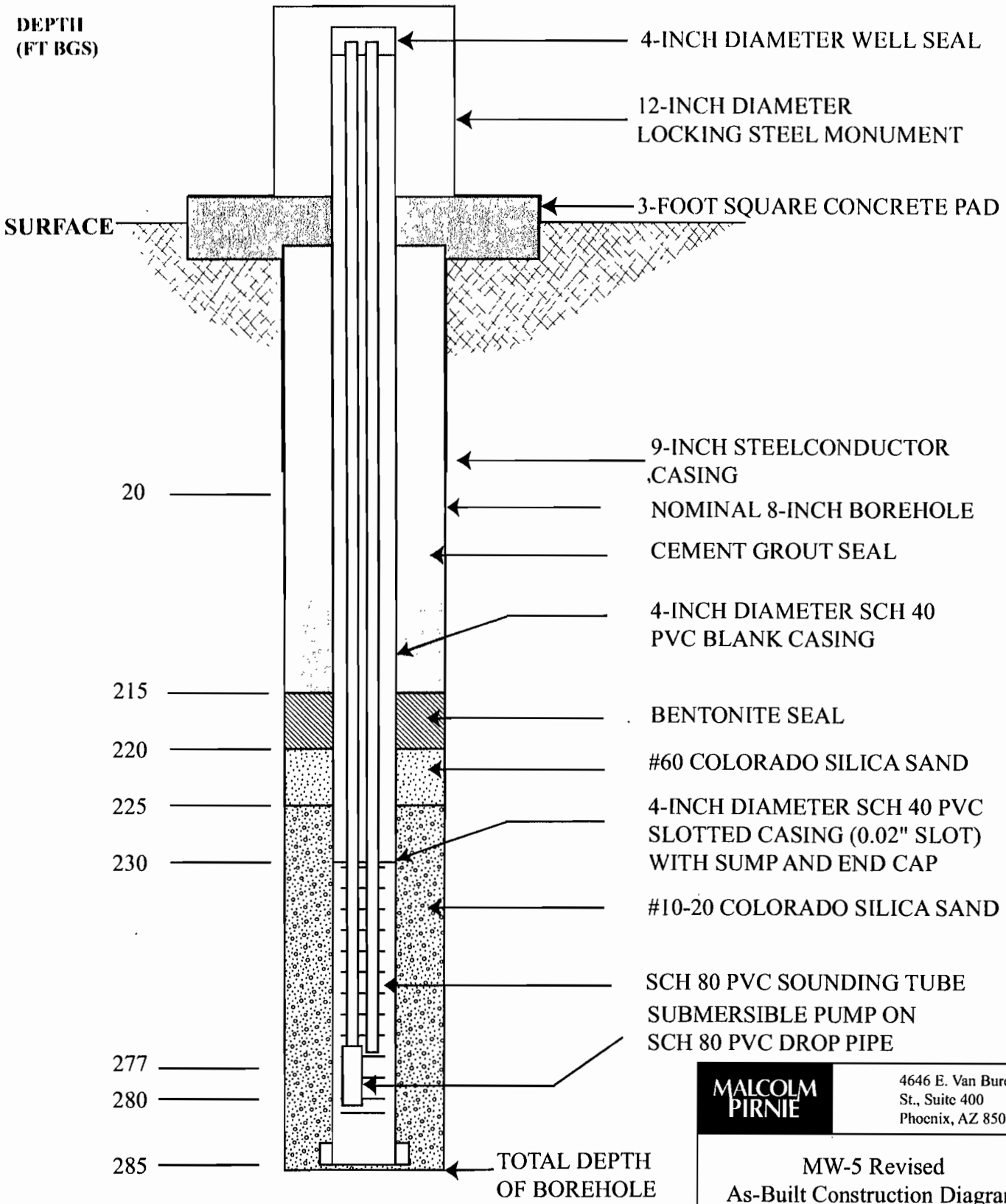
MALCOLM PIRNIE

4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

MW-2 Revised
As-Built Construction Diagram

2009 Annual Monitoring Report

December 2010	**Appendix A**



NOT TO SCALE

Note: Converted to monument surface completion in September 2009

MALCOLM PIRNIE

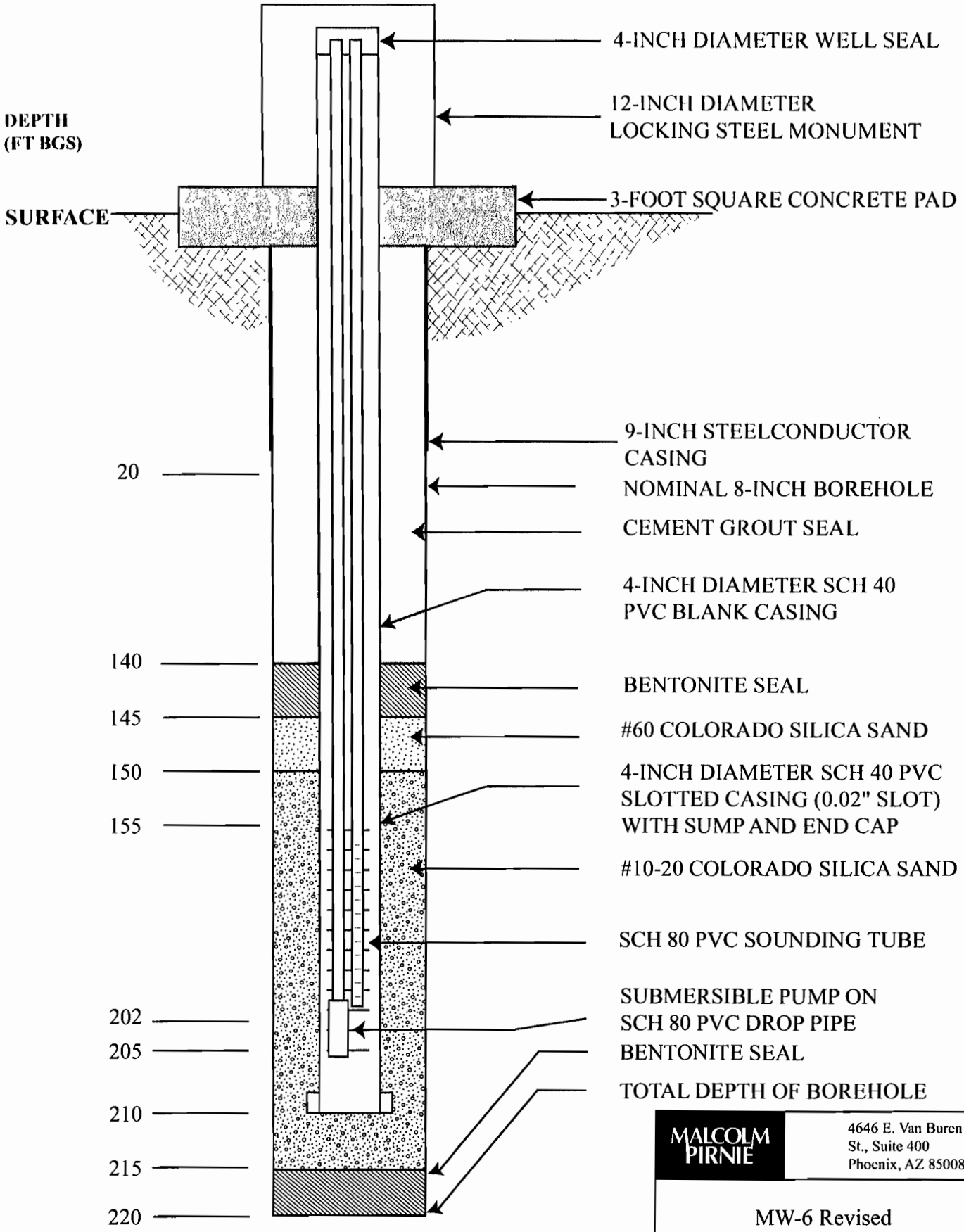
4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

MW-5 Revised
As-Built Construction Diagram

2009 Annual Monitoring Report

December 2010 | **Appendix A**

M:\3994003\300 Monitor Well Install\As Builts



NOT TO SCALE

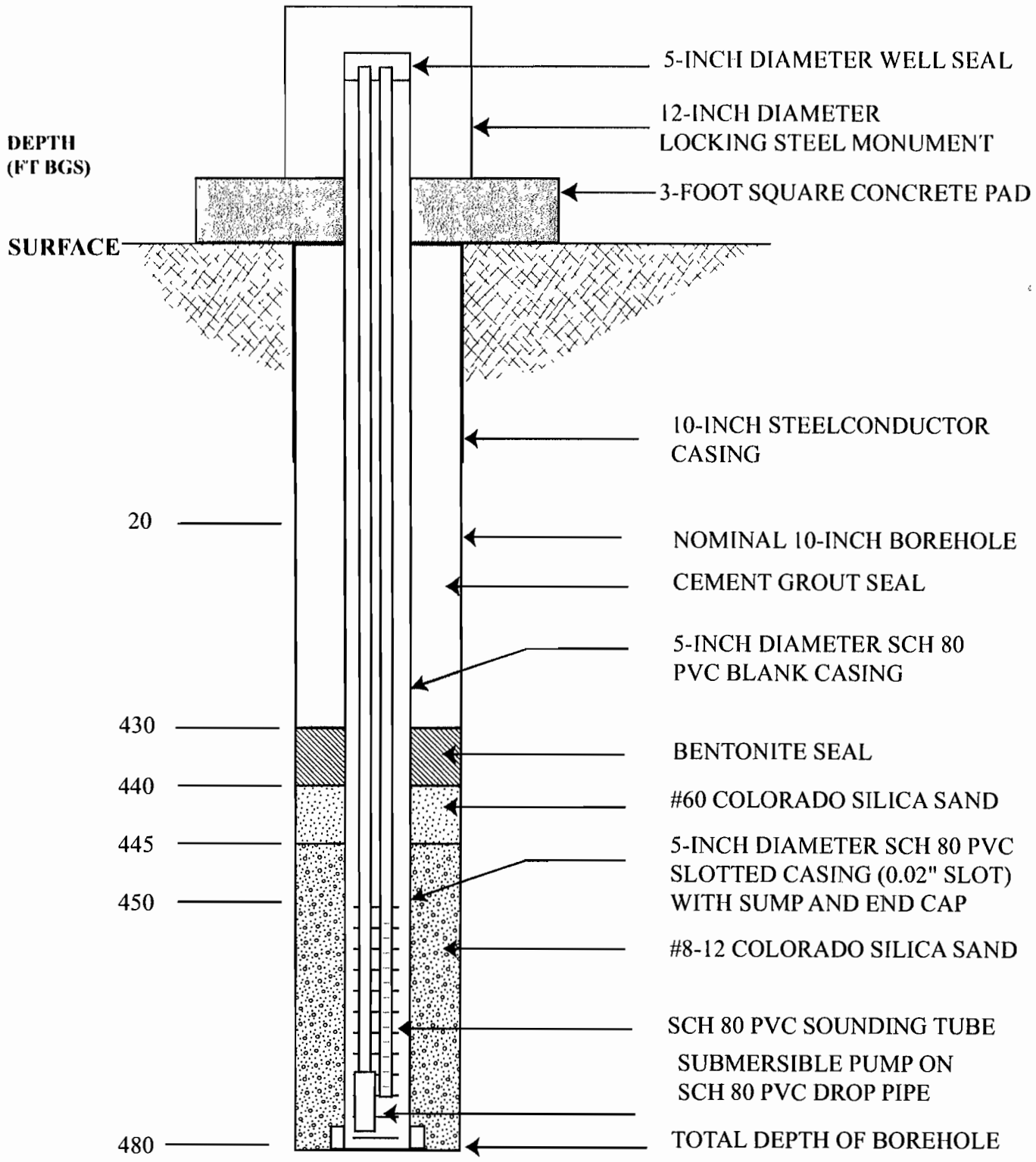
Note: Converted to monument surface completion in September 2009

MALCOLM PIRNIE
4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

MW-6 Revised
As-Built Construction Diagram

2009 Annual Monitoring Report

M:\3994003\300 Monitor Well Install\As Builts



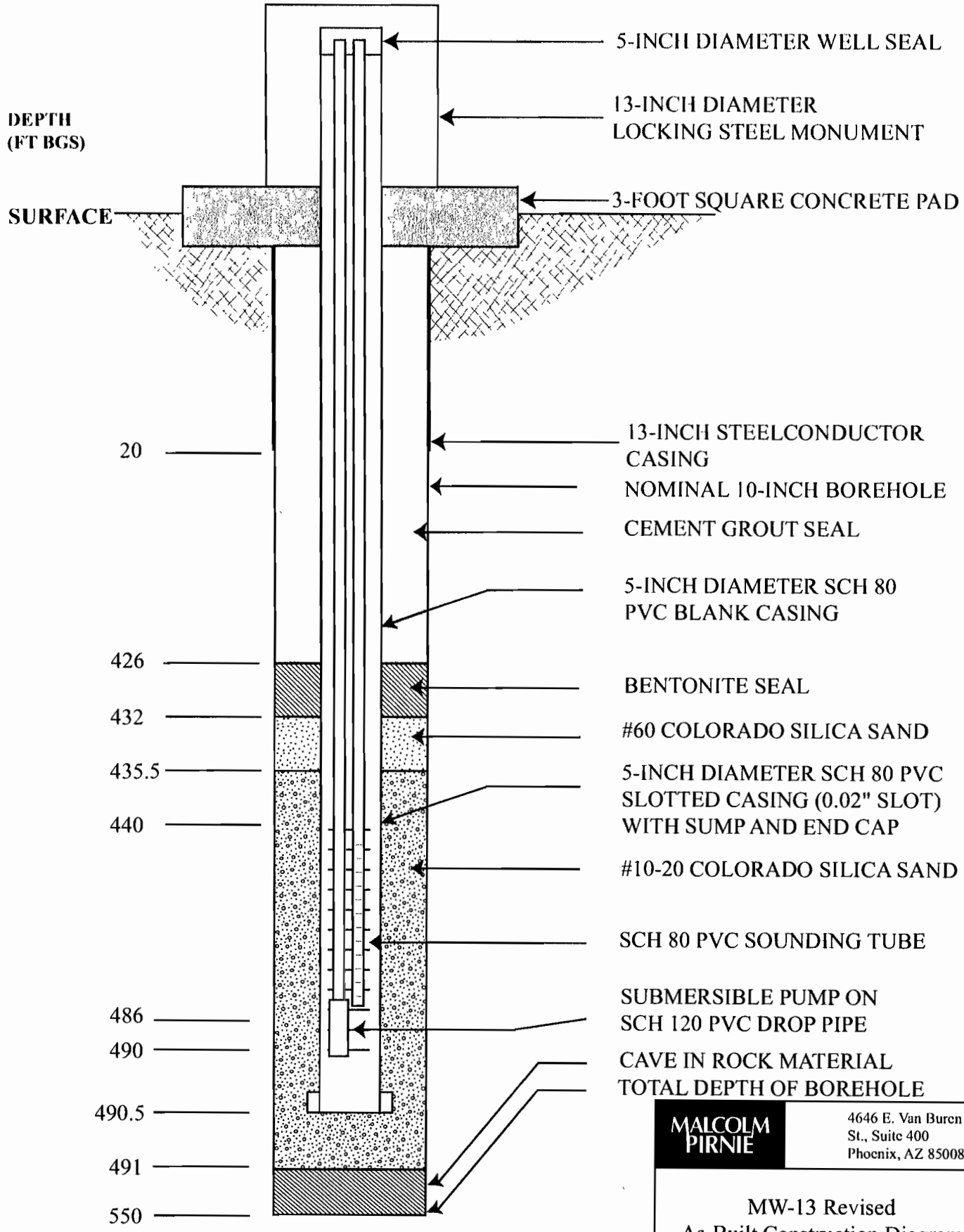
NOT TO SCALE

Note: Converted to monument surface completion in September 2009

MALCOLM PIRNIE
4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

MW-12 Revised
As-Built Construction Diagram

2009 Annual Monitoring Report



NOT TO SCALE

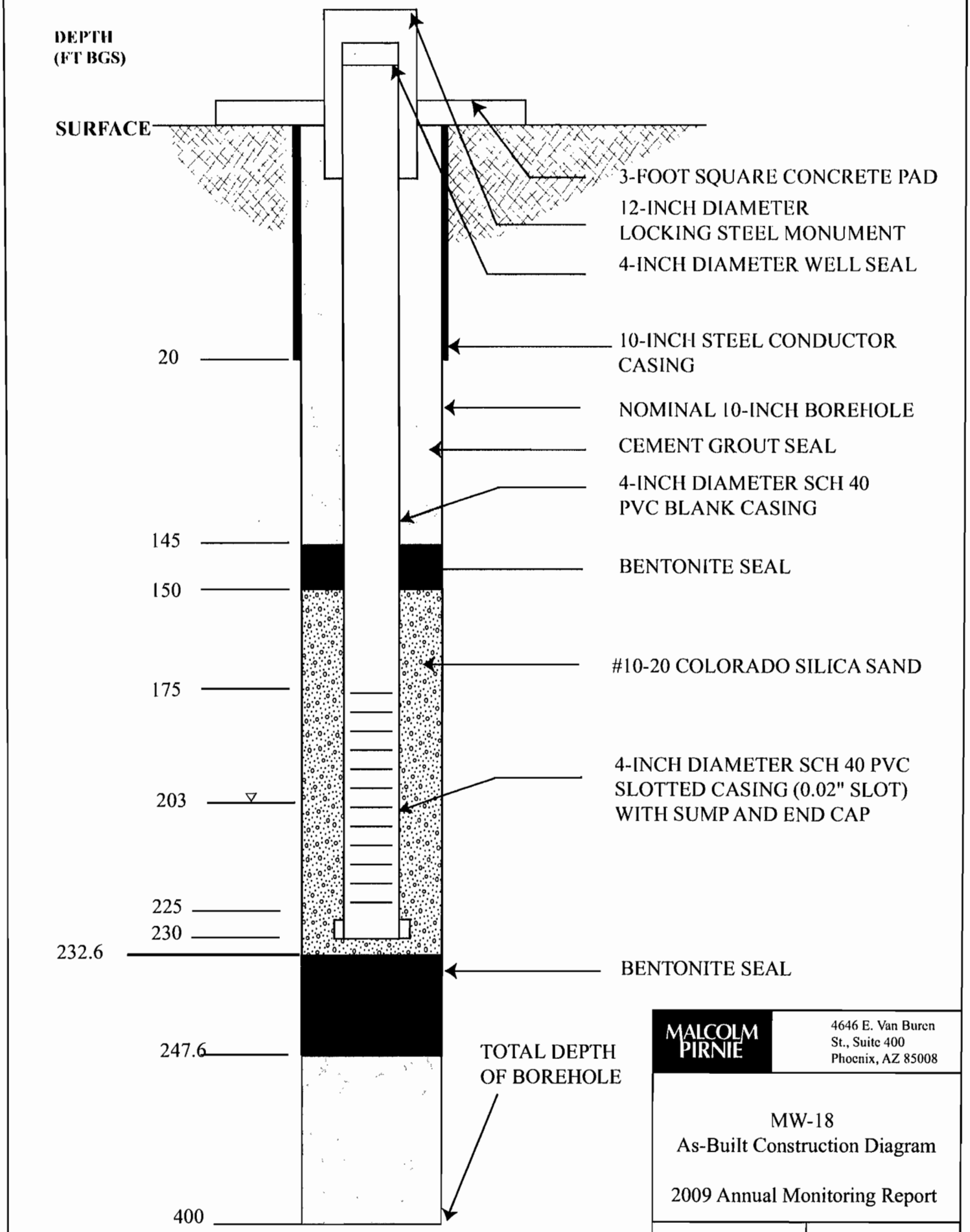
Note: Converted to monument surface completion in September 2009

MALCOLM PIRNIE
4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

MW-13 Revised
As-Built Construction Diagram

2009 Annual Monitoring Report

December 2010 | **Appendix A**



NOT TO SCALE

M:\3994003\300 Monitor Well Install\As Builts

MALCOLM PIRNIE

4646 E. Van Buren
St., Suite 400
Phoenix, AZ 85008

MW-18
As-Built Construction Diagram

2009 Annual Monitoring Report

December 2010 | **Appendix A**

MALCOLM PIRNIE

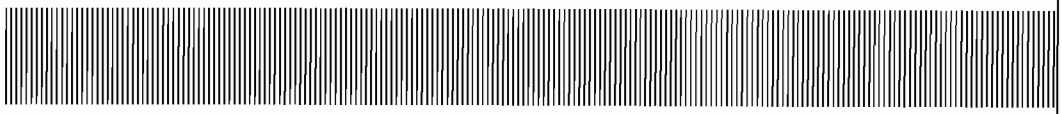
INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

B

APPENDIX

Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix B
IDW Documentation



3994-003

MALCOLM PIRNIE

LIQUID ENVIRONMENTAL SOLUTIONS

liquid ENVIRONMENTAL SOLUTIONS

NON-HAZARDOUS WASTE MANIFEST

49105

195799

Profile Number [redacted]

Generator Name	**Name:** [illegible] **Phone:** ( )	**Generator Address**	**Address:** [illegible] **City:** [illegible] **State:** AZ **Zip:**

Check with your state and local regulatory agencies for manifest retention requirements. NOTE: Many regulatory agencies require records to be kept on-site and available to review for up to 3 years.

Waste Type ☐ Grease Trap ☐ Grit Trap ☐ Septic/Chemical Toilet ☒ Non-Industrial ☐ Industrial ☐ Special

I certify that the waste material removed from the above premises does not contain any radioactive, flammable, explosive, toxic or hazardous material ("Excluded Waste"). The term "hazardous material" is defined as any one or more pollutant, toxic substance, hazardous substance, solvent or oil as defined in or pusuant to the Resource Conservation and Recovery Act, the Comprehensive Environmental Response Compensation and Liability Act, the Federal Clean Water Act, or any other federal, state or local environmental law, regulation, ordinance, or rule, whether existing as of the date of this agreement or subsequently enacted. I also acknowledge that the Generator shall be responsible for any costs incurred by the Transporter or Disposal Facility in handling or proper disposal of any hazardous waste and that the Generator expressly agrees to defend, indemnify and hold harmless the Transporter from and against any and all damages, costs, fines and liabilities resulting from or arising out of any such hazardous waste.

Generator Rep. Name (please print)	Jerry L McPherson	**Generator Rep. Signature**	

Transporter Name	**Name:** [illegible] **Phone:** [illegible]	**Transporter Address**	**Address:** [illegible] **City:** [illegible] **State:** AZ **Zip:** [illegible]

Waste Removed (Gallons)	4000	**Date** 01/08/2009	**Time** 11:35

I certify that the information above is accurate, and that only the waste certified for removal by the Generator is contained in the servicing vehicle. I am aware that falsification of this manifest may result in prosecution.

Driver Name (please print)	Rafael Lopez	**Driver Signature**	

Disposal Facility	Liquid Environmental Solutions of Arizona	**Address**	5159 West Van Buren Street Phoenix, AZ 85043
Waste Received (Gallons)	4000	**Date** 1-8-09	**Time**
Facility Rep. Name (please print)	Kevin Brandt	**Facility Rep. Signature**	

WHITE - Generator Final Copy YELLOW - Liquid Environmental Solutions Copy GOLDENROD - Transporter Copy PINK - Generator 1st Copy

LIQUID ENVIRONMENTAL SOLUTIONS

NON-HAZARDOUS WASTE MANIFEST

50001

Profile Number
195699

Generator Name	**Name:** UPCO **Phone:** (623, 516 - 3340	**Generator Address**	**Address:** 24401 N. Central Ave **City:** Phoenix **State:** AZ **Zip:** 85027

Check with your state and local regulatory agencies for manifest retention requirements. NOTE: Many regulatory agencies require records to be kept on-site and available for review for up to 3 years.

Waste Type	☐ Grease Trap	☐ Grit Trap	☐ Septic/Chemical Toilet	☒ Non-Industrial	☐ Industrial	☐ Special

I certify that the waste material removed from the above premises does not contain any radioactive, flammable, explosive, toxic or hazardous material ("Excluded Waste"). The term "hazardous material" is defined as any one or more pollutant, toxic substance, hazardous substance, solvent or oil as defined in or pusuant to the Resource Conservation and Recovery Act, the Comprehensive Environmental Response Compensation and Liability Act, the Federal Clean Water Act, or any other federal, state or local environmental law, regulation, ordinance, or rule, whether existing as of the date of this agreement or subsequently enacted. I also acknowledge that the Generator shall be responsible for any costs incurred by the Transporter or Disposal Facility in handling or proper disposal of any hazardous waste and that the Generator expressly agrees to defend, indemnify and hold harmless the Transporter from and against any and all damages, costs, fines and liabilities resulting from or arising out of any such hazardous waste.

Generator Rep. Name (please print)	Jerry L. McAtee	**Generator Rep. Signature**	

Transporter Name	**Name:** MPE **Phone:** (602) 278-6233	**Transporter Address**	**Address:** 3345 S. 51st. Ave. **City:** Phoenix **State:** AZ **Zip:** 85043

Waste Removed (Gallons)	4000	**Date**	**Time**
		2-23-09	

I certify that the information above is accurate, and that only the waste certified for removal by the Generator is contained in the servicing vehicle. I am aware that falsification of this manifest may result in prosecution.

Driver Name (please print)	D.G.	**Driver Signature**	

Disposal Facility	Liquid Environmental Solutions of Arizona	**Address**	5159 West Van Buren Street Phoenix, AZ 85043

Waste Received (Gallons)	4000	**Date**	**Time**
		02.23.09	0851
Facility Rep. Name (please print)	Pat Gerardo	**Facility Rep. Signature**	

WHITE - Generator Final Copy YELLOW - Liquid Environmental Solutions Copy GOLDENROD - Transporter Copy PINK - Generator 1st Copy

LIQUID ENVIRONMENTAL SOLUTIONS

NON-HAZARDOUS WASTE MANIFEST

30177

[redacted]

Generator Name	Name: UNIVERSAL PROPULSION Phone: (623) 516-3310	**Generator Address**	Address: 25401 Central Ave City: PHX State: AZ Zip: 85027

[redacted]

Waste Type: ☐ Grease Trap ☐ Grit Trap ☐ Septic/Chemical Toilet ☐ Non-Industrial ☒ Industrial ☐ Special

I certify that the waste material removed from the above premises does not contain any radioactive, flammable, explosive, toxic or hazardous material ("Excluded Waste"). The term "hazardous material" is defined as any one or more pollutant, toxic substance, hazardous substance, solvent or oil as defined in or pusuant to the Resource Conservation and Recovery Act, the Comprehensive Environmental Response Compensation and Liability Act, the Federal Clean Water Act, or any other federal, state or local environmental law, regulation, ordinance, or rule, whether existing as of the date of this agreement or subsequently enacted. I also acknowledge that the Generator shall be responsible for any costs incurred by the Transporter or Disposal Facility in handling or proper disposal of any hazardous waste and that the Generator expressly agrees to defend, indemnify and hold harmless the Transporter from and against any and all damages, costs, fines and liabilities resulting from or arising out of any such hazardous waste.

Generator Rep. Name (please print)	X GREGORY CARPENTER	**Generator Rep. Signature**	X Gregory Carpenter

Transporter Name	Name: MPE Phone: (602) 272-6233	**Transporter Address**	Address: 4045 S. 51st Ave City: PHX State: AZ Zip: 85043

Waste Removed (Gallons)	5000	**Date**	**Time**
		9.03.09	

I certify that the information above is accurate, and that only the waste certified for removal by the Generator is contained in the servicing vehicle. I am aware that falsification of this manifest may result in prosecution.

Driver Name (please print)	JAVAD CHAIK	**Driver Signature**	JAVAD

Disposal Facility	Liquid Environmental Solutions of Arizona	**Address**	5159 West Van Buren Street Phoenix, AZ 85043
Waste Received (Gallons)		**Date**	**Time**
Facility Rep. Name (please print)		**Facility Rep. Signature**	

WHITE - Generator Final Copy YELLOW - Liquid Environmental Solutions Copy GOLDENROD - Transporter Copy PINK - Generator 1st Copy

LIQUID ENVIRONMENTAL SOLUTIONS

17097

NON-HAZARDOUS WASTE MANIFEST

[redacted]

195699

Generator Name	Name: UNIVERSAL Propls Phone: ( )	**Generator Address**	Address: City: State: AZ Zip:

[redacted]

Waste Type ☐ Grease Trap ☐ Grit Trap ☐ Septic/Chemical Toilet ☒ Non-Industrial ☐ Industrial ☐ Special

I certify that the waste material removed from the above premises does not contain any radioactive, flammable, explosive, toxic or hazardous material ("Excluded Waste"). The term "hazardous material" is defined as any one or more pollutant, toxic substance, hazardous substance, solvent or oil as defined in or pusuant to the Resource Conservation and Recovery Act, the Comprehensive Environmental Response Compensation and Liability Act, the Federal Clean Water Act, or any other federal, state or local environmental law, regulation, ordinance, or rule, whether existing as of the date of this agreement or subsequently enacted. I also acknowledge that the Generator shall be responsible for any costs incurred by the Transporter or Disposal Facility in handling or proper disposal of any hazardous waste and that the Generator expressly agrees to defend, indemnify and hold harmless the Transporter from and against any and all damages, costs, fines and liabilities resulting from or arising out of any such hazardous waste.

Generator Rep. Name (please print)	UPCO	**Generator Rep. Signature**	

Transporter Name	Name: NPE Phone: ( )	**Transporter Address**	Address: 3045 S 55th City: Phx State: AZ Zip:

Waste Removed (Gallons)	1000	**Date**	**Time**
		9-23-09	

I certify that the information above is accurate, and that only the waste certified for removal by the Generator is contained in the servicing vehicle. I am aware that falsification of this manifest may result in prosecution.

Driver Name (please print)	Dan	**Driver Signature**	

Disposal Facility	Liquid Environmental Solutions of Arizona	**Address**	5159 West Van Buren Street Phoenix, AZ 85043
Waste Received (Gallons)	1000	**Date**	**Time**
		9-23-09	
Facility Rep. Name (please print)	Kevin Brandt	**Facility Rep. Signature**	

WHITE - Transporter YELLOW - Second Generator GOLDENROD - Disposal Facility PINK - Generator

LIQUID ENVIRONMENTAL SOLUTIONS

NON-HAZARDOUS WASTE MANIFEST

49114

Profile Number

19579

Generator Name	Name: MALONE PIPELINE LLC Phone: (623) 516-2340 x 2266	**Generator Address**	Address: 2540 N. CENTRAL AVE City: PHOENIX State: AZ Zip: 85004

[redacted]

Waste Type: ☐ Grease Trap ☐ Grit Trap ☐ Septic/Chemical Toilet ☒ Non-Industrial ☐ Industrial ☐ Special

I certify that the waste material removed from the above premises does not contain any radioactive, flammable, explosive, toxic or hazardous material ("Excluded Waste"). The term "hazardous material" is defined as any one or more pollutant, toxic substance, hazardous substance, solvent or oil as defined in or pusuant to the Resource Conservation and Recovery Act, the Comprehensive Environmental Response Compensation and Liability Act, the Federal Clean Water Act, or any other federal, state or local environmental law, regulation, ordinance, or rule, whether existing as of the date of this agreement or subsequently enacted. I also acknowledge that the Generator shall be responsible for any costs incurred by the Transporter or Disposal Facility in handling or proper disposal of any hazardous waste and that the Generator expressly agrees to defend, indemnify and hold harmless the Transporter from and against any and all damages, costs, fines and liabilities resulting from or arising out of any such hazardous waste.

Generator Rep. Name (please print)	Kevin Mitchell	**Generator Rep. Signature**	K Mitchell

Transporter Name	Name: M.P.E. Phone: (800) 833-7602	**Transporter Address**	Address: 3045 S 51ST AVE City: PHX State: AZ Zip: 85323

Waste Removed (Gallons)	1,750	**Date**	12/18/09
		Time	12:45 PM

I certify that the information above is accurate, and that only the waste certified for removal by the Generator is contained in the servicing vehicle. I am aware that falsification of this manifest may result in prosecution.

Driver Name (please print)	RAFAEL PEREZ	**Driver Signature**	R Perez

Disposal Facility	Liquid Environmental Solutions of Arizona	**Address**	5159 West Van Buren Street Phoenix, AZ 85043
Waste Received (Gallons)	1750	**Date**	12-18-09
		Time	
Facility Rep. Name (please print)	Kevin Brandt	**Facility Rep. Signature**	K Brandt

WHITE - Generator Final Copy YELLOW - Liquid Environmental Solutions Copy GOLDENROD - Transporter Copy PINK - Generator 1st Copy

WASTE MANAGEMENT

PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY

Customer Acct. No. _____

Ticket No. _____

GENERATOR

WM-187871

Name _____ Generating Location _____

Address _____

Phone No. _____ I.D. No. _____

NWR	1 1 1 1 3 2	A2		

UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

GREG CARPENTER — AUTHORIZED AGENT'S NAME (PRINT)

9/25/09 — DATE

Greg Carpenter — SIGNATURE

CONTRACTOR

Name _____ Phone No. _____

Address _____

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) — DATE — SIGNATURE

TRANSPORTER

Name _____ Phone No. _____

Address _____ Driver's Name _____

Vehicle's No. 881 Bin # [redacted]933

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

9-25-09 — SHIPMENT DATE — DRIVER'S SIGNATURE

9-25-09 — DELIVERY DATE — DRIVER'S SIGNATURE

DISPOSAL FACILITY

- ☐ **BUTTERFIELD STATION FACILITY** • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
- ☒ **NORTHWEST REGIONAL LANDFILL** • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6065
- ☐ **PAINTED DESERT LANDFILL** • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3606
- ☐ **GRAY WOLF LANDFILL** • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
- ☐ **LONE CACTUS LANDFILL** • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
- ☐ **IRONWOOD LANDFILL** • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778

☐ _____

I hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

NAME (PRINT) — DATE — SIGNATURE

ORIGINAL - WHITE DISPOSAL FACILITY - YELLOW TRANSPORTER - PINK GENERATOR - GOLDENROD

WASTE MANAGEMENT

Northwest Regional Landfill
12401 Deer Valley Road
Surprise, AZ, 85387
Ph: 6235846065

Original
Ticket# 647332

Customer Name: MPEnviro MP Environmental
Ticket Date 09/25/2009
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest 187871
Destination
PO
Profile 101432AZ (Universal Propulsion Co Inc)
Generator 180-UNIVERSALPROPULSION Universal Propulsion CO

Carrier MP Environmental
Vehicle# 381
Container PO
Driver
Check#
Billing # 0000036
Gen EPA ID
Grid

Volume

	Time	Scale	Operator	Inbound		
In	09/25/2009 11:49:37	Inbound	LMGarcia		Gross	47250 lb
Out	09/25/2009 12:41:15	Outbound	LMGarcia		Tare	26080 lb
					Net	18280 lb
					Tons	9.14

Comments

	Product	LU%	Qty	UOM	Rate	Tax	Amount	Origin
1	Non Reg Soil -Tons	100	9.14	Tons				
2	FUEL-Fuel Surcharg	100		%				
3	%ENV-Environmenta	100		%				
4	ADE-ADEQ Fee	100	9.14	Tons				

Total Tax
Total Ticket

Driver's Signature

103WM

WASTE MANAGEMENT

PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY

Customer Acct. No. _____

Ticket No. _____

GENERATOR

WM-187872

Name _____ Generating Location _____

Address _____ _____

_____ _____

Phone No. _____ I.D. No. _____

WWR	121132	A2	

UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

GREG CARPENTER — 9/25/09 — Greg Carpenter

AUTHORIZED AGENT'S NAME (PRINT) — DATE — SIGNATURE

CONTRACTOR

Name _____ Phone No. _____

Address _____

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) — DATE — SIGNATURE

TRANSPORTER

Name _____ Phone No. _____

Address _____ Driver's Name BRIAN CRAWELL

_____ Vehicle's No. [redacted] 593

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

9-25-09 — Brian Crawell — 9-25-09 — Brian Crawell

SHIPMENT DATE — DRIVER'S SIGNATURE — DELIVERY DATE — DRIVER'S SIGNATURE

DISPOSAL FACILITY

- ☐ **BUTTERFIELD STATION FACILITY** • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
- ☐ **NORTHWEST REGIONAL LANDFILL** • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6065
- ☒ **PAINTED DESERT LANDFILL** • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3605
- ☐ **GRAY WOLF LANDFILL** • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
- ☐ **LONE CACTUS LANDFILL** • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
- ☐ **IRONWOOD LANDFILL** • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778

☐ _____

I hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

_____ — 9-25 — _____

NAME (PRINT) — DATE — SIGNATURE

ORIGINAL - WHITE DISPOSAL FACILITY - YELLOW TRANSPORTER - PINK GENERATOR - GOLDENROD

WASTE MANAGEMENT

Northwest Regional Landfill
19401 Deer Valley Road
Surprise, AZ, 85387
Ph: 6235846065

Original
Ticket# 647307

Customer Name MPEnviro MP Environmental
Ticket Date 09/25/2009
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest 187872
Destination
PO
Profile 101432AZ (Universal Propulsion Co Inc)
Generator 160-UNIVERSALPROPULSION Universal Propulsion CO

Carrier MP Environmental
Vehicle# 583
Container 20
Driver
Check#
Billing # 0000086
Gen EPA ID
Grid

Volume

	Time	Scale	Operator			
In	09/25/2009 15:30:59	Inbound	LMGarcia	Inbound	Gross	41480 lb
Out	09/25/2009 15:31:23	Inbound	LMGarcia		Tare	26480 lb*
			* Manual Weight		Net	15000 lb
					Tons	7.50

Comments

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Non Reg Soil -Tons	100	7.50	Tons				
2	FUEL-Fuel Surcharg	100		%				
3	P&ENV-Environmenta	100		%				
4	ADE-ADEQ Fee	100	7.50	Tons				

Brian Garcia

Total Tax
Total Ticket

WASTE MANAGEMENT

PLEASE CALL LANDFILL 24 HRS IN ADVANCE WITH SHIPPING NOTICE.

NON - HAZARDOUS WASTE MANIFEST

FOR OFFICE USE ONLY
Customer Acct. No. _____
Ticket No. _____

GENERATOR

WM- 187873

Name _____ Generating Location _____

Address _____

Phone No. _____ I.D. No. _____

WMR	101432	A2		

UNIT
D - DRUM
B - BAG
C - CARTON
T - TONS
Y - YARDS
O - OTHER

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

GREG CARPENTER — 9/25/09 — Greg Carpenter
AUTHORIZED AGENT'S NAME (PRINT) — DATE — SIGNATURE

CONTRACTOR

Name _____ Phone No. _____

Address _____

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

AUTHORIZED AGENT'S NAME (PRINT) — DATE — SIGNATURE

TRANSPORTER

Name _____ Phone No. _____

Address _____ Driver's Name _____

Vehicle's No. _____

I hereby certify that the above listed material(s), is (are) not a hazardous waste as defined by 40CFR Part 261 or any applicable state law: That each waste has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulation.

9-25-09 — _____ — 9-25-09 — _____
SHIPMENT DATE — DRIVER'S SIGNATURE — DELIVERY DATE — DRIVER'S SIGNATURE

DISPOSAL FACILITY

- ☐ **BUTTERFIELD STATION FACILITY** • 40404 South 99th Avenue • Mobile, Arizona 85239 • (602) 256-0630
- ☐ **NORTHWEST REGIONAL LANDFILL** • 19401 West Deer Valley Road • Surprise, Arizona 85387 • (623) 584-6065
- ☐ **PAINTED DESERT LANDFILL** • 9001 North Porter Avenue • Joseph City, Arizona 86032 • (520) 288-3605
- ☐ **GRAY WOLF LANDFILL** • 23355 East Highway 169 • Mile Post 11 • Dewey, Arizona 86327 • (520) 632-0370
- ☐ **LONE CACTUS LANDFILL** • 21402 North 7th Street • Phoenix, Arizona 85024 • (623) 516-0244
- ☐ **IRONWOOD LANDFILL** • 12720 East Highway 287 • Florence, Arizona 85232 • (520) 868-8778
- ☐ _____

I hereby certify that the above material has been accepted and that information presented on this document are true and accurate.

_____ — 9-25-09 — _____
NAME (PRINT) — DATE — SIGNATURE

ORIGINAL - WHITE DISPOSAL FACILITY - YELLOW TRANSPORTER - PINK GENERATOR - GOLDENROD

WASTE MANAGEMENT

Northwest Regional Landfill
19401 Deer Valley Road
Surprise, AZ, 85387
Ph: 6235846065

Original
Ticket# 647233

Customer Name MP Enviro MP Environmental
Ticket Date 09/25/2009
Payment Type Credit Account
Manual Ticket#
Hauling Ticket#
Route
State Waste Code
Manifest 187873
Destination
PO
Profile 101432AZ (Universal Propulsion Co Inc)
Generator 160-UNIVERSAL PROPULSION Universal Propulsion CO

Carrier MP Environmental
Vehicle# 583
Container 20
Driver
Check#
Billing # 0000086
Gen EPA ID
Grid

Volume

	Time	Scale	Operator	Inbound		
In	09/25/2009 11:51:08	Inbound	LMGarcia		Gross	43260 lb
Out	09/25/2009 12:42:36	Outbound	LMGarcia		Tare	26480 lb
					Net	16780 lb
					Tons	8.39

Comments

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Non Reg Soil -Tons	100	8.39	Tons				
2	FUEL-Fuel Surcharg	100		%				
3	P6ENV-Environmenta	100		%				
4	ADE-ADEQ Fee	100	8.39	Tons				

Total Tax
Total Ticket

Driver's Signature

403WM

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

C

APPENDIX

Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix C
Water Level Data

3994-003

MALCOLM PIRNIE

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-1	1/6/2004	1557.19	206.64	1350.55
	3/19/2004	1557.22	206.70	1350.57
	4/16/2004	1557.22	206.66	1350.61
	9/7/2004	1557.22	207.79	1349.43
	10/22/2004	1557.22	207.42	1349.80
	11/22/2004	1557.22	207.71	1349.51
	12/7/2004	1557.22	207.80	1349.42
	1/17/2005	1557.22	207.62	1349.60
	2/14/2005	1557.22	207.52	1349.70
	3/15/2005	1557.22	207.36	1349.86
	4/25/2005	1557.22	207.47	1349.75
	5/20/2005	1557.22	207.69	1349.53
	6/27/2005	1557.22	207.82	1349.40
	7/18/2005	1557.22	208.13	1349.09
	8/22/2005	1557.22	208.04	1349.18
	9/22/2005	1557.22	208.03	1349.19
	10/24/2005	1557.22	208.03	1349.19
	12/2/2005	1557.22	207.97	1349.25
	12/22/2005	1557.22	208.15	1349.07
	3/20/2006	1557.22	207.98	1349.24
	5/22/2006	1557.22	208.08	1349.14
	8/28/2006	1557.22	208.04	1349.18
	11/13/2006	1557.22	208.04	1349.18
	2/12/2007	1557.22	208.08	1349.14
	4/9/2007	1557.22	208.03	1349.19
	7/30/2007	1557.22	207.84	1349.38
	10/15/2007	1557.22	208.16	1349.06
	1/14/2008	1557.22	208.37	1348.85
	3/31/2008	1557.22	208.24	1348.98
	4/29/2008	1557.22	208.27	1348.95
	5/27/2008	1557.22	208.37	1348.85
	6/27/2008	1557.22	208.53	1348.69
	7/28/2008	1557.22	208.50	1348.72
	8/29/2008	1557.22	208.55	1348.67
	9/20/2008	1557.22	208.44	1348.78
	10/14/2008	1557.22	208.37	1348.85
	11/21/2008	1557.22	208.36	1348.86
	12/15/2008	1557.22	208.44	1348.78
	1/12/2009	1557.22	208.41	1348.81
	2/16/2009	1557.22	208.47	1348.75
	3/17/2009	1557.22	208.42	1348.80

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-1	4/13/2009	1557.22	208.38	1348.84
	5/20/2009	1557.22	208.71	1348.51
	6/15/2009	1557.22	208.58	1348.64
	7/6/2009	1557.22	208.58	1348.64
	8/13/2009	1557.22	208.68	1348.54
	9/28/2009	1560.43	211.92	1348.51
	10/27/2009	1560.43	211.98	1348.45
	11/25/2009	1560.43	212.29	1348.14
	12/18/2009	1560.43	212.35	1348.08
MW-2	1/6/2004	1567.51	216.90	1350.61
	3/19/2004	1567.67	217.40	1350.27
	4/16/2004	1567.67	217.06	1350.61
	9/7/2004	1567.62	218.06	1349.56
	10/22/2004	1567.62	217.62	1350.00
	11/22/2004	1567.62	218.10	1349.52
	12/7/2004	1567.62	218.15	1349.47
	1/17/2005	1567.62	218.02	1349.60
	2/14/2005	1567.62	217.93	1349.69
	3/15/2005	1567.62	217.83	1349.79
	4/25/2005	1567.62	217.88	1349.74
	5/20/2005	1567.62	218.06	1349.56
	6/27/2005	1567.62	218.20	1349.42
	7/18/2005	1567.62	218.53	1349.09
	8/22/2005	1567.62	218.43	1349.19
	9/22/2005	1567.62	218.44	1349.18
	10/24/2005	1567.62	218.44	1349.18
	12/2/2005	1567.62	218.34	1349.28
	12/22/2005	1567.62	218.48	1349.14
	3/20/2006	1567.62	218.33	1349.29
	5/22/2006	1567.62	218.43	1349.19
	8/28/2006	1567.62	218.35	1349.27
	11/13/2006	1567.62	218.38	1349.24
	2/12/2007	1567.62	218.48	1349.14
	4/9/2007	1567.62	218.41	1349.21
	7/30/2007	1567.62	218.19	1349.43
	10/15/2007	1567.62	218.45	1349.17
	1/14/2008	1567.62	218.70	1348.92
	3/31/2008	1567.62	218.55	1349.07
	4/29/2008	1567.62	218.54	1349.08
	5/27/2008	1567.62	218.69	1348.93
	6/27/2008	1567.62	218.89	1348.73

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-2	7/28/2008	1567.62	218.81	1348.81
	8/29/2008	1567.62	218.83	1348.79
	9/20/2008	1567.62	218.75	1348.87
	10/14/2008	1567.62	218.69	1348.93
	11/21/2008	1567.62	218.69	1348.93
	12/15/2008	1567.62	218.77	1348.85
	1/12/2009	1567.62	218.81	1348.81
	2/16/2009	1567.62	218.85	1348.77
	3/17/2009	1567.62	218.48	1349.14
	4/13/2009	1567.62	218.73	1348.89
	5/20/2009	1567.62	219.05	1348.57
	6/15/2009	1567.62	218.95	1348.67
	7/6/2009	1567.62	218.95	1348.67
	8/13/2009	1567.62	219.03	1348.59
	9/28/2009	1571.22	222.74	1348.48
	10/27/2009	1571.22	222.71	1348.51
	11/25/2009	1571.22	223.06	1348.16
	12/18/2009	1571.22	223.08	1348.14
MW-3	9/7/2004	1583.59	229.10	1354.50
	10/22/2004	1583.59	227.92	1355.67
	11/22/2004	1583.59	228.91	1354.68
	12/7/2004	1583.59	229.03	1354.56
	1/17/2005	1583.59	229.35	1354.24
	2/14/2005	1583.59	229.73	1353.86
	3/15/2005	1583.59	229.86	1353.73
	4/25/2005	1583.59	229.94	1353.65
	5/20/2005	1583.59	230.21	1353.38
	6/27/2005	1583.59	230.30	1353.29
	7/18/2005	1583.59	230.61	1352.98
	8/22/2005	1583.59	230.63	1352.96
	9/22/2005	1583.59	231.67	1351.92
	10/24/2005	1583.59	230.94	1352.65
	11/30/2005	1583.59	231.12	1352.47
	12/22/2005	1583.59	231.15	1352.44
	3/21/2006	1583.59	231.59	1352.00
	5/22/2006	1583.59	231.91	1351.68
	8/28/2006	1583.59	232.24	1351.35
	11/13/2006	1583.59	232.82	1350.77
	2/12/2007	1583.59	232.76	1350.83
	4/9/2007	1583.59	233.11	1350.48
	7/30/2007	1583.59	233.52	1350.07

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-3	10/15/2007	1583.59	234.45	1349.14
	1/14/2008	1583.59	234.93	1348.66
	3/31/2008	1583.59	235.42	1348.17
	4/29/2008	1583.59	235.21	1348.38
	5/27/2008	1583.59	235.48	1348.11
	6/27/2008	1583.59	235.66	1347.93
	7/28/2008	1583.59	235.79	1347.80
	8/29/2008	1583.59	236.07	1347.52
	9/20/2008	1583.59	236.10	1347.49
	10/14/2008	1583.59	236.30	1347.29
	11/21/2008	1583.59	236.45	1347.14
	12/15/2008	1583.59	236.59	1347.00
	1/12/2009	1583.59	236.60	1346.99
	2/16/2009	1583.59	236.86	1346.73
	3/17/2009	1583.59	237.00	1346.59
	4/13/2009	1583.59	237.07	1346.52
	5/20/2009	1583.59	237.24	1346.35
	6/15/2009	1583.59	237.31	1346.28
	7/6/2009	1583.59	237.35	1346.24
	8/12/2009	1583.59	237.47	1346.12
	9/28/2009	1583.59	237.81	1345.78
	10/27/2009	1583.59	237.82	1345.77
	11/25/2009	1583.59	238.13	1345.46
	12/18/2009	1583.59	238.13	1345.46
MW-4	9/7/2004	1620.34	269.13	1351.21
	10/22/2004	1620.34	268.92	1351.42
	11/22/2004	1620.34	269.58	1350.76
	12/7/2004	1620.34	269.83	1350.51
	1/17/2005	1620.34	269.84	1350.50
	2/14/2005	1620.34	270.04	1350.30
	3/15/2005	1620.34	270.15	1350.19
	4/25/2005	1620.34	270.12	1350.22
	5/20/2005	1620.34	270.22	1350.12
	6/27/2005	1620.34	270.26	1350.08
	7/18/2005	1620.34	270.56	1349.78
	8/22/2005	1620.34	270.40	1349.94
	9/22/2005	1620.34	270.44	1349.90
	10/24/2005	1620.34	270.78	1349.56
	11/30/2005	1620.34	270.82	1349.52
	12/22/2005	1620.34	270.80	1349.54
	3/20/2006	1620.34	271.28	1349.06

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-4	5/22/2006	1620.34	271.43	1348.91
	8/28/2006	1620.34	271.82	1348.52
	11/13/2006	1620.34	271.33	1349.01
	2/12/2007	1620.34	271.51	1348.83
	4/9/2007	1620.34	271.66	1348.68
	7/30/2007	1620.34	272.63	1347.71
	10/15/2007	1620.34	273.35	1346.99
	1/14/2008	1620.34	273.81	1346.53
	3/31/2008	1620.34	274.00	1346.34
	4/29/2008	1620.34	273.76	1346.58
	5/27/2008	1620.34	274.05	1346.29
	6/27/2008	1620.34	274.18	1346.16
	7/28/2008	1620.34	274.22	1346.12
	8/29/2008	1620.34	274.40	1345.94
	9/20/2008	1620.34	274.48	1345.86
	10/14/2008	1620.34	274.68	1345.66
	11/21/2008	1620.34	274.70	1345.64
	12/15/2008	1620.34	274.90	1345.44
	1/12/2009	1620.34	274.93	1345.41
	2/16/2009	1620.34	274.78	1345.56
	3/17/2009	1620.34	275.07	1345.27
	4/13/2009	1620.34	275.04	1345.30
	5/20/2009	1620.34	275.19	1345.15
	6/15/2009	1620.34	275.23	1345.11
	7/6/2009	1620.34	275.26	1345.08
	8/12/2009	1620.34	275.39	1344.95
	9/28/2009	1620.34	275.50	1344.84
	10/27/2009	1620.34	275.50	1344.84
	11/25/2009	1620.34	275.86	1344.48
	12/18/2009	1620.34	275.82	1344.52
MW-5	9/7/2004	1590.45	240.17	1350.28
	10/22/2004	1590.45	239.67	1350.78
	11/22/2004	1590.45	240.40	1350.05
	12/7/2004	1590.45	240.49	1349.96
	1/17/2005	1590.45	240.47	1349.98
	2/14/2005	1590.45	240.44	1350.01

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-5	3/15/2005	1590.45	240.36	1350.09
	4/25/2005	1590.45	240.38	1350.07
	5/20/2005	1590.45	240.48	1349.97
	6/27/2005	1590.45	240.58	1349.87
	7/18/2005	1590.45	240.90	1349.55
	8/22/2005	1590.45	240.81	1349.64
	9/22/2005	1590.45	240.81	1349.64
	10/24/2005	1590.45	240.85	1349.60
	11/30/2005	1590.45	240.81	1349.64
	12/22/2005	1590.45	240.90	1349.55
	3/20/2006	1590.45	240.92	1349.53
	5/22/2006	1590.45	241.07	1349.38
	8/28/2006	1590.45	240.97	1349.48
	11/13/2006	1590.45	241.04	1349.41
	2/12/2007	1590.45	241.09	1349.36
	4/9/2007	1590.45	241.10	1349.35
	7/30/2007	1590.45	240.81	1349.64
	10/15/2007	1590.45	241.12	1349.33
	1/14/2008	1590.45	241.28	1349.17
	3/31/2008	1590.45	241.31	1349.14
	4/29/2008	1590.45	241.28	1349.17
	5/27/2008	1590.45	241.33	1349.12
	6/27/2008	1590.45	241.48	1348.97
	7/28/2008	1590.45	241.44	1349.01
	8/29/2008	1590.45	241.45	1349.00
	9/20/2008	1590.45	241.48	1348.97
	10/14/2008	1590.45	241.43	1349.02
	11/21/2008	1590.45	241.45	1349.00
	12/15/2008	1590.45	241.43	1349.02
	1/12/2009	1590.45	241.42	1349.03
	2/16/2009	1590.45	241.45	1349.00
	3/17/2009	1590.45	241.43	1349.02
	4/13/2009	1590.45	241.43	1349.02
	5/20/2009	1590.45	241.53	1348.92
	6/15/2009	1590.45	241.57	1348.88
	7/6/2009	1590.45	241.54	1348.91
	8/12/2009	1590.45	241.58	1348.87
	9/28/2009	1594.08	245.32	1348.76
	10/27/2009	1594.08	245.38	1348.70
	11/25/2009	1594.08	245.54	1348.54
	12/18/2009	1594.08	245.59	1348.49

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-6	9/7/2004	1548.22	162.22	1386.00
	10/22/2004	1548.22	161.27	1386.95
	11/22/2004	1548.22	161.77	1386.45
	12/7/2004	1548.22	161.99	1386.23
	1/17/2005	1548.22	162.32	1385.90
	2/14/2005	1548.22	162.50	1385.72
	3/15/2005	1548.22	160.38	1387.84
	4/25/2005	1548.22	149.74	1398.48
	5/20/2005	1548.22	148.31	1399.91
	6/27/2005	1548.22	148.82	1399.40
	7/18/2005	1548.22	149.61	1398.61
	8/22/2005	1548.22	150.88	1397.34
	9/22/2005	1548.22	151.89	1396.33
	10/24/2005	1548.22	153.11	1395.11
	11/30/2005	1548.22	154.16	1394.06
	12/22/2005	1548.22	154.68	1393.54
	3/20/2006	1548.22	156.61	1391.61
	5/22/2006	1548.22	157.80	1390.42
	8/28/2006	1548.22	159.64	1388.58
	11/13/2006	1548.22	161.11	1387.11
	2/12/2007	1548.22	161.95	1386.27
	4/9/2007	1548.22	161.63	1386.59
	7/30/2007	1548.22	162.92	1385.30
	10/15/2007	1548.22	163.95	1384.27
	1/14/2008	1548.22	164.94	1383.28
	3/31/2008	1548.22	165.42	1382.80
	4/29/2008	1548.22	164.28	1383.94
	5/27/2008	1548.22	163.05	1385.17
	6/27/2008	1548.22	162.08	1386.14
	7/28/2008	1548.22	161.50	1386.72
	8/29/2008	1548.22	161.30	1386.92
	9/20/2008	1548.22	161.33	1386.89
	10/14/2008	1548.22	161.48	1386.74
	11/21/2008	1548.22	161.71	1386.51
	12/15/2008	1548.22	161.89	1386.33
	1/12/2009	1548.22	162.28	1385.94
	2/16/2009	1548.22	162.43	1385.79
	3/17/2009	1548.22	162.81	1385.41
	4/13/2009	1548.22	162.83	1385.39
	5/20/2009	1548.22	162.78	1385.44
	6/15/2009	1548.22	162.57	1385.65

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-6	7/6/2009	1548.22	162.50	1385.72
	8/12/2009	1548.22	162.64	1385.58
	9/28/2009	1551.65	166.25	1385.40
	10/27/2009	1551.65	166.33	1385.32
	11/25/2009	1551.65	167.02	1384.63
	12/18/2009	1551.65	167.10	1384.55
MW-7	10/22/2004	1541.35	157.21	1384.14
	11/22/2004	1541.35	154.14	1387.21
	12/7/2004	1541.35	154.55	1386.80
	1/17/2005	1541.35	155.02	1386.33
	2/14/2005	1541.35	155.20	1386.15
	3/15/2005	1541.35	155.48	1385.87
	4/25/2005	1541.35	155.56	1385.79
	5/20/2005	1541.35	155.56	1385.79
	6/27/2005	1541.35	155.60	1385.75
	7/18/2005	1541.35	155.94	1385.41
	8/22/2005	1541.35	156.09	1385.26
	9/22/2005	1541.35	156.37	1384.98
	10/24/2005	1541.35	157.01	1384.34
	11/30/2005	1541.35	157.41	1383.94
	12/22/2005	1541.35	157.73	1383.62
	3/20/2006	1541.35	158.83	1382.52
	5/22/2006	1541.35	159.39	1381.96
	8/28/2006	1541.35	159.54	1381.81
	11/13/2006	1541.35	159.48	1381.87
	2/12/2007	1541.35	159.37	1381.98
	4/9/2007	1541.35	159.30	1382.05
	7/30/2007	1541.35	159.48	1381.87
	10/15/2007	1541.35	160.12	1381.23
	1/14/2008	1541.35	160.61	1380.74
	3/31/2008	1541.35	160.53	1380.82
	4/29/2008	1541.35	160.46	1380.89
	5/27/2008	1541.35	160.63	1380.72
	6/27/2008	1541.35	160.83	1380.52
	7/28/2008	1541.35	160.92	1380.43
	8/29/2008	1541.35	160.85	1380.50
	9/20/2008	1541.35	160.98	1380.37
	10/14/2008	1541.35	161.21	1380.14
	11/21/2008	1541.35	161.22	1380.13
	12/15/2008	1541.35	161.19	1380.16
	1/12/2009	1541.35	161.39	1379.96

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-7	2/16/2009	1541.35	161.17	1380.18
	3/17/2009	1541.35	161.42	1379.93
	4/13/2009	1541.35	161.39	1379.96
	5/20/2009	1541.35	161.49	1379.86
	6/15/2009	1541.35	161.57	1379.78
	7/6/2009	1541.35	161.58	1379.77
	8/12/2009	1541.35	161.71	1379.64
	9/28/2009	1541.35	161.71	1379.64
	10/27/2009	1541.35	161.70	1379.65
	11/25/2009	1541.35	162.06	1379.29
	12/18/2009	1541.35	162.07	1379.28
MW-8	10/22/2004	1542.18	193.21	1348.97
	11/22/2004	1542.18	192.27	1349.91
	12/7/2004	1542.18	192.29	1349.89
	1/17/2005	1542.18	192.27	1349.91
	2/14/2005	1542.18	192.29	1349.89
	3/15/2005	1542.18	192.27	1349.91
	4/25/2005	1542.18	192.29	1349.89
	5/20/2005	1542.18	192.50	1349.68
	6/27/2005	1542.18	192.57	1349.61
	7/18/2005	1542.18	192.88	1349.30
	8/22/2005	1542.18	192.90	1349.28
	9/22/2005	1542.18	192.84	1349.34
	10/24/2005	1542.18	192.89	1349.29
	11/30/2005	1542.18	192.84	1349.34
	12/22/2005	1542.18	192.91	1349.27
	3/20/2006	1542.18	192.83	1349.35
	5/22/2006	1542.18	192.97	1349.21
	8/28/2006	1542.18	192.95	1349.23
	11/13/2006	1542.18	192.98	1349.20
	2/12/2007	1542.18	193.01	1349.17
	4/9/2007	1542.18	192.79	1349.39
	7/30/2007	1542.18	192.71	1349.47
	10/15/2007	1542.18	193.18	1349.00
	1/14/2008	1542.18	193.32	1348.86
	3/31/2008	1542.18	193.17	1349.01
	4/29/2008	1542.18	193.08	1349.10
	5/27/2008	1542.18	193.25	1348.93
	6/27/2008	1542.18	193.39	1348.79
	7/28/2008	1542.18	193.36	1348.82
	8/29/2008	1542.18	193.37	1348.81

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-8	9/20/2008	1542.18	193.35	1348.83
	10/14/2008	1542.18	193.37	1348.81
	11/21/2008	1542.18	193.38	1348.80
	12/15/2008	1542.18	193.35	1348.83
	1/12/2009	1542.18	193.34	1348.84
	2/16/2009	1542.18	193.37	1348.81
	3/17/2009	1542.18	193.38	1348.80
	4/13/2009	1542.18	193.33	1348.85
	5/20/2009	1542.18	193.55	1348.63
	6/15/2009	1542.18	193.51	1348.67
	7/6/2009	1542.18	193.49	1348.69
	8/12/2009	1542.18	193.52	1348.66
	9/28/2009	1542.18	193.70	1348.48
	10/27/2009	1542.18	193.80	1348.38
	11/25/2009	1542.18	193.99	1348.19
	12/18/2009	1542.18	194.08	1348.10
MW-9	2/14/2005	1565.60	215.29	1350.31
	3/15/2005	1565.60	215.36	1350.24
	4/25/2005	1565.60	215.34	1350.26
	5/20/2005	1565.60	215.36	1350.24
	6/27/2005	1565.60	215.41	1350.19
	7/18/2005	1565.60	215.68	1349.92
	8/22/2005	1565.60	215.57	1350.03
	9/22/2005	1565.60	215.59	1350.01
	10/24/2005	1565.60	215.72	1349.88
	11/30/2005	1565.60	215.70	1349.90
	12/22/2005	1565.60	215.64	1349.96
	3/20/2006	1565.60	215.82	1349.78
	5/22/2006	1565.60	216.03	1349.57
	8/28/2006	1565.60	215.95	1349.65
	11/13/2006	1565.60	216.07	1349.53
	2/12/2007	1565.60	216.12	1349.48
	4/9/2007	1565.60	216.19	1349.41
	7/30/2007	1565.60	215.83	1349.77
	10/15/2007	1565.60	216.16	1349.44
	1/14/2008	1565.60	216.30	1349.30
	3/31/2008	1565.60	216.26	1349.34
	4/29/2008	1565.60	216.15	1349.45
	5/27/2008	1565.60	216.24	1349.36
	6/27/2008	1565.60	216.37	1349.23
	7/28/2008	1565.60	216.34	1349.26

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-9	8/29/2008	1565.60	216.38	1349.22
	9/20/2008	1565.60	216.42	1349.18
	10/14/2008	1565.60	216.46	1349.14
	11/21/2008	1565.60	216.51	1349.09
	12/15/2008	1565.60	216.52	1349.08
	1/12/2009	1565.60	216.53	1349.07
	2/16/2009	1565.60	216.52	1349.08
	3/17/2009	1565.60	216.56	1349.04
	4/13/2009	1565.60	216.54	1349.06
	5/20/2009	1565.60	216.58	1349.02
	6/15/2009	1565.60	216.60	1349.00
	7/6/2009	1565.60	216.61	1348.99
	8/12/2009	1565.60	216.62	1348.98
	9/28/2009	1565.60	216.68	1348.92
	10/27/2009	1565.60	216.62	1348.98
	11/25/2009	1565.60	216.80	1348.80
	12/18/2009	1565.60	216.85	1348.75
MW-10	2/14/2005	1536.11	149.92	1386.19
	3/15/2005	1536.11	149.71	1386.40
	4/25/2005	1536.11	149.56	1386.55
	5/20/2005	1536.11	149.33	1386.78
	6/27/2005	1536.11	149.04	1387.07
	7/18/2005	1536.11	149.08	1387.03
	8/22/2005	1536.11	149.02	1387.09
	9/22/2005	1536.11	148.88	1387.23
	10/24/2005	1536.11	149.20	1386.91
	11/30/2005	1536.11	149.27	1386.84
	12/22/2005	1536.11	149.33	1386.78
	3/20/2006	1536.11	149.54	1386.57
	5/22/2006	1536.11	149.66	1386.45
	8/28/2006	1536.11	150.05	1386.06
	11/13/2006	1536.11	150.45	1385.66
	2/12/2007	1536.11	150.63	1385.48
	4/9/2007	1536.11	150.75	1385.36
	7/30/2007	1536.11	150.88	1385.23
	10/15/2007	1536.11	151.45	1384.66
	1/14/2008	1536.11	151.93	1384.18
	3/31/2008	1536.11	152.04	1384.07
	4/29/2008	1536.11	151.98	1384.13
	5/27/2008	1536.11	152.20	1383.91
	6/27/2008	1536.11	152.37	1383.74

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-10	7/28/2008	1536.11	152.48	1383.63
	8/29/2008	1536.11	152.41	1383.70
	9/20/2008	1536.11	152.58	1383.53
	10/14/2008	1536.11	152.83	1383.28
	11/21/2008	1536.11	152.88	1383.23
	12/15/2008	1536.11	152.87	1383.24
	1/12/2009	1536.11	153.14	1382.97
	2/16/2009	1536.11	152.95	1383.16
	3/17/2009	1536.11	153.23	1382.88
	4/13/2009	1536.11	153.24	1382.87
	5/20/2009	1536.11	153.28	1382.83
	6/15/2009	1536.11	153.35	1382.76
	7/6/2009	1536.11	153.42	1382.69
	8/12/2009	1536.11	153.61	1382.50
	9/28/2009	1536.11	153.62	1382.49
	10/27/2009	1536.11	153.64	1382.47
	11/25/2009	1536.11	153.98	1382.13
	12/18/2009	1536.11	154.00	1382.11
MW-11	12/22/2005	1603.35	253.68	1349.67
	3/20/2006	1603.35	253.71	1349.64
	5/22/2006	1603.35	253.83	1349.52
	8/28/2006	1603.35	253.78	1349.57
	11/13/2006	1603.35	253.80	1349.55
	2/12/2007	1603.35	253.86	1349.49
	4/9/2007	1603.35	253.87	1349.48
	7/30/2007	1603.35	253.51	1349.84
	10/15/2007	1603.35	253.90	1349.45
	1/14/2008	1603.35	254.07	1349.28
	4/29/2008	1603.35	254.13	1349.22
	5/27/2008	1603.35	254.12	1349.23
	6/27/2008	1603.35	254.20	1349.15
	7/28/2008	1603.35	254.26	1349.09
	8/29/2008	1603.35	254.28	1349.07
	9/20/2008	1603.35	254.25	1349.10
	10/14/2008	1603.35	254.23	1349.12
	11/21/2008	1603.35	254.23	1349.12
	12/15/2008	1603.35	254.20	1349.15
	1/12/2009	1603.35	254.22	1349.13
	2/16/2009	1603.35	254.20	1349.15
	3/17/2009	1603.35	254.25	1349.10
	4/13/2009	1603.35	254.24	1349.11

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-11	5/20/2009	1603.35	254.32	1349.03
	6/15/2009	1603.35	254.35	1349.00
	7/6/2009	1603.35	254.35	1349.00
	8/12/2009	1603.35	254.38	1348.97
	9/28/2009	1603.35	254.52	1348.83
	10/27/2009	1603.35	254.61	1348.74
	11/25/2009	1603.35	254.73	1348.62
	12/18/2009	1603.35	254.80	1348.55
MW-12	12/22/2005	1557.46	209.16	1348.30
	3/20/2006	1557.46	209.09	1348.37
	5/22/2006	1557.46	209.17	1348.29
	8/28/2006	1557.46	209.12	1348.34
	11/13/2006	1557.46	209.14	1348.32
	2/12/2007	1557.46	209.23	1348.23
	4/9/2007	1557.46	209.16	1348.30
	7/30/2007	1557.46	208.85	1348.61
	10/15/2007	1557.46	209.23	1348.23
	1/14/2008	1557.46	209.46	1348.00
	3/31/2008	1557.46	209.31	1348.15
	4/29/2008	1557.46	209.31	1348.15
	5/27/2008	1557.46	209.42	1348.04
	6/27/2008	1557.46	209.63	1347.83
	7/28/2008	1557.46	209.58	1347.88
	8/29/2008	1557.46	209.58	1347.88
	9/20/2008	1557.46	209.50	1347.96
	10/14/2008	1557.46	209.40	1348.06
	11/21/2008	1557.46	209.41	1348.05
	12/15/2008	1557.46	209.50	1347.96
	1/12/2009	1557.46	209.46	1348.00
	2/16/2009	1557.46	209.52	1347.94
	3/17/2009	1557.46	209.48	1347.98
	4/13/2009	1557.46	209.45	1348.01
	5/20/2009	1557.46	209.79	1347.67
	6/15/2009	1557.46	209.64	1347.82
	7/6/2009	1557.46	209.66	1347.80
	8/13/2009	1557.46	209.75	1347.71
	9/28/2009	1560.91	213.59	1347.32
	10/27/2009	1560.91	213.61	1347.30
	11/25/2009	1560.91	213.94	1346.97
	12/18/2009	1560.91	213.99	1346.92

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-13	8/29/2008	1595.77	246.82	1348.95
	9/20/2008	1595.77	246.75	1349.02
	10/14/2008	1595.77	246.75	1349.02
	11/21/2008	1595.77	246.78	1348.99
	12/15/2008	1595.77	246.83	1348.94
	1/12/2009	1595.77	246.79	1348.98
	2/16/2009	1595.77	246.81	1348.96
	3/17/2009	1595.77	246.80	1348.97
	4/13/2009	1595.77	246.80	1348.97
	5/20/2009	1595.77	246.90	1348.87
	6/15/2009	1595.77	246.95	1348.82
	7/6/2009	1595.77	246.89	1348.88
	8/12/2009	1595.77	246.98	1348.79
	9/28/2009	1599.52	250.74	1348.78
	10/27/2009	1599.52	250.71	1348.81
	11/25/2009	1599.52	250.98	1348.54
	12/18/2009	1599.52	251.00	1348.52
MW-14	8/29/2008	1602.48	263.25	1339.23
	9/20/2008	1602.48	263.38	1339.10
	10/14/2008	1602.48	263.69	1338.79
	11/21/2008	1602.48	264.15	1338.33
	12/15/2008	1602.48	264.02	1338.46
	1/12/2009	1602.48	263.57	1338.91
	2/16/2009	1602.48	263.66	1338.82
	3/17/2009	1602.48	264.03	1338.45
	4/13/2009	1602.48	264.08	1338.40
	5/20/2009	1602.48	264.55	1337.93
	6/15/2009	1602.48	264.65	1337.83
	7/6/2009	1602.48	264.89	1337.59
	8/12/2009	1602.48	265.10	1337.38
	9/28/2009	1602.48	265.59	1336.89
	10/27/2009	1602.48	265.78	1336.70
	11/25/2009	1602.48	266.72	1335.76
	12/18/2009	1602.48	265.98	1336.50
MW-15	8/29/2008	1600.48	261.95	1338.53
	9/20/2008	1600.48	262.09	1338.39
	10/14/2008	1600.48	262.18	1338.30
	11/21/2008	1600.48	262.45	1338.03
	12/15/2008	1600.48	262.58	1337.90
	1/12/2009	1600.48	262.51	1337.97
	2/16/2009	1600.48	262.53	1337.95

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
MW-15	3/17/2009	1600.48	262.60	1337.88
	4/13/2009	1600.48	262.72	1337.76
	5/20/2009	1600.48	262.96	1337.52
	6/15/2009	1600.48	263.03	1337.45
	7/6/2009	1600.48	263.19	1337.29
	8/12/2009	1600.48	263.36	1337.12
	9/28/2009	1600.48	263.69	1336.79
	10/27/2009	1600.48	263.80	1336.68
	11/25/2009	1600.48	264.20	1336.28
	12/18/2009	1600.48	264.28	1336.20
MW-18	9/28/2009	1533.53	181.20	1352.33
	10/7/2009	1533.53	137.39	1396.14
	10/27/2009	1533.53	132.18	1401.35
	11/25/2009	1533.53	131.17	1402.36
	12/18/2009	1533.53	130.11	1403.42

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
18 East Yearling	3/30/07	1596.79	NA	NA
	5/25/07	1596.79	NA	NA
	6/4/07	1596.79	NA	NA
	6/20/2007	1596.79	NA	NA
	7/30/2007	1596.79	NA	NA
	8/2/2007	1596.79	351.13	1245.66
	8/30/2007	1596.79	346.66	1250.13
	9/12/2007	1596.79	365.49	1231.30
	9/24/2007	1596.79	358.82	1237.97
	9/27/2007	1596.79	365.22	1231.57
	10/15/2007	1596.79	362.45	1234.34
	11/19/2007	1596.79	363.82	1232.97
	12/11/2007	1596.79	360.47	1236.32
	1/14/2008	1596.79	354.74	1242.05
	3/13/2008	1596.79	358.96	1237.83
	5/16/2008	1596.79	350.67	1246.12
	7/28/2008	1596.79	below transducer	NM
	8/29/2008	1596.79	258.19	1338.60
	10/14/2008	1596.79	362.65	1234.14
	12/3/2008	1596.79	358.64	1238.15
	12/15/2008	1596.79	358.88	1237.91
	1/12/2009	1596.79	357.04	1239.75
	2/16/2009	1596.79	355.66	1241.13
	3/17/2009	1596.79	358.48	1238.31
	4/13/2009	1596.79	369.10	1227.69
	5/20/2009	1596.79	399.30	1197.49
	6/15/2009	1596.79	372.35	1224.44
	7/6/2009	1596.79	377.89	1218.90
	8/12/2009	1596.79	399.60	1197.19
	9/28/2009	1596.79	dry	dry
	10/27/2009	1596.79	dry	dry
	11/25/2009	1596.79	dry	dry
	12/18/2009	1596.79	392.78	1204.01
218 East Yearling	3/30/2007	1617.01	325.20	1291.81
	5/25/07	1617.01	313.19	1303.82
	6/4/07	1617.01	325.92	1291.09
	6/20/2007	1617.01	317.50	1299.51
	7/30/2007	1617.01	NA	NA
	8/2/2007	1617.01	NA	NA
	8/30/2007	1617.01	313.80	1303.21
	9/12/2007	1617.01	334.26	1282.75

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
218 East Yearling	9/24/2007	1617.01	NA	NA
	9/27/2007	1617.01	317.38	1299.63
	10/15/2007	1617.01	323.81	1293.20
	11/19/2007	1617.01	322.32	1294.69
	12/11/2007	1617.01	315.75	1301.26
	1/14/2008	1617.01	313.32	1303.69
	3/13/2008	1617.01	obstruction	NM
	5/16/2008	1617.01	344.85	1272.16
	7/28/2008	1617.01	316.35	1300.66
	8/29/2008	1617.01	329.46	1287.55
	10/14/2008	1617.01	340.00	1277.01
	12/3/2008	1617.01	317.34	1299.67
	12/15/2008	1617.01	313.89	1303.12
	1/12/2009	1617.01	310.40	1306.61
	2/16/2009	1617.01	314.42	1302.59
	3/17/2009	1617.01	311.95	1305.06
	4/13/2009	1617.01	311.63	1305.38
	5/20/2009	1617.01	332.30	1284.71
	6/15/2009	1617.01	321.86	1295.15
	7/6/2009	1617.01	325.00	1292.01
	8/12/2009	1617.01	325.93	1291.08
	9/28/2009	1617.01	323.18	1293.83
	10/27/2009	1617.01	324.80	1292.21
	11/25/2009	1617.01	322.86	1294.15
	12/18/2009	1617.01	320.08	1296.93
520 East Yearling	3/30/07	1635.71	293.60	1342.11
	5/25/07	1635.71	293.68	1342.03
	6/4/07	1635.71	292.33	1343.38
	6/20/2007	1635.71	292.54	1343.17
	7/30/2007	1635.71	293.69	1342.02
	8/2/2007	1635.71	NA	NA
	8/30/2007	1635.71	292.04	1343.67
	9/12/2007	1635.71	294.56	1341.15
	9/24/2007	1635.71	294.59	1341.12
	9/27/2007	1635.71	295.18	1340.53
	10/15/2007	1635.71	294.94	1340.77
	11/19/2007	1635.71	295.66	1340.05
	12/11/2007	1635.71	295.41	1340.30
	1/14/2008	1635.71	295.30	1340.41
	3/13/2008	1635.71	294.71	1341.00
	5/16/2008	1635.71	295.80	1339.91

Appendix C
Manual Water Level Data
UPCO and Private Wells

Well Identification	Date of Measurement	Measuring Point Elevation (ft amsl)	Depth to Water from Measuring Point (ft)	Groundwater Elevation (ft amsl)
520 East Yearling	7/28/2008	1635.71	296.54	1339.17
	8/29/2008	1635.71	305.50	1330.21
	10/14/2008	1635.71	297.20	1338.51
	12/3/2008	1635.71	297.37	1338.34
	12/15/2008	1635.71	297.42	1338.29
	1/12/2009	1635.71	296.90	1338.81
	2/16/2009	1635.71	296.90	1338.81
	3/17/2009	1635.71	297.42	1338.29
	4/13/2009	1635.71	299.90	1335.81
	5/20/2009	1635.71	298.10	1337.61
	6/15/2009	1635.71	298.18	1337.53
	7/6/2009	1635.71	311.26	1324.45
	8/12/2009	1635.71	311.69	1324.02
	9/28/2009	1635.71	312.45	1323.26
	10/27/2009	1635.71	290.65	1345.06
	11/25/2009	1635.71	299.85	1335.86
	12/18/2009	1635.71	299.38	1336.33

Note:
Measured depth to water and calculated groundwater elevations at private wells may not represent actual static water levels because these are active pumping wells, subject to frequent water level fluctuations.
NM = Not measured
NA = No access
dry = Sounder did not detect water

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

D

APPENDIX

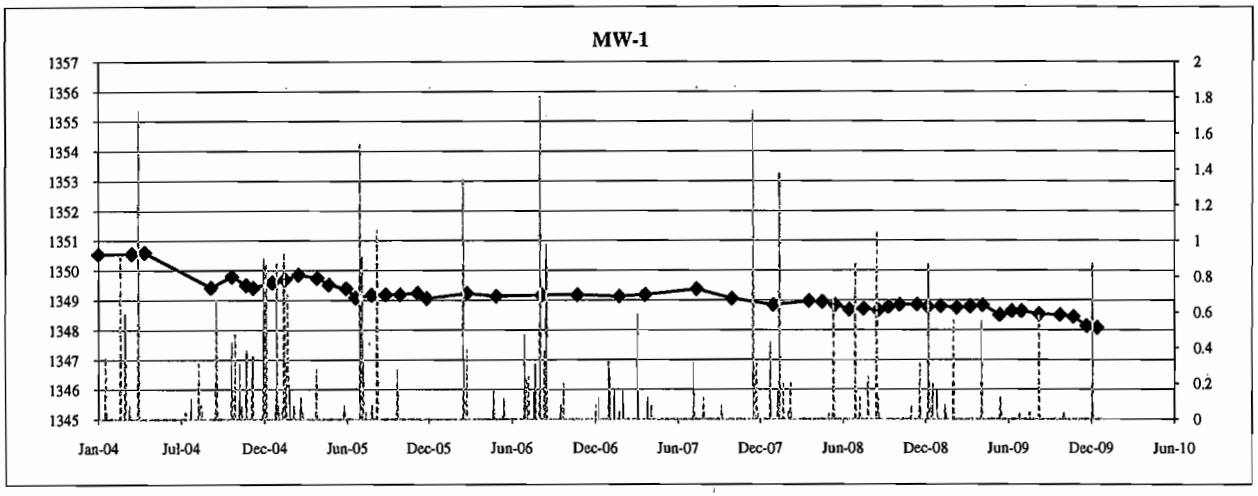
Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

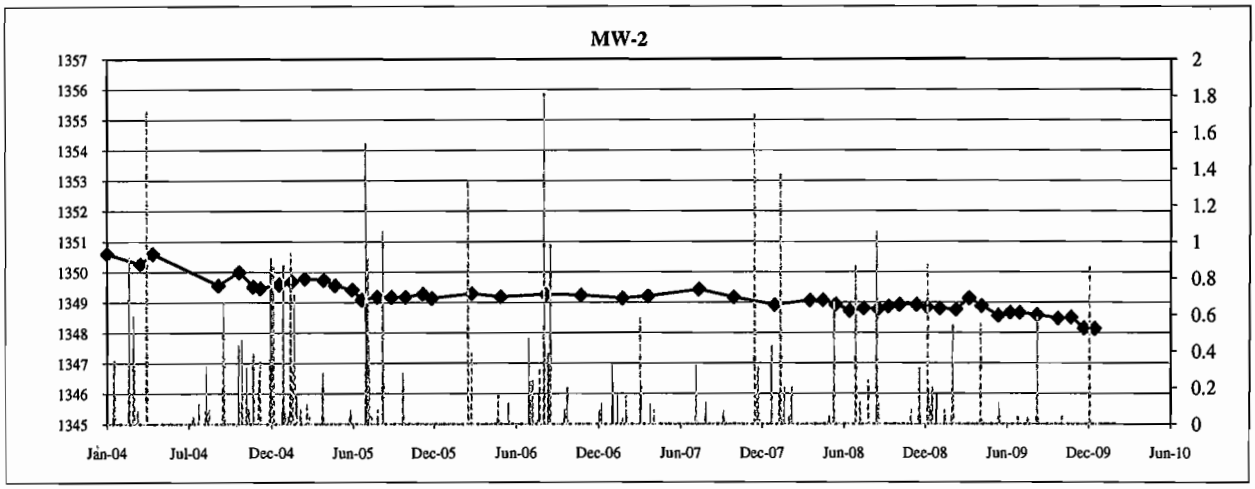
Appendix D
Monitor Well Hydrographs

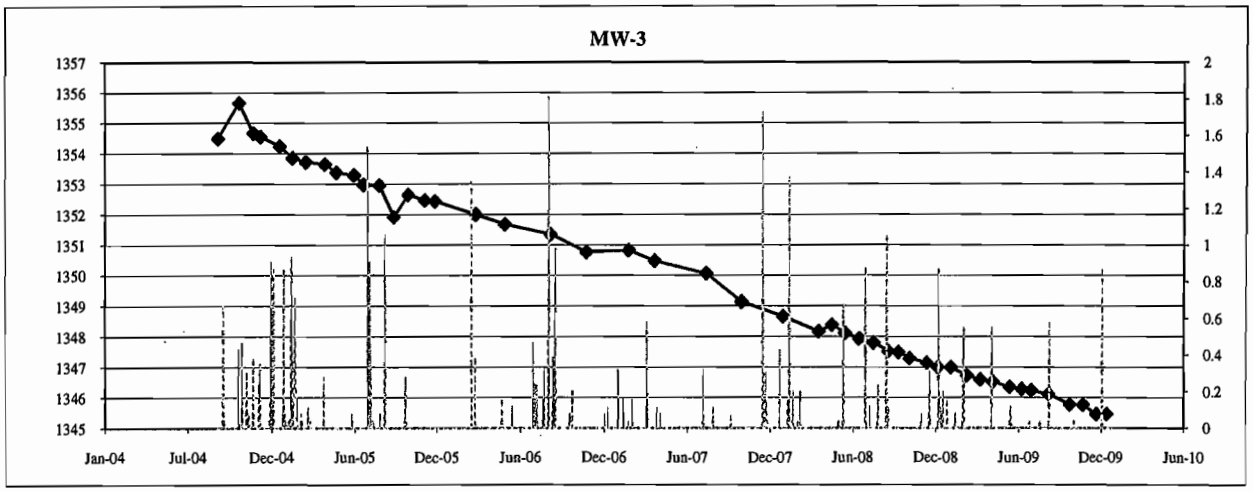
3994-003

MALCOLM PIRNIE

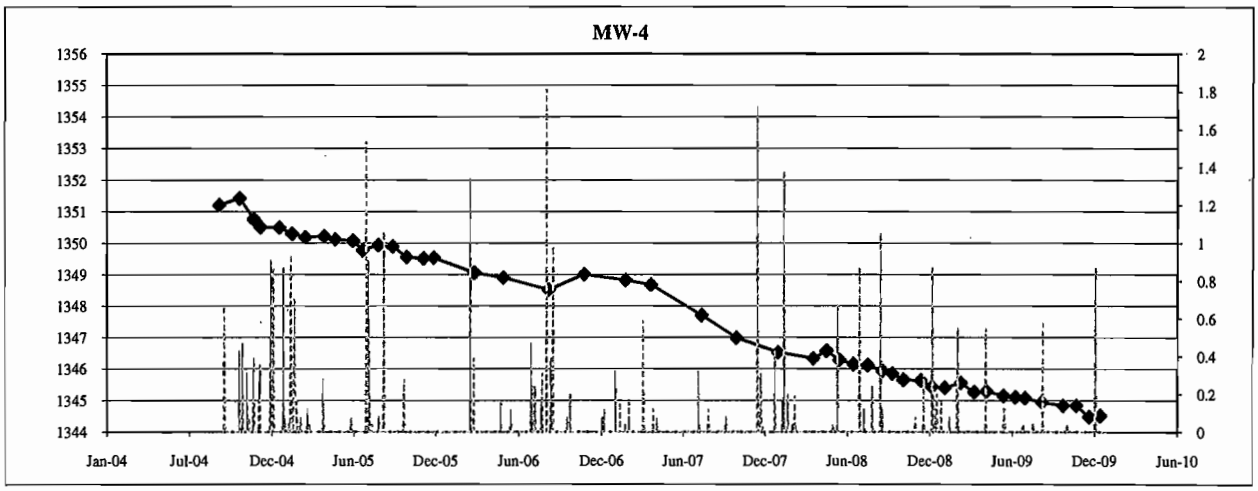
Appendix D
Well Hydrographs (feet amsl) with Precipitation (in/day)

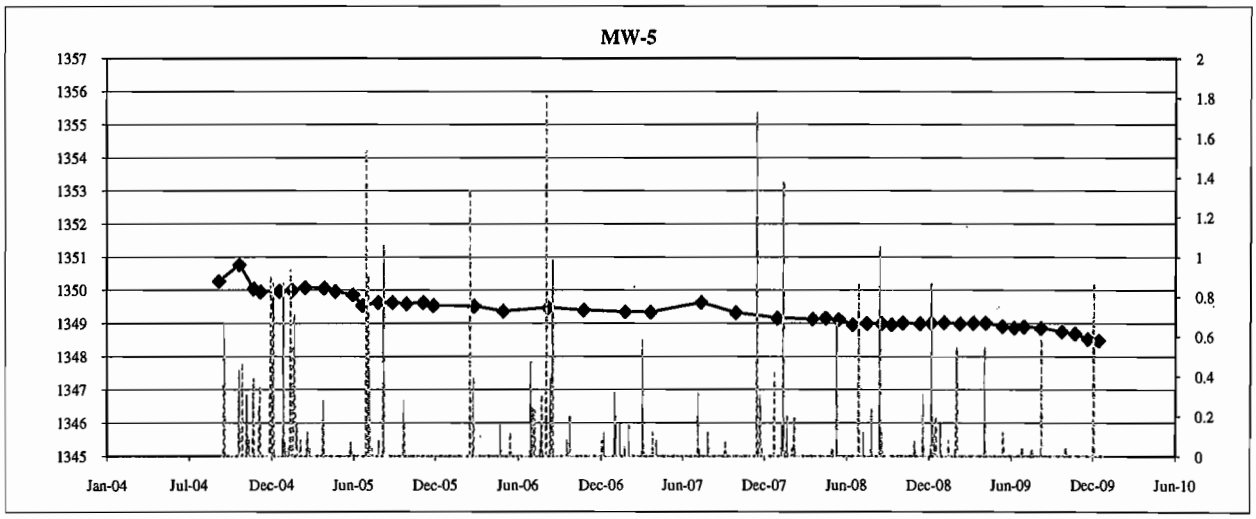


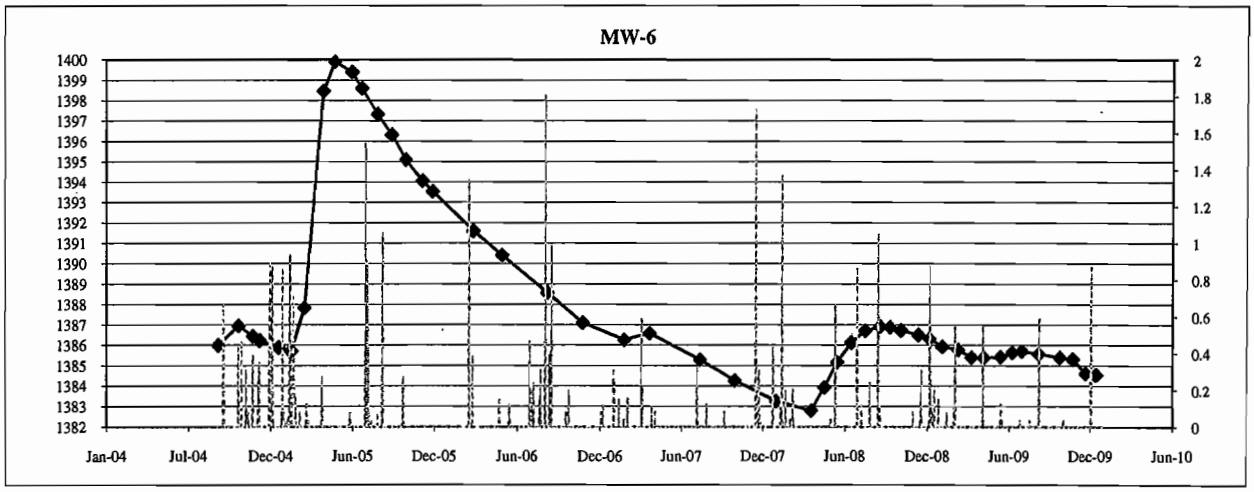




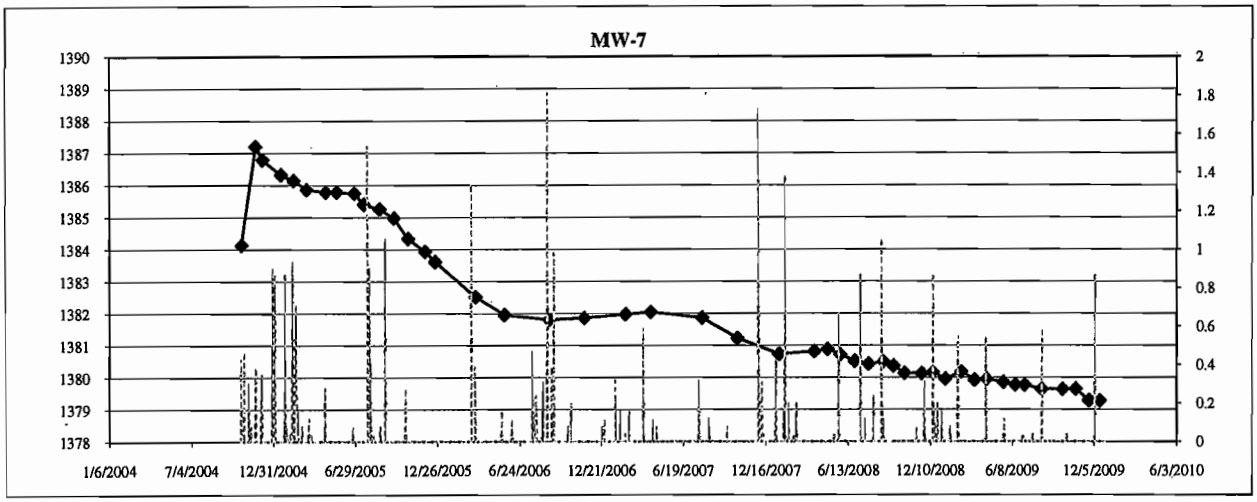
Appendix D
Well Hydrographs (feet amsl) with Precipitation (in/day)

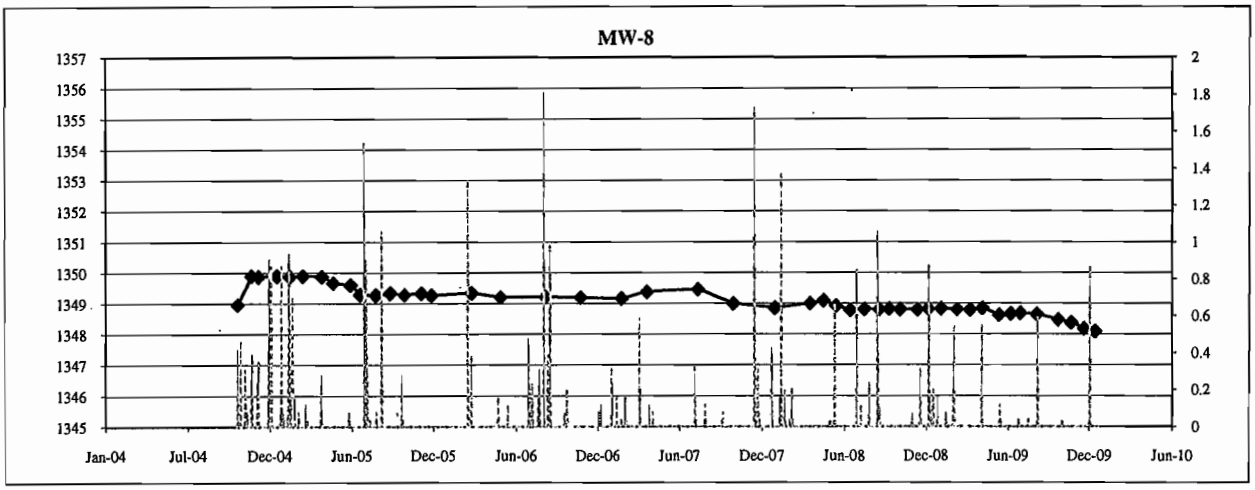


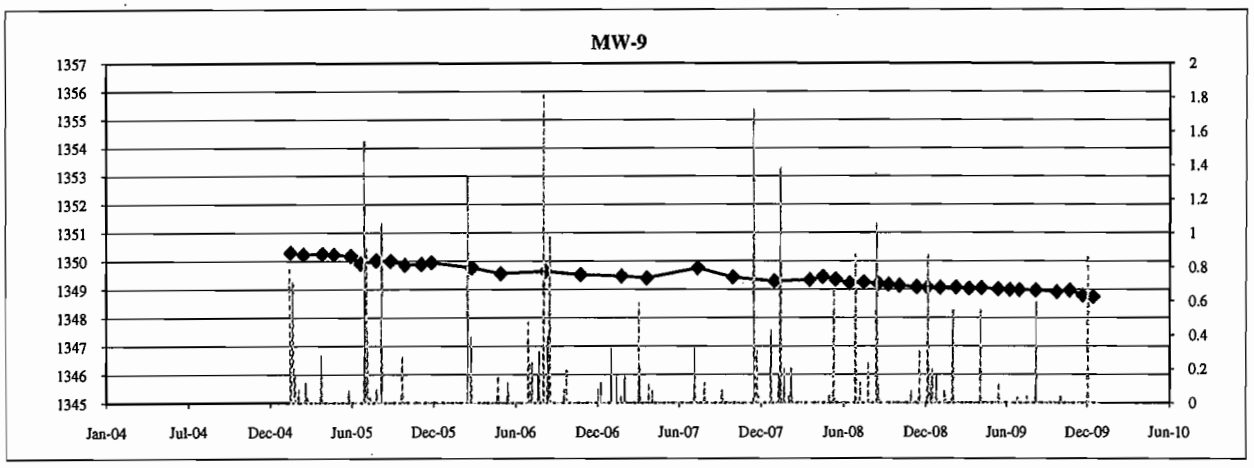




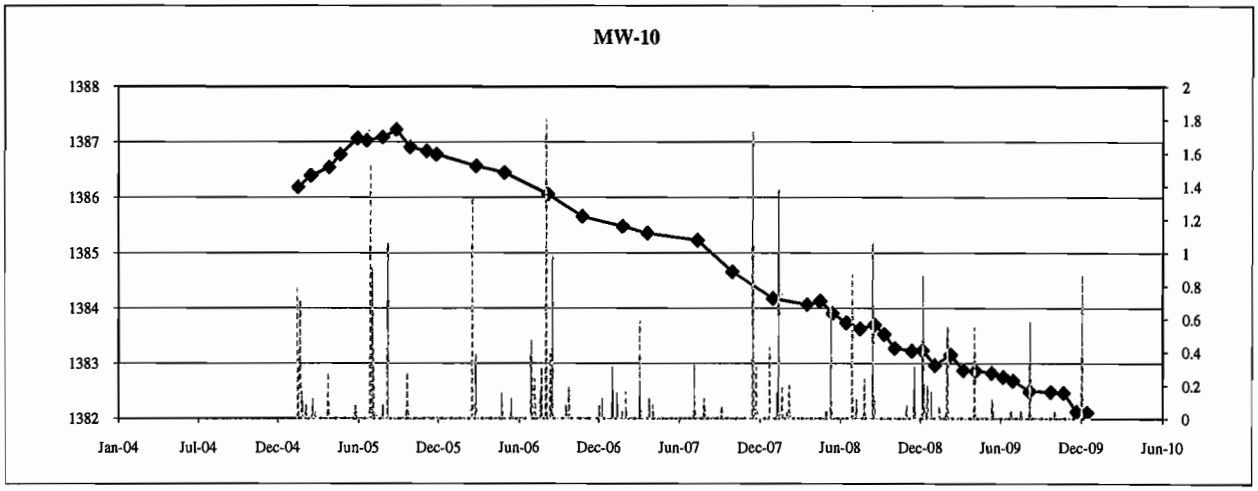
Appendix D
Well Hydrographs (feet amsl) with Precipitation (in/day)

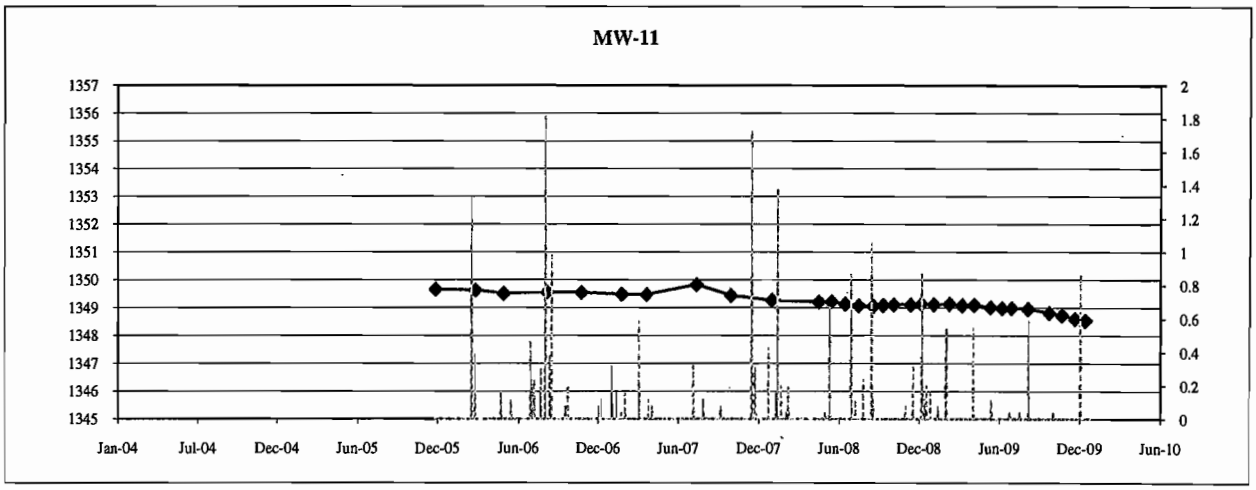


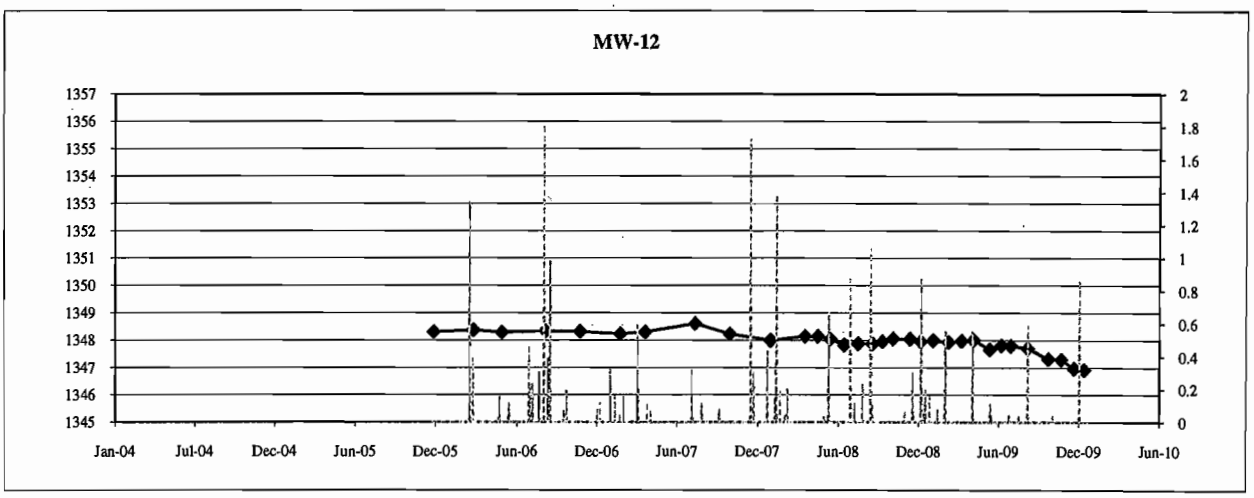




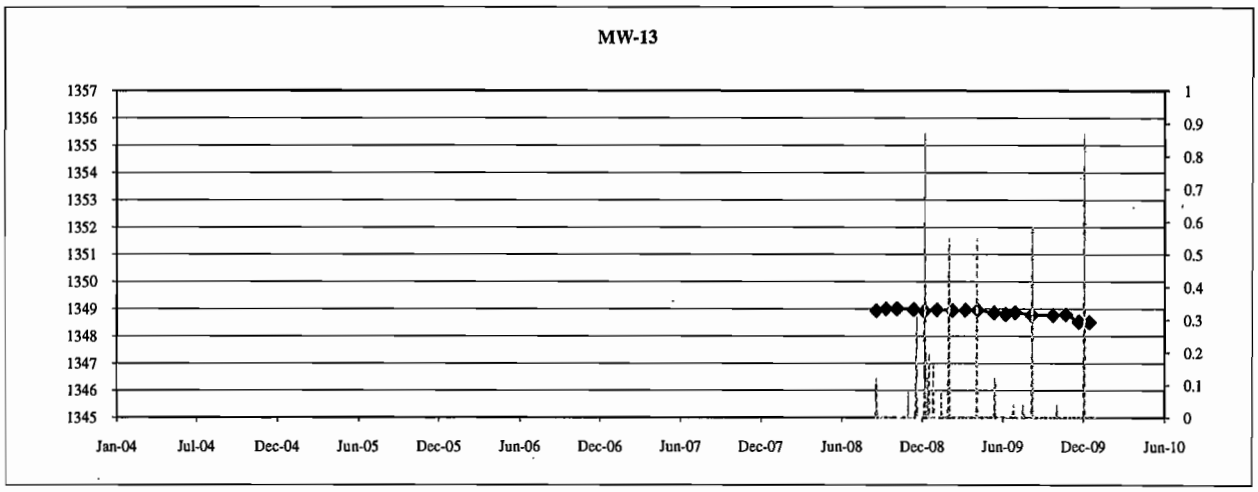
Appendix D
Well Hydrographs (feet amsl) with Precipitation (in/day)

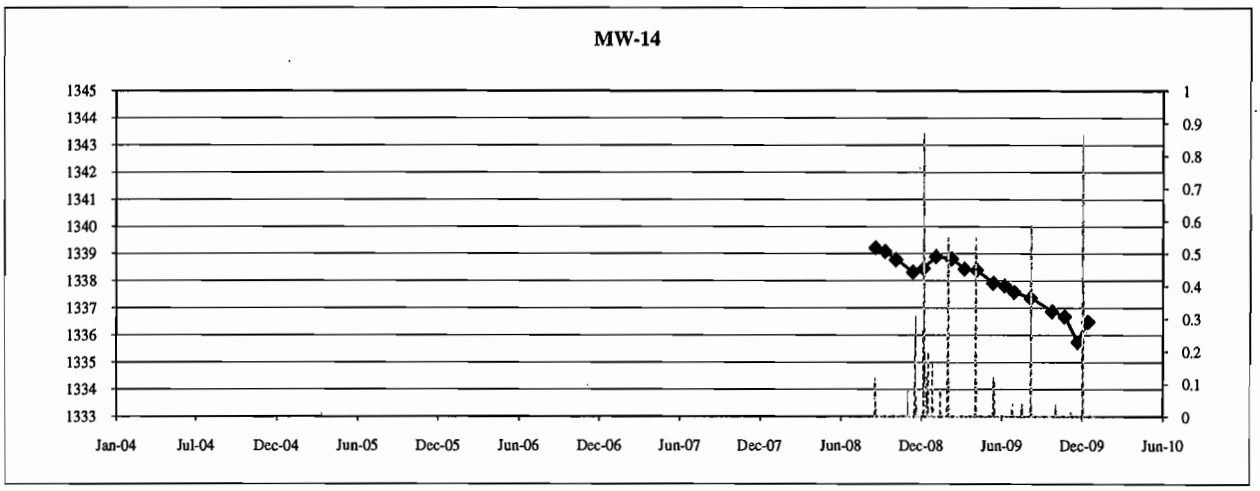


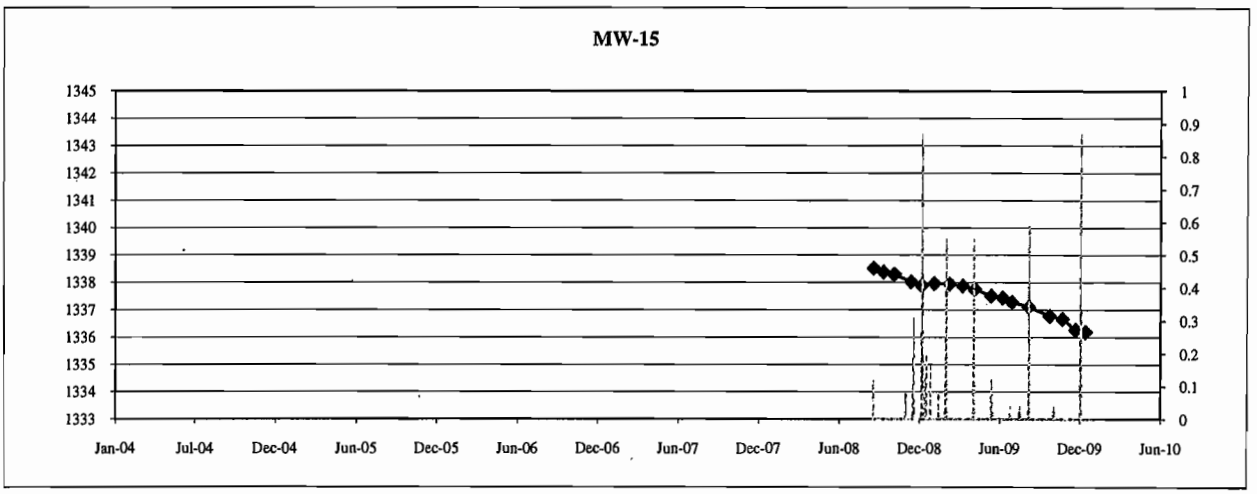




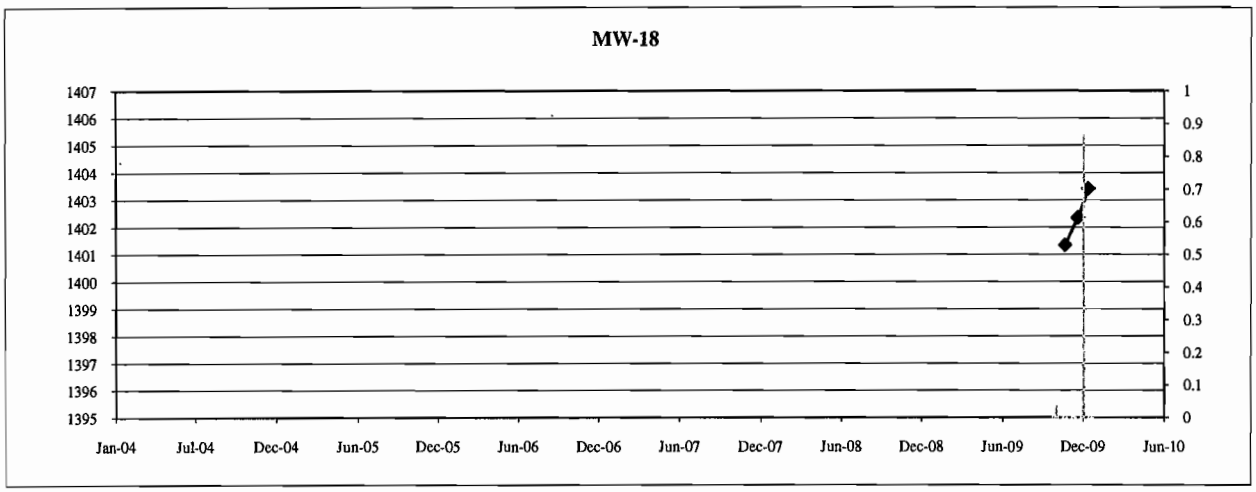
Appendix D
Well Hydrographs (feet amsl) with Precipitation (in/day)



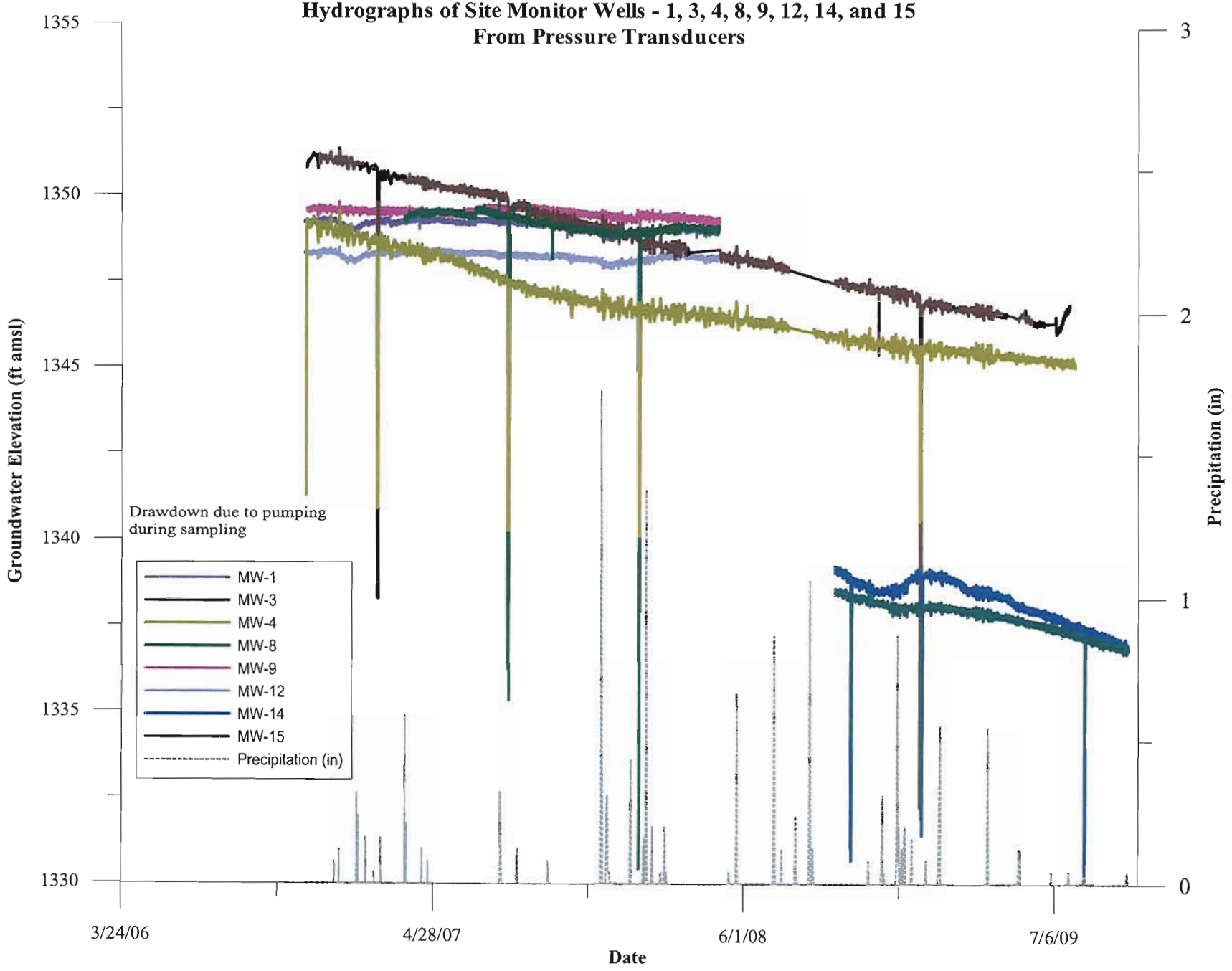




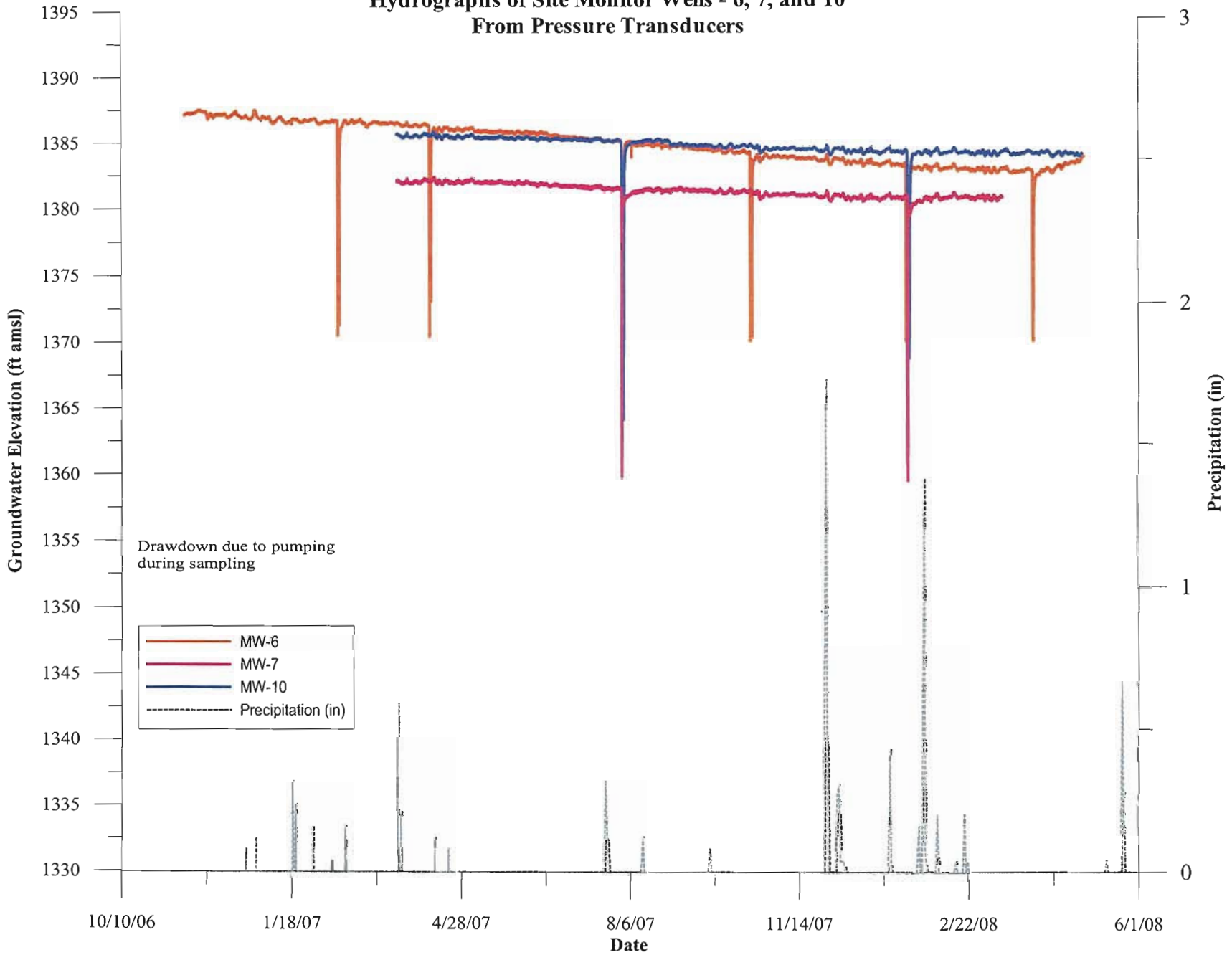
Appendix D
Well Hydrographs (feet amsl) with Precipitation (in/day)



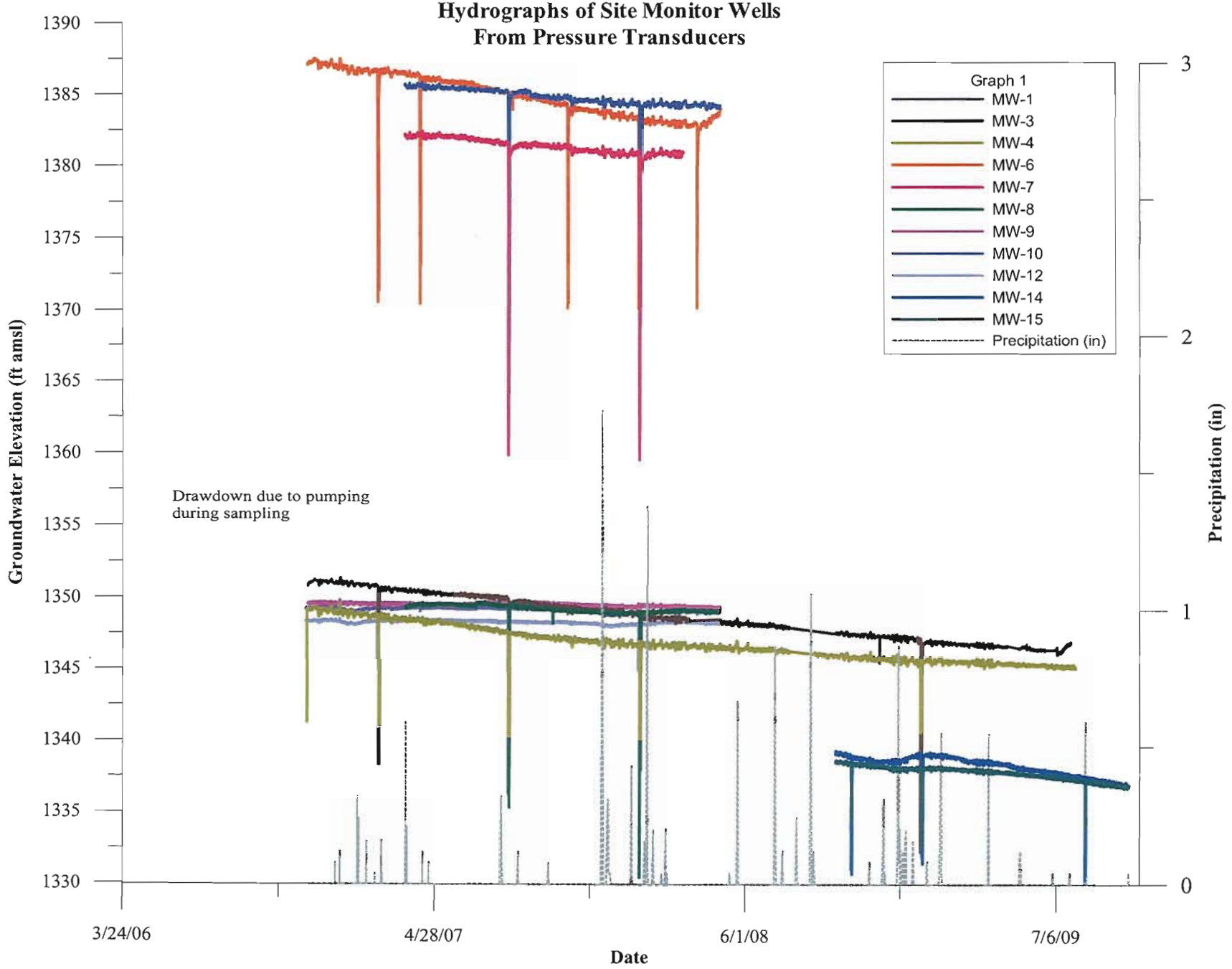
Appendix D
Hydrographs of Site Monitor Wells - 1, 3, 4, 8, 9, 12, 14, and 15
From Pressure Transducers



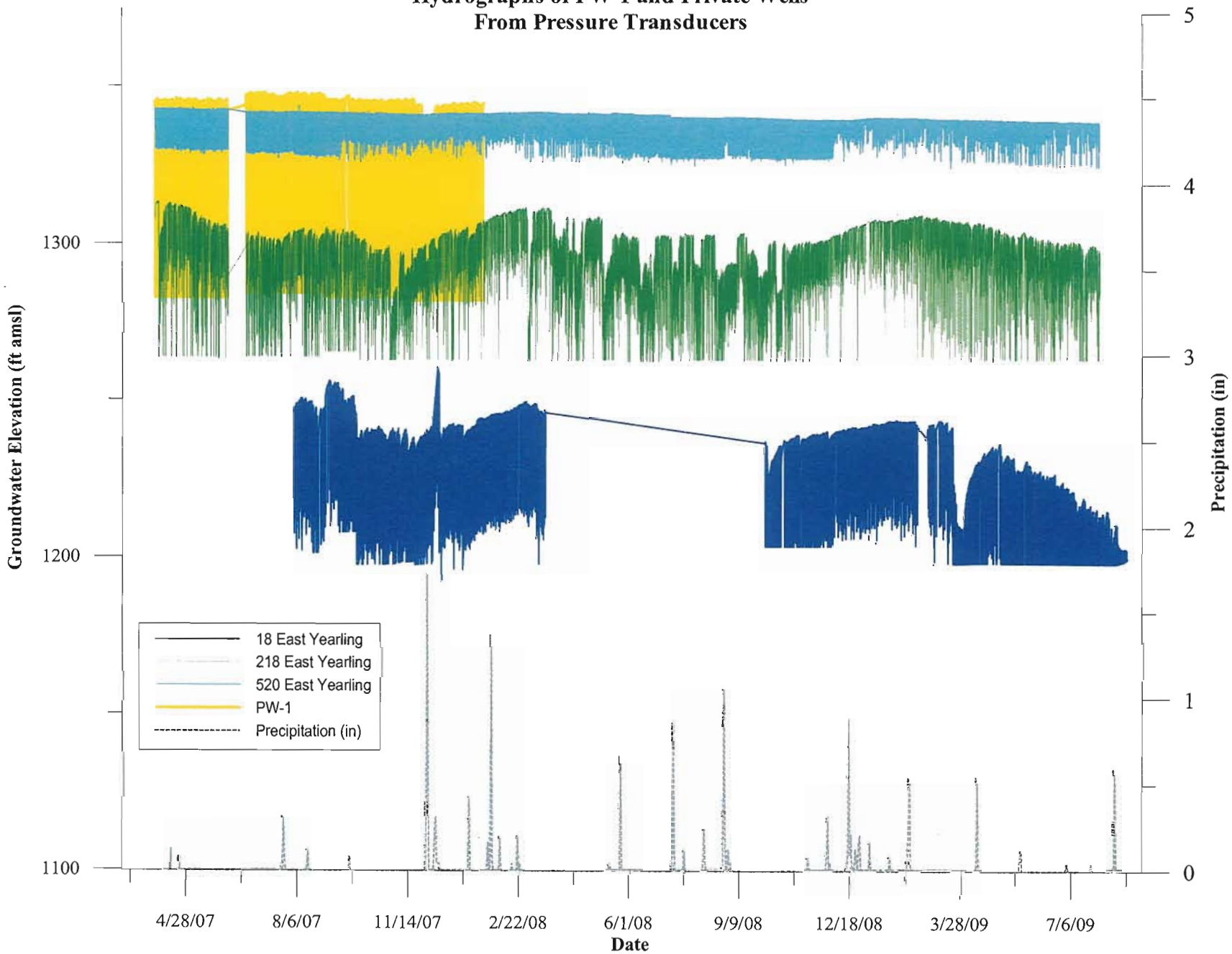
Appendix D
Hydrographs of Site Monitor Wells - 6, 7, and 10
From Pressure Transducers



Appendix D
Hydrographs of Site Monitor Wells
From Pressure Transducers



Appendix D
Hydrographs of PW-1 and Private Wells
From Pressure Transducers



MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

E

APPENDIX

Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix E
2009 Monitor Well Quality

3994-003

MALCOLM PIRNIE

Appendix E
Monitor Well Groundwater Quality Summary

Parameter	MW-1 1/23/2009	MW-1 4/15/2009	MW-1 8/14/2009	MW-1 11/2/2009	MW-2 1/23/2009	MW-2 4/15/2009	MW-2 8/14/2009	MW-2 11/2/2009	MW-3 1/14/2009	MW-3 8/18/2009	MW-4 1/14/2009	MW-4 8/18/2009
Inorganics (mg/L)												
Arsenic	0.010	NA	NA	NA	0.0084	NA	NA	NA	0.0060	NA	0.0026	NA
Barium	0.045	NA	NA	NA	0.074	NA	NA	NA	0.020	NA	0.092	NA
Cadmium	<0.0010	NA	NA	NA	<0.0010	NA	NA	NA	<0.0010	NA	<0.0010	NA
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	0.0028	NA	NA	NA	0.015	NA	NA	NA	<0.0010	NA	<0.0010	NA
Lead	0.0011	NA	NA	NA	0.0010	NA	NA	NA	0.0020	NA	0.0042	NA
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	<0.00020	NA	NA	NA	<0.00020	NA	NA	NA	<0.00020	NA	<0.00020	NA
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	<0.0020	NA	NA	NA	<0.0020	NA	NA	NA	<0.0020	NA	<0.0020	NA
Silver	<0.0010	NA	NA	NA	<0.0010	NA	NA	NA	<0.0010	NA	<0.0010 UJ	NA
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perchlorate (EPA 314.0; ug/L)	76	76	83	70	92	88	96	83	<2.0	<2.0	<2.0	<2.0
Perchlorate (EPA 332.0; ug/L)	NA	NA	NA	NA	NA	NA	NA	NA	0.73	0.64 J	0.72	0.71 J
Volatile Organic Compounds (ug/L)												
1,1,1,2-Tetrachloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,1,1-Trichloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,1,2,2-Tetrachloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,1,2-Trichloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,1-Dichloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,1-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,1-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,2,3-Trichlorobenzene	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA
1,2,3-Trichloropropane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA
1,2,4-Trichlorobenzene	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA
1,2,4-Trimethylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,2-Dibromo-3-chloropropane	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA
1,2-Dibromoethane (EDB)	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,2-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,2-Dichloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,2-Dichloropropane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,3,5-Trimethylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,3-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,3-Dichloropropane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,4-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
1,4-Dioxane	<2.0	NA	<2.0	NA	2.4	NA	2.8	NA	<2.0	NA	<2.0	NA
2,2-Dichloropropane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA
2-Butanone (MEK)	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA
2-Chlorotoluene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
2-Hexanone	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA
4-Chlorotoluene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
4-Methyl-2-pentanone (MIBK)	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA
Acetone	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA
Benzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Bromobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Bromochloromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Bromodichloromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA

Appendix E
Monitor Well Groundwater Quality Summary

Parameter	MW-1 1/23/2009	MW-1 4/15/2009	MW-1 8/14/2009	MW-1 11/2/2009	MW-2 1/23/2009	MW-2 4/15/2009	MW-2 8/14/2009	MW-2 11/2/2009	MW-3 1/14/2009	MW-3 8/18/2009	MW-4 1/14/2009	MW-4 8/18/2009
Volatile Organic Compounds (ug/L)												
Bromoform	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA
Bromomethane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA
Carbon disulfide	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Carbon tetrachloride	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Chlorobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Chloroethane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA
Chloroform	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Chloromethane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA
cis-1,2-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
cis-1,3-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Dibromochloromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Dibromomethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Dichlorodifluoromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Ethylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Hexachlorobutadiene	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA
Iodomethane	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA
Isopropylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Methylene Chloride	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA
Methyl-tert-butyl Ether (MTBE)	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Naphthalene	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA
n-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
n-Propylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
p-Isopropyltoluene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
sec-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Styrene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
tert-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Tetrachloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Toluene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
trans-1,2-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
trans-1,3-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Trichloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Trichlorofluoromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Vinyl Acetate	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Vinyl chloride	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA
Xylenes, Total	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA

Appendix E
Monitor Well Groundwater Quality Summary

Parameter	MW - 5 1/16/2009	MW-5 4/15/2009	MW-5 8/17/2009	MW-5 10/28/2009	MW-6 1/14/2009	MW-6 4/15/2009	MW-6 8/18/2009	MW-6 10/30/2009	MW-7 1/15/2009	MW-7 8/18/2009	MW-8 1/14/2009	MW-8 8/18/2009
Inorganics (mg/L)												
Arsenic	0.010	NA	NA	NA	0.0077	NA	NA	NA	0.026	NA	0.049	0.048
Barium	0.056	NA	NA	NA	0.016	NA	NA	NA	0.0067	NA	0.018	0.0026
Cadmium	<0.0010	NA	NA	NA	<0.0010	NA	NA	NA	<0.0010	NA	<0.0010	<0.0010
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	0.029	NA	NA	NA	<0.0010	NA	NA	NA	0.0029	NA	0.023	0.024
Lead	<0.0010	NA	NA	NA	0.0024	NA	NA	NA	0.0010	NA	0.0023	<0.0010
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	<0.00020	NA	NA	NA	<0.00020	NA	NA	NA	<0.00020	NA	<0.00020	<0.00020
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	<0.0020	NA	NA	NA	0.0024	NA	NA	NA	<0.0020	NA	<0.0020	<0.0020
Silver	<0.0010 UJ	NA	NA	NA	<0.0010 UJ	NA	NA	NA	<0.0010	NA	<0.0010 UJ	<0.0010
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perchlorate (EPA 314.0; ug/L)	24	23	27	26	18	17	19	15	<2.0	<2.0	<2.0	<2.0
Perchlorate (EPA 332.0; ug/L)	NA	NA	NA	NA	NA	NA	NA	NA	0.62	0.70 J	1.1	1.0 J
Volatile Organic Compounds (ug/L)												
1,1,1,2-Tetrachloroethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,1,1-Trichloroethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,1,2,2-Tetrachloroethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,1,2-Trichloroethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,1-Dichloroethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,1-Dichloroethene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,1-Dichloropropene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,2,3-Trichlorobenzene	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
1,2,3-Trichloropropane	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
1,2,4-Trichlorobenzene	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
1,2,4-Trimethylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,2-Dibromo-3-chloropropane	<2.5	NA	NA	NA	<2.5	NA	NA	NA	<2.5	NA	<2.5	NA
1,2-Dibromoethane (EDB)	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,2-Dichlorobenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,2-Dichloroethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,2-Dichloropropane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,3,5-Trimethylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,3-Dichlorobenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,3-Dichloropropane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,4-Dichlorobenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
1,4-Dioxane	<2.0	NA	NA	NA	<2.0	NA	NA	NA	<2.0	NA	<2.0	NA
2,2-Dichloropropane	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
2-Butanone (MEK)	<2.5	NA	NA	NA	<2.5	NA	NA	NA	<2.5	NA	<2.5	NA
2-Chlorotoluene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
2-Hexanone	<2.5	NA	NA	NA	<2.5	NA	NA	NA	<2.5	NA	<2.5	NA
4-Chlorotoluene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
4-Methyl-2-pentanone (MIBK)	<2.5	NA	NA	NA	<2.5	NA	NA	NA	<2.5	NA	<2.5	NA
Acetone	<10	NA	NA	NA	<10	NA	NA	NA	<10	NA	<10	NA
Benzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Bromobenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Bromochloromethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Bromodichloromethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA

Appendix E
Monitor Well Groundwater Quality Summary

Parameter	MW - 5 1/16/2009	MW-5 4/15/2009	MW-5 8/17/2009	MW-5 10/28/2009	MW-6 1/14/2009	MW-6 4/15/2009	MW-6 8/18/2009	MW-6 10/30/2009	MW-7 1/15/2009	MW-7 8/18/2009	MW-8 1/14/2009	MW-8 8/18/2009
Volatile Organic Compounds (ug/L)												
Bromoform	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
Bromomethane	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
Carbon disulfide	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Carbon tetrachloride	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Chlorobenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Chloroethane	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
Chloroform	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Chloromethane	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
cis-1,2-Dichloroethene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
cis-1,3-Dichloropropene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Dibromochloromethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Dibromomethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Dichlorodifluoromethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Ethylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Hexachlorobutadiene	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
Iodomethane	<2.5	NA	NA	NA	<2.5	NA	NA	NA	<2.5	NA	<2.5	NA
Isopropylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Methylene Chloride	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA
Methyl-tert-butyl Ether (MTBE)	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Naphthalene	<2.5	NA	NA	NA	<2.5	NA	NA	NA	<2.5	NA	<2.5	NA
n-Butylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
n-Propylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
p-Isopropyltoluene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
sec-Butylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Styrene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
tert-Butylbenzene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Tetrachloroethene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Toluene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
trans-1,2-Dichloroethene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
trans-1,3-Dichloropropene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Trichloroethene	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Trichlorofluoromethane	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Vinyl Acetate	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Vinyl chloride	<0.50	NA	NA	NA	<0.50	NA	NA	NA	<0.50	NA	<0.50	NA
Xylenes, Total	<1.0	NA	NA	NA	<1.0	NA	NA	NA	<1.0	NA	<1.0	NA

Appendix E
Monitor Well Groundwater Quality Summary

Parameter	MW-9 1/14/2009	MW-9 8/18/2009	MW-10 1/14/2009	MW-10 8/18/2009	MW-11 1/15/2009	MW-11 8/18/2009	MW-12 1/23/2009	MW-12 8/14/2009	MW - 13 1/16/2009	MW-13 4/16/2009	MW-13 8/13/2009	MW-13 10/29/2009
Inorganics (mg/L)												
Arsenic	0.0084	NA	0.018	NA	0.0076	NA	0.0072	NA	0.0042	NA	NA	NA
Barium	0.061	NA	0.0085	NA	0.14	NA	0.026	NA	0.070	NA	NA	NA
Cadmium	<0.0010	NA	<0.0010	NA	<0.0010	NA	<0.0010	NA	<0.0010	NA	NA	NA
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	33 J	NA	NA	NA
Chromium	<0.0010	NA	0.0021	NA	0.0035	NA	0.0069	NA	0.0012	NA	NA	NA
Lead	0.0014	NA	0.0016	NA	<0.0010	NA	<0.0010	NA	<0.0010	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	15	NA	NA	NA
Mercury	<0.00020	NA	<0.00020	NA	<0.00020	NA	<0.00020	NA	<0.00020	NA	NA	NA
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	2.7	NA	NA	NA
Selenium	<0.0020	NA	<0.0020	NA	0.0042	NA	<0.0020	NA	<0.0020	NA	NA	NA
Silver	<0.0010 UJ	NA	<0.0010 UJ	NA	<0.0010	NA	<0.0010	NA	<0.0010 UJ	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	51 J	NA	NA	NA
Perchlorate (EPA 314.0; ug/L)	<2.0	<2.0	<2.0	<2.0	2.0	2.3	<2.0	<2.0	190	81	40	30
Perchlorate (EPA 332.0; ug/L)	0.84	0.78 J	0.96	0.93 J	2.0	2.1 J	1.2	0.78 J	NA	NA	NA	NA
Volatile Organic Compounds (ug/L)												
1,1,1,2-Tetrachloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,1,1-Trichloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,1,2,2-Tetrachloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,1,2-Trichloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,1-Dichloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,1-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,1-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,2,3-Trichlorobenzene	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
1,2,3-Trichloropropane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
1,2,4-Trichlorobenzene	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
1,2,4-Trimethylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,2-Dibromo-3-chloropropane	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	NA	NA
1,2-Dibromoethane (EDB)	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,2-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,2-Dichloroethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,2-Dichloropropane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,3,5-Trimethylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,3-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,3-Dichloropropane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,4-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
1,4-Dioxane	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	<2.0	NA	NA	NA
2,2-Dichloropropane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
2-Butanone (MEK)	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	NA	NA
2-Chlorotoluene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
2-Hexanone	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	NA	NA
4-Chlorotoluene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	NA	NA
Acetone	<10	NA	<10	NA	<10	NA	<10	NA	<10	NA	NA	NA
Benzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Bromobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Bromochloromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Bromodichloromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA

Appendix E
Monitor Well Groundwater Quality Summary

Parameter	MW-9 1/14/2009	MW-9 8/18/2009	MW-10 1/14/2009	MW-10 8/18/2009	MW-11 1/15/2009	MW-11 8/18/2009	MW-12 1/23/2009	MW-12 8/14/2009	MW - 13 1/16/2009	MW-13 4/16/2009	MW-13 8/13/2009	MW-13 10/29/2009
Volatile Organic Compounds (ug/L)												
Bromoform	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
Bromomethane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
Carbon disulfide	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Carbon tetrachloride	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Chlorobenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Chloroethane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
Chloroform	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Chloromethane	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
cis-1,2-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
cis-1,3-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Dibromochloromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Dibromomethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Dichlorodifluoromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Ethylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Hexachlorobutadiene	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
Iodomethane	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	NA	NA
Isopropylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Methylene Chloride	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA
Methyl-tert-butyl Ether (MTBE)	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Naphthalene	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	<2.5	NA	NA	NA
n-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
n-Propylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
p-Isopropyltoluene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
sec-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Styrene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
tert-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Tetrachloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Toluene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
trans-1,2-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
trans-1,3-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Trichloroethene	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Trichlorofluoromethane	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Vinyl Acetate	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Vinyl chloride	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	<0.50	NA	NA	NA
Xylenes, Total	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	NA	NA

Appendix E
Monitor Well Groundwater Quality Summary

Parameter	MW - 14 1/16/2009	MW-14 8/13/2009	MW-15 1/15/2009	MW-15 8/13/2009	MW-18 10/30/2009	PW-1 1/12/2009	PW-1 4/15/2009	PW-1 7/6/2009	PW-1 10/30/2009
Inorganics (mg/L)									
Arsenic	0.0020	NA	0.0029	NA	0.062	0.011	0.0093	0.010	0.010
Barium	0.27	NA	0.25	NA	0.022	0.0047	0.0044	0.0045	0.0049
Cadmium	<0.0010	NA	<0.0010	NA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Calcium	63 J	NA	45	NA	25 J	22	23	24	26
Chromium	<0.0010	NA	<0.0010	NA	0.022	0.0025	0.0024	0.0022	0.0022
Lead	0.0019	NA	0.0016	NA	<0.0010	0.0011	<0.0010	<0.0010	<0.0010
Magnesium	17	NA	11	NA	12 J	10	10	10	12
Mercury	<0.00020	NA	<0.00020	NA	<0.00020	<0.00020	<0.00020	0.00083	<0.00020
Potassium	3.0	NA	2.3	NA	3.8	3.5	3.9	3.5	3.9
Selenium	<0.0020	NA	<0.0020	NA	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Silver	<0.0010 UJ	NA	<0.0010	NA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Sodium	51 J	NA	42	NA	61	59	56	54	61
Perchlorate (EPA 314.0; ug/L)	<2.0	<2.0	<2.0	<2.0	<2.0	4.8	2.6	2.4	<2.0
Perchlorate (EPA 332.0; ug/L)	1.1	1.1 J	0.82	0.83 J	1.5	NA	NA	NA	NA
Volatile Organic Compounds (ug/L)									
1,1,1,2-Tetrachloroethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,1,1-Trichloroethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,1,2,2-Tetrachloroethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,1,2-Trichloroethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,1-Dichloroethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	0.62	<0.50 UJ
1,1-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	<0.50	3.6	6.0	<0.50 UJ
1,1-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,2,3-Trichlorobenzene	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
1,2,3-Trichloropropane	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
1,2,4-Trichlorobenzene	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
1,2,4-Trimethylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,2-Dibromo-3-chloropropane	<2.5	NA	<2.5	NA	<2.5	<2.5	<2.5	<2.5	<2.5 UJ
1,2-Dibromoethane (EDB)	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,2-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,2-Dichloroethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,2-Dichloropropane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,3,5-Trimethylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,3-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,3-Dichloropropane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,4-Dichlorobenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
1,4-Dioxane	<2.0	NA	<2.0	NA	<1.0	<2.0	2.5	2.9	2.4 J
2,2-Dichloropropane	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
2-Butanone (MEK)	<2.5	NA	<2.5	NA	<2.5	<2.5	<2.5	<2.5	<2.5 UJ
2-Chlorotoluene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
2-Hexanone	<2.5	NA	<2.5	NA	<2.5	<2.5	<2.5	<2.5	<2.5 UJ
4-Chlorotoluene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
4-Methyl-2-pentanone (MIBK)	<2.5	NA	<2.5	NA	<2.5	<2.5	<2.5	<2.5	<2.5 UJ
Acetone	<10	NA	<10	NA	<10	<10	<10	<10	<10
Benzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Bromobenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Bromochloromethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Bromodichloromethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ

Appendix E
Monitor Well Groundwater Quality Summary

Parameter	MW - 14 1/16/2009	MW-14 8/13/2009	MW-15 1/15/2009	MW-15 8/13/2009	MW-18 10/30/2009	PW-1 1/12/2009	PW-1 4/15/2009	PW-1 7/6/2009	PW-1 10/30/2009
Volatile Organic Compounds (ug/L)									
Bromoform	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	1.2	1.3 J
Bromomethane	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
Carbon disulfide	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Carbon tetrachloride	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Chlorobenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Chloroethane	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
Chloroform	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	0.71	<0.50 UJ
Chloromethane	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
cis-1,2-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
cis-1,3-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Dibromochloromethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Dibromomethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Dichlorodifluoromethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Ethylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Hexachlorobutadiene	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
Iodomethane	<2.5	NA	<2.5	NA	<2.5	<2.5	<2.5	<2.5	<2.5 UJ
Isopropylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Methylene Chloride	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ
Methyl-tert-butyl Ether (MTBE)	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Naphthalene	<2.5	NA	<2.5	NA	<2.5	<2.5	<2.5	<2.5	<2.5 UJ
n-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
n-Propylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
p-Isopropyltoluene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
sec-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Styrene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
tert-Butylbenzene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Tetrachloroethene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Toluene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
trans-1,2-Dichloroethene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
trans-1,3-Dichloropropene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Trichloroethene	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Trichlorofluoromethane	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Vinyl Acetate	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Vinyl chloride	<0.50	NA	<0.50	NA	<0.50	<0.50	<0.50	<0.50	<0.50 UJ
Xylenes, Total	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0 UJ

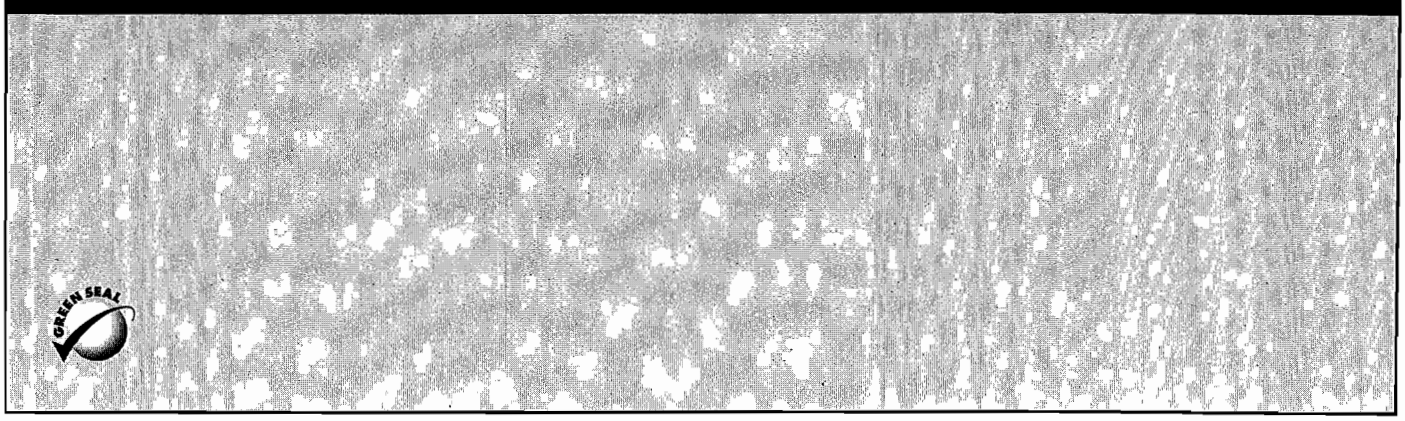
Notes:
NA = Not analyzed
< = Analyte not detected above the listed laboratory reporting limit
J = Estimated value
UJ = The reporting limit is considered an estimated value
mg/L = Milligrams per liter
ug/L = Micrograms per liter

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

F

APPENDIX



Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix F
Historic Private Well Water Quality Data

MALCOLM PIRNIE

Appendix F
Historic Private Well Water Qaulity Data

Sample ID	Date Collected	Perchlorate	
		EPA Method 314.0 (ug/L)	EPA Method 332.0 (ug/L)
104 E. Yearling	11/15/2006	<2.0	2.0
	12/28/2007	<2.0	1.3
	4/1/2008	<2.0	1.1
	10/15/2008	<2.0	0.75
	4/16/2009	<2.0	0.65
122 W.Yearling	12/28/2007	<2.0	1.4
	4/1/2008	<2.0	1.2
	10/13/2008	<2.0	0.72
	4/16/2009	<2.0	0.67
	10/30/2009	<2.0	1.2
16 E Yearling	11/19/2004	<2.0	NA
	4/29/2005	<2.0	NA
	10/28/2005	<2.0	NA
	5/23/2006	<2.0	NA
	11/13/2006	<2.0	0.68
	10/16/2007	<2.0	0.64
	4/1/2008 *	<2.0	2.6
	4/1/2008	<2.0	2.9
	10/15/2008	<2.0	0.77
	4/17/2009	<2.0	0.63
	10/30/2009	<2.0	1.0
18 E.Yearling	10/27/2005	<2.0	NA
	5/23/2006	<2.0	NA
	11/14/2006	<2.0	0.94
	4/4/2007	<2.0	0.98
	10/16/2007	<2.0	0.77
	4/1/2008	<2.0	1.0
	10/15/2008	<2.0	1.1
	4/16/2009	<2.0	0.86
	10/30/2009	<2.0	1.1
204 E.Yearling	10/27/2005	<2.0	NA
	4/16/2009	<2.0	0.64
	10/30/2009	<2.0	1.3
218 E Yearling	11/19/2004	<2.0	NA
	10/28/2005	<2.0	NA
	5/23/2006	<2.0	NA
	11/14/2006	<2.0	0.68
	4/4/2007	<2.0	0.67
	10/16/2007	<2.0	NA
	4/1/2008	<2.0	1.3
	10/15/2008	<2.0	0.80
	10/15/2008 **	<2.0	0.73
	4/16/2009	<2.0	0.68
	10/30/2009	<2.0	1.2

Appendix F
Historic Private Well Water Qaulity Data

Sample ID	Date Collected	Perchlorate	
		EPA Method 314.0 (ug/L)	EPA Method 332.0 (ug/L)
25825 N 1st Place	11/17/2004	<2.0	NA
	4/28/2005	<2.0	NA
	10/28/2005	<2.0	NA
	5/23/2006	<2.0	NA
	11/14/2006	<2.0	1.0
	4/4/2007	<2.0	0.93
	10/16/2007	<2.0	0.89
	4/1/2008	<2.0	1.1
	10/15/2008	<2.0	0.97
	4/16/2009	<2.0	0.89
	10/30/2009	<2.0	1.2
25903 N 2nd St	11/19/2004	<2.0	NA
	10/28/2005	<2.0	NA
	5/23/2006	<2.0	NA
	11/14/2006	<2.0	0.78
	4/4/2007	<2.0	0.76
	4/1/2008	2.2	3.1
	10/15/2008	<2.0	0.84
	4/16/2009	<2.0	0.88
	10/30/2009	<2.0	1.3
412 E Yearling	11/19/2004	<2.0	NA
	4/29/2005	<2.0	NA
	10/28/2005	<2.0	NA
	5/23/2006	<2.0	NA
	4/1/2008	<2.0	2.1
	10/15/2008	<2.0	1.5
	4/16/2009	<2.0	1.1
	10/30/2009	<2.0	1.5
424 E Yearling	1/19/2008	<2.0	1.2
	4/1/2008	<2.0	2.2
	10/15/2008	<2.0	1.6
	4/16/2009	<2.0	1.2
	10/30/2009	<2.0	1.8
520 E Yearling	11/17/2004	<2.0	NA
	4/28/2005	<2.0	NA
	5/23/2006	<2.0	NA
	11/14/2006	<2.0	1.5
	4/4/2007	2.4	1.3
	10/16/2007	<2.0	1.4
	4/1/2008	<2.0	2.2
	10/15/2008	<2.0	1.3
	4/16/2009	<2.0	1.3
	10/30/2009	<2.0	1.9

Appendix F
Historic Private Well Water Qaulity Data

Sample ID	Date Collected	Perchlorate	
		EPA Method 314.0 (ug/L)	EPA Method 332.0 (ug/L)
604/616 E. Yearling	11/17/2004	<2.0	NA
	4/29/2005	<2.0	NA
	10/28/2005	<2.0	NA
	5/23/2006	<2.0	NA
	11/14/2006	<2.0	1.1
	4/6/2007	<2.0	1.2
	10/16/2007	<2.0	1.0
	4/1/2008	<2.0	1.5
	10/15/2008	<2.0	1.1
	4/16/2009	<2.0	0.98
	10/30/2009	<2.0	1.6
8 W. Yearling	12/28/2007	<2.0	1.2
	4/4/2008	<2.0	0.78
	10/15/2008	<2.0	1.1
	10/30/2009	<2.0	1.1

Notes:
ug/L = Micrograms per liter
< = Analyte not detected above the listed laboratory reporting limit
* = Well in front yard sampled for comparison purposes, labeled as 16 E. Yearling - N
** = Older well located in front yard of 218 E. Yearling that previously supplied both 204 E. Yearling and 218 E. Yearling residences before installation of new wells in back yards of both residences.
NA = Not analyzed

MALCOLM PIRNIE

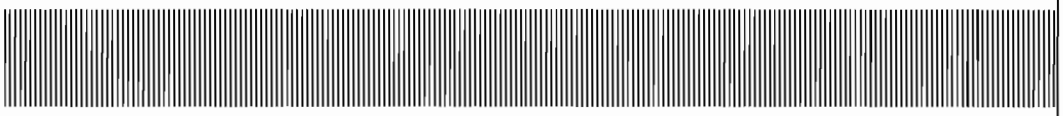
INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

G

APPENDIX

Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

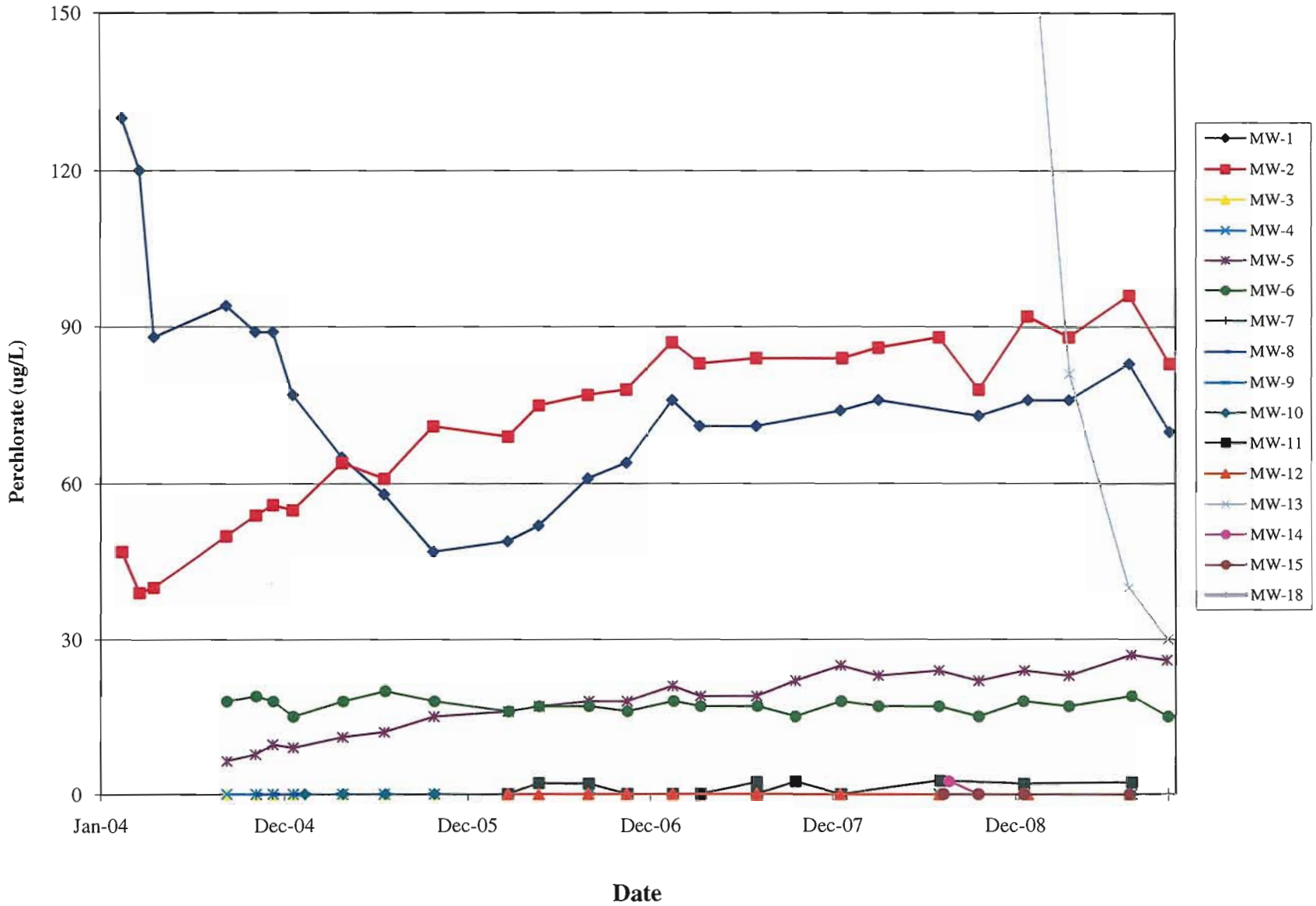
Appendix G
Historic Perchlorate Concentration Graph



3994-003

MALCOLM PIRNIE

Appendix G
Historic Monitor Well Perchlorate Concentration Graph



MALCOLM PIRNIE

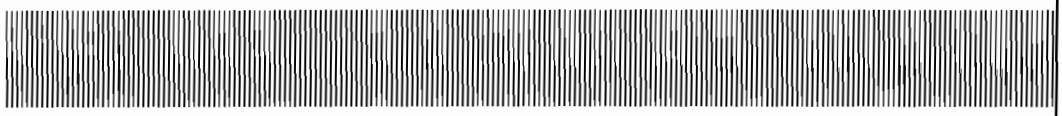
INDEPENDENT ENVIRONMENTAL
ENGINEERS, SCIENTISTS
AND CONSULTANTS

H

APPENDIX

Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix H
Summary of 2009 Field Data



3994-003

MALCOLM PIRNIE

Appendix H
2009 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time (HH:MM)	Temperature (°C)	Conductivity (µs/cm)	pH (SU)
First Quarter 2009	MW-1	1/23/2009	14	8:46	27.67	487	7.01
	MW-1	1/23/2009	39	8:50	27.64	482	7.32
	MW-1	1/23/2009	64	8:54	27.75	483	7.35
	MW-1	1/23/2009	91	8:58	27.77	484	7.36
	MW-1	1/23/2009	149	9:07	purge end time		
	MW-2	1/23/2009	0	10:05	26.68	473	7.33
	MW-2	1/23/2009	41	10:09	26.83	471	7.47
	MW-2	1/23/2009	83	10:13	27.63	474	7.49
	MW-2	1/23/2009	123	10:17	27.69	472	7.51
	MW-2	1/23/2009	174	10:22	purge end time		
	MW-3	1/13/2009	10	12:52	27.63	330	7.04
	MW-3	1/13/2009	30	12:56	28.70	338	6.93
	MW-3	1/13/2009	50	13:00	29.09	340	6.97
	MW-3	1/13/2009	70	13:04	29.10	339	6.90
	MW-4	1/13/2009	10	11:48	27.45	474	6.94
	MW-4	1/13/2009	20	11:53	28.86	476	6.94
	MW-4	1/13/2009	22	11:54	purge end time		
	MW-5	1/16/2009	6	7:57	26.03	445	6.92
	MW-5	1/16/2009	35	8:02	27.57	434	6.98
	MW-5	1/16/2009	64	8:07	27.66	422	6.97
	MW-5	1/16/2009	93	8:12	27.70	418	7.00
	MW-5	1/16/2009	122	8:17	27.84	416	7.02
	MW-5	1/16/2009	151	8:22	27.99	411	7.03
	MW-5	1/16/2009	226	8:35	purge end time		
	MW-6	1/13/2009	16	14:09	27.82	476	6.77
	MW-6	1/13/2009	32	14:13	28.56	479	6.60
	MW-6	1/13/2009	48	14:17	28.78	481	6.64
	MW-6	1/13/2009	52	14:18	purge end time		
	MW-7	1/15/2009	20	7:43	26.15	367	7.27
	MW-7	1/15/2009	52	7:48	26.81	366	7.40
	MW-7	1/15/2009	84	7:53	26.02	367	7.34
	MW-7	1/15/2009	117	7:58	27.02	368	7.31
	MW-7	1/15/2009	150	8:03	27.30	367	7.33
	MW-7	1/15/2009	182	8:08	27.35	369	7.32
	MW-7	1/15/2009	260	8:20	purge end time		
	MW-8	1/13/2009	21	8:36	25.79	241	7.48
	MW-8	1/13/2009	32	8:39	27.74	230	7.82
	MW-8	1/13/2009	42	8:42	28.01	228	8.02
	MW-8	1/13/2009	52	8:45	28.06	229	8.02
	MW-8	1/13/2009	63	8:48	27.45	234	7.95
	MW-8	1/13/2009	73	8:51	28.12	223	7.96
	MW-8	1/13/2009	87	8:55	28.56	234	8.01
	MW-8	1/13/2009	89	9:07	purge end time		
	MW-9	1/14/2009	18	8:03	26.04	475	7.36
	MW-9	1/14/2009	48	8:08	27.24	478	7.32
	MW-9	1/14/2009	78	8:13	27.37	476	7.26
	MW-9	1/14/2009	108	8:18	27.34	476	7.21
	MW-9	1/14/2009	138	8:23	27.35	472	7.22
	MW-9	1/14/2009	168	8:28	27.47	468	7.18
	MW-9	1/14/2009	198	8:33	27.39	465	7.08
	MW-9	1/14/2009	270	8:45	purge end time		

Appendix H
2009 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time (HH:MM)	Temperature (°C)	Conductivity (µs/cm)	pH (SU)
First Quarter 2009	MW-10	1/13/2009	10	10:14	27.36	405	7.03
	MW-10	1/13/2009	20	10:18	28.42	401	7.00
	MW-10	1/13/2009	32	10:23	28.55	401	6.95
	MW-10	1/13/2009	45	10:28	28.66	401	6.96
	MW-10	1/13/2009	58	10:33	purge end time		
	MW-11	1/15/2009	17	14:38	29.15	642	7.28
	MW-11	1/15/2009	52	14:44	28.86	644	6.92
	MW-11	1/15/2009	87	14:50	28.93	645	6.87
	MW-11	1/15/2009	122	14:56	29.02	646	6.87
	MW-11	1/15/2009	157	15:02	28.88	648	6.87
	MW-11	1/15/2009	191	15:08	28.69	649	6.86
	MW-11	1/15/2009	290	15:25	purge end time		
	MW-12	1/23/2009	25	8:45	28.10	506	7.35
	MW-12	1/23/2009	125	8:53	28.91	514	7.35
	MW-12	1/23/2009	250	9:03	29.34	509	7.37
	MW-12	1/23/2009	400	9:15	29.31	490	7.35
	MW-12	1/23/2009	525	9:25	29.37	483	7.35
	MW-12	1/23/2009	,588	9:30	purge stop		
	MW-12	1/23/2009	0	10:13	purge start		
	MW-12	1/23/2009	132	10:15	28.56	475	7.50
	MW-12	1/23/2009	288	10:28	29.45	479	7.38
	MW-12	1/23/2009	408	10:38	29.54	481	7.37
	MW-12	1/23/2009	552	10:50	purge end time		
	MW-13	1/16/2009	36	12:13	29.58	590	7.14
	MW-13	1/16/2009	90	12:18	29.42	584	6.89
	MW-13	1/16/2009	167	12:25	29.47	583	6.87
	MW-13	1/16/2009	272	12:35	29.56	573	6.87
	MW-13	1/16/2009	376	12:45	29.64	565	6.90
	MW-13	1/16/2009	519	12:59	29.61	545	6.92
	MW-13	1/16/2009	549	13:02	purge stop		
	MW-13	1/16/2009	0	13:39	purge start		
	MW-13	1/16/2009	12	13:40	31.09	549	7.10
	MW-13	1/16/2009	128	13:51	28.83	524	6.73
	MW-13	1/16/2009	222	14:00	29.88	526	6.76
	MW-13	1/16/2009	285	14:06	29.62	529	6.75
	MW-13	1/16/2009	506	14:27	purge end time		
	MW-14	1/15/2009	24	10:02	28.79	748	7.16
	MW-14	1/15/2009	144	10:12	29.14	748	7.18
	MW-14	1/15/2009	214	10:22	29.21	746	7.11
	MW-14	1/15/2009	249	10:32	29.49	743	7.10
	MW-14	1/15/2009	274	10:42	29.82	744	7.10
	MW-14	1/15/2009	292	10:52	30.32	744	7.09
	MW-14	1/15/2009	307	11:02	30.70	743	7.10
	MW-14	1/15/2009	313	11:07	purge stop		
	MW-14	1/16/2009	0	9:51	purge start		
	MW-14	1/16/2009	12	9:52	27.07	734	7.01
	MW-14	1/16/2009	36	9:54	29.10	737	6.99
	MW-14	1/16/2009	156	10:04	purge end time		

Appendix H
2009 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time (HH:MM)	Temperature (°C)	Conductivity (µs/cm)	pH (SU)
First Quarter 2009	MW-15	1/15/2009	12	12:42	28.48	525	7.22
	MW-15	1/15/2009	54	12:49	29.00	522	6.78
	MW-15	1/15/2009	96	12:56	28.91	519	6.78
	MW-15	1/15/2009	138	13:03	29.05	518	6.80
	MW-15	1/15/2009	180	13:10	29.14	517	6.82
	MW-15	1/15/2009	222	13:17	29.18	518	6.84
	MW-15	1/15/2009	324	13:34	purge end time		
Second Quarter 2009	MW-1	4/15/2009	1	10:20	27.88	486	7.20
	MW-1	4/15/2009	40	10:26	28.11	498	7.21
	MW-1	4/15/2009	73	10:31	28.18	500	7.21
	MW-1	4/15/2009	118	10:38	28.00	501	7.20
	MW-1	4/15/2009	164	10:45	purge end time		
	MW-2	4/15/2009	8	11:23	27.94	505	7.25
	MW-2	4/15/2009	44	11:27	28.01	501	7.24
	MW-2	4/15/2009	84	11:31	27.95	496	7.24
	MW-2	4/15/2009	194	11:42	purge end time		
	MW-5	4/15/2009	6	8:22	27.80	454	7.04
	MW-5	4/15/2009	32	8:27	28.55	451	7.19
	MW-5	4/15/2009	59	8:32	28.65	449	7.25
	MW-5	4/15/2009	97	8:39	28.60	444	7.30
	MW-5	4/15/2009	141	8:47	28.63	444	7.31
	MW-5	4/15/2009	168	8:52	28.66	442	7.31
	MW-5	4/15/2009	200	8:58	purge end time		
	MW-6	4/14/2009	8	7:54	26.24	436	7.05
	MW-6	4/14/2009	22	7:58	27.75	484	7.09
	MW-6	4/14/2009	39	8:03	28.39	474	7.15
	MW-6	4/14/2009	46	8:05	purge end time		
	MW-13	4/16/2009	12	7:44	28.73	638	7.05
	MW-13	4/16/2009	57	7:48	28.86	633	7.15
	MW-13	4/16/2009	90	7:51	29.27	636	7.21
	MW-13	4/16/2009	155	7:57	29.51	646	7.23
	MW-13	4/16/2009	220	8:03	29.55	641	7.25
	MW-13	4/16/2009	295	8:10	29.35	641	7.27
	MW-13	4/16/2009	403	8:20	29.41	642	7.27
	MW-13	4/16/2009	490	8:28	purge stop		
	MW-13	4/16/2009	0	9:09	purge start		
	MW-13	4/16/2009	0	9:09	29.30	624	7.24
	MW-13	4/16/2009	65	9:15	29.47	616	7.25
	MW-13	4/16/2009	119	9:20	29.52	610	7.27
	MW-13	4/16/2009	173	9:25	29.48	608	7.27
	MW-13	4/16/2009	227	9:30	29.56	610	7.27
	MW-13	4/16/2009	346	9:41	29.54	600	7.27
	MW-13	4/16/2009	464	9:52	purge end time		
Third Quarter 2009	MW-1	8/14/2009	11	11:07	23.57	464	7.07
	MW-1	8/14/2009	38	11:12	23.67	478	7.03
	MW-1	8/14/2009	66	11:17	23.66	484	7.01
	MW-1	8/14/2009	94	11:22	23.66	487	7.02
	MW-1	8/14/2009	121	11:27	23.67	488	7.01
	MW-1	8/14/2009	138	11:30	purge end time		
	MW-2	8/14/2009	0	13:05	24.26	512	7.08
	MW-2	8/14/2009	49	13:10	25.15	520	6.77
	MW-2	8/14/2009	88	13:14	25.59	521	6.79

Appendix H
2009 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time (HH:MM)	Temperature (°C)	Conductivity (µs/cm)	pH (SU)
Third Quarter 2009	MW-2	8/14/2009	107	13:16	23.87	500	6.88
	MW-2	8/14/2009	127	13:18	23.84	496	6.68
	MW-2	8/14/2009	146	13:20	23.99	496	6.64
	MW-2	8/14/2009	166	13:22	purge end time		
	MW-3	8/17/2009	10	9:29	23.70	366	7.00
	MW-3	8/17/2009	21	9:31	24.07	366	6.81
	MW-3	8/17/2009	32	9:33	24.19	367	6.82
	MW-3	8/17/2009	50	9:37	24.35	367	6.78
	MW-3	8/17/2009	70	9:41	24.36	373	dry
	MW-3	8/17/2009	75	9:42	purge end time		
	MW-4	8/17/2009	2	8:17	23.09	503	6.75
	MW-4	8/17/2009	9	8:21	22.61	493	6.63
	MW-4	8/17/2009	13	8:23	22.98	499	6.63
	MW-4	8/17/2009	17	8:25	23.44	510	6.68
	MW-4	8/17/2009	22	8:27	24.45	521	6.73
	MW-4	8/17/2009	27	8:30	25.23	529	6.78
	MW-4	8/17/2009	33	8:33	purge end time		
	MW-5	8/17/2009	29	15:26	24.05	452	7.50
	MW-5	8/17/2009	56	15:31	23.97	444	6.80
	MW-5	8/17/2009	85	15:36	23.99	441	6.76
	MW-5	8/17/2009	114	15:41	24.04	441	6.82
	MW-5	8/17/2009	143	15:46	24.03	439	6.84
	MW-5	8/17/2009	172	15:51	24.00	438	6.83
	MW-5	8/17/2009	195	15:55	purge end time		
	MW-6	8/17/2009	10	14:02	23.55	516	7.25
	MW-6	8/17/2009	18	14:04	23.55	514	6.60
	MW-6	8/17/2009	27	14:07	23.59	514	6.57
	MW-6	8/17/2009	41	14:10	23.67	503	6.51
	MW-6	8/17/2009	46	14:12	purge end time		
	MW-7	8/18/2009	11	11:13	23.25	397	7.11
	MW-7	8/18/2009	47	11:19	23.44	394	6.99
	MW-7	8/18/2009	80	11:24	23.46	395	7.09
	MW-7	8/18/2009	118	11:30	23.59	396	7.04
	MW-7	8/18/2009	151	11:35	23.55	396	7.09
	MW-7	8/18/2009	184	11:40	23.57	396	7.00
	MW-7	8/18/2009	217	11:45	purge end time		
	MW-8	8/17/2009	6	11:30	24.27	257	7.90
	MW-8	8/17/2009	15	11:33	24.58	254	7.26
	MW-8	8/17/2009	25	11:37	24.85	256	7.37
	MW-8	8/17/2009	42	11:44	25.06	257	7.65
	MW-8	8/17/2009	60	11:51	25.18	260	7.78
	MW-8	8/17/2009	74	11:56	25.33	263	7.89
	MW-8	8/17/2009	88	12:02	25.67	269	7.96
	MW-8	8/17/2009	135	12:20	purge end time		
	MW-9	8/18/2009	21	14:23	27.79	520	7.02
	MW-9	8/18/2009	45	14:27	23.79	514	6.81
	MW-9	8/18/2009	71	14:31	23.84	516	6.78
	MW-9	8/18/2009	94	14:35	23.89	513	6.73
	MW-9	8/18/2009	128	14:41	23.90	510	6.82
	MW-9	8/18/2009	153	14:45	23.83	506	6.81
	MW-9	8/18/2009	192	14:52	purge end time		
	MW-10	8/17/2009	7	10:25	23.66	428	7.16

Appendix H
2009 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time (HH:MM)	Temperature (°C)	Conductivity (µs/cm)	pH (SU)
Third Quarter 2009	MW-10	8/17/2009	12	10:27	23.83	430	6.47
	MW-10	8/17/2009	19	10:30	23.97	430	6.36
	MW-10	8/17/2009	30	10:35	24.19	435	6.52
	MW-10	8/17/2009	38	10:38	24.29	440	6.60
	MW-10	8/17/2009	45	10:41	24.40	434	6.70
	MW-10	8/17/2009	54	10:46	purge end time		
	MW-11	8/18/2009	22	9:28	24.00	687	7.11
	MW-11	8/18/2009	46	9:32	24.06	690	7.03
	MW-11	8/18/2009	77	9:37	24.17	694	7.00
	MW-11	8/18/2009	107	9:42	24.06	691	6.98
	MW-11	8/18/2009	159	9:50	24.12	692	6.95
	MW-11	8/18/2009	201	9:57	24.18	691	6.95
	MW-11	8/18/2009	267	10:08	purge end time		
	MW-12	8/14/2009	0	7:42	24.09	532	6.83
	MW-12	8/14/2009	112	7:52	24.66	539	6.86
	MW-12	8/14/2009	224	8:02	25.02	529	6.95
	MW-12	8/14/2009	336	8:12	25.10	514	6.99
	MW-12	8/14/2009	482	8:25	25.23	507	7.01
	MW-12	8/14/2009	549	8:31	purge stop		
	MW-12	8/14/2009	0	9:28	purge start		
	MW-12	8/14/2009	135	9:40	24.90	499	6.98
	MW-12	8/14/2009	248	9:50	25.04	500	7.00
	MW-12	8/14/2009	360	10:00	24.90	497	6.98
	MW-12	8/14/2009	450	10:08	purge end time		
	MW-13	8/13/2009	21	8:52	24.26	580	6.37
	MW-13	8/13/2009	73	8:57	24.15	576	6.86
	MW-13	8/13/2009	173	9:07	24.39	581	7.04
	MW-13	8/13/2009	272	9:17	24.46	584	7.10
	MW-13	8/13/2009	374	9:27	24.50	580	7.18
	MW-13	8/13/2009	474	9:37	24.50	573	7.17
	MW-13	8/13/2009	574	9:47	purge stop		
	MW-13	8/13/2009	0	10:36	purge start		
	MW-13	8/13/2009	116	10:47	24.54	559	7.21
	MW-13	8/13/2009	213	10:57	24.60	558	7.22
	MW-13	8/13/2009	312	11:07	24.62	558	7.22
	MW-13	8/13/2009	382	11:14	purge end time		
	MW-14	8/12/2009	10	15:19	25.17	825	6.47
	MW-14	8/12/2009	59	15:24	25.59	834	6.73
	MW-14	8/12/2009	100	15:29	25.60	831	6.86
	MW-14	8/12/2009	133	15:34	25.80	834	6.92
	MW-14	8/12/2009	158	15:39	26.06	843	6.98
	MW-14	8/12/2009	187	15:49	25.50	835	6.94
	MW-14	8/12/2009	206	15:59	25.87	838	7.00
	MW-14	8/12/2009	220	16:09	26.42	844	7.08
	MW-14	8/12/2009	238	16:24	27.10	850	7.13
	MW-14	8/12/2009	244	16:30	purge end time		
	MW-15	8/13/2009	10	13:18	23.32	550	7.32
	MW-15	8/13/2009	52	13:26	23.90	555	7.20
	MW-15	8/13/2009	94	13:34	23.98	558	7.16
	MW-15	8/13/2009	135	13:42	24.12	560	7.17
	MW-15	8/13/2009	177	13:50	24.10	559	7.18
	MW-15	8/13/2009	218	13:58	24.03	559	7.16
	MW-15	8/13/2009	291	14:12	purge end time		

Appendix H
2009 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time (HH:MM)	Temperature (°C)	Conductivity (µs/cm)	pH (SU)
Fourth Quarter 2009	MW-1	11/2/2009	11	9:47	22.59	437	6.99
	MW-1	11/2/2009	33	9:51	22.97	440	7.07
	MW-1	11/2/2009	55	9:55	23.06	442	7.08
	MW-1	11/2/2009	77	9:59	23.07	444	7.08
	MW-1	11/2/2009	99	10:03	23.09	449	7.10
	MW-1	11/2/2009	121	10:07	23.09	446	7.11
	MW-1	11/2/2009	165	10:15	purge end time		
	MW-2	11/2/2009	19	10:57	22.95	474	7.04
	MW-2	11/2/2009	66	11:02	22.96	466	7.05
	MW-2	11/2/2009	100	11:05	22.86	463	7.03
	MW-2	11/2/2009	119	11:07	22.88	463	7.04
	MW-2	11/2/2009	133	11:09	22.88	463	7.05
	MW-2	11/2/2009	190	11:15	purge end time		
	MW-5	10/28/2009	22	15:17	18.43	372	6.80
	MW-5	10/28/2009	39	15:20	22.65	415	6.91
	MW-5	10/28/2009	66	15:25	22.82	412	6.93
	MW-5	10/28/2009	99	15:31	22.83	410	6.93
	MW-5	10/28/2009	132	15:37	22.83	410	6.93
	MW-5	10/28/2009	165	15:43	22.76	410	6.93
	MW-5	10/28/2009	204	15:50	purge end time		
	MW-6	10/28/2009	5	13:51	21.35	466	6.14
	MW-6	10/28/2009	16	13:55	21.72	477	6.35
	MW-6	10/28/2009	26	13:59	22.61	484	6.47
	MW-6	10/28/2009	36	14:03	22.68	492	6.55
	MW-6	10/28/2009	42	14:05	purge end time		
	MW-13	10/29/2009	33	13:43	23.40	532	7.27
	MW-13	10/29/2009	143	13:53	23.67	536	7.10
	MW-13	10/29/2009	253	14:03	23.61	533	7.10
	MW-13	10/29/2009	363	14:13	23.65	535	7.09
	MW-13	10/29/2009	528	14:28	purge stop		
	MW-13	10/29/2009	187	14:45	purge start		
	MW-13	10/29/2009	264	14:52	23.51	522	7.12
	MW-13	10/29/2009	418	15:06	23.79	534	7.09
	MW-13	10/29/2009	627	15:25	purge end time		
	MW-18	10/29/2009	4	8:15	27.30	419	10.04
	MW-18	10/29/2009	7	8:20	27.20	413	9.85
	MW-18	10/29/2009	8	8:23	26.20	412	9.81
	MW-18	10/29/2009	10	8:26	25.80	412	9.80
	MW-18	10/29/2009	13	8:30	25.00	413	9.79
	MW-18	10/29/2009	19	8:41	26.80	410	9.75
	MW-18	10/29/2009	25	8:50	NM	NM	NM
	MW-18	10/29/2009	34	9:06	29.20	399	9.73
	MW-18	10/29/2009	40	9:16	27.70	407	9.67
	MW-18	10/29/2009	46	9:26	27.30	406	9.66
	MW-18	10/29/2009	53	9:38	27.70	407	9.63
	MW-18	10/29/2009	59	9:47	28.30	407	9.63
	MW-18	10/29/2009	65	9:57	29.30	416	9.67
	MW-18	10/29/2009	72	10:09	28.40	408	9.62
	MW-18	10/29/2009	77	10:18	29.80	407	9.58
	MW-18	10/29/2009	83	10:28	29.80	409	9.58
	MW-18	10/29/2009	89	10:38	29.20	412	9.60
	MW-18	10/29/2009	96	10:49	29.80	424	9.66
	MW-18	10/29/2009	102	10:59	29.90	428	9.64

Appendix H
2009 Field Data Summary

Quarter Sampled	Well ID	Date	Purge Volume (gallons)	Time (HH:MM)	Temperature (°C)	Conductivity (µs/cm)	pH (SU)
Fourth Quarter 2009	MW-18	10/29/2009	108	11:09	29.30	415	9.37
	MW-18	10/29/2009	114	11:19	29.20	429	9.15
	MW-18	10/29/2009	120	11:29	28.80	423	9.15
	MW-18	10/29/2009	126	11:39	28.70	401	9.20
	MW-18	10/29/2009	132	11:49	30.70	383	9.20
	MW-18	10/29/2009	138	11:59	29.80	366	9.14
	MW-18	10/29/2009	142	12:05	purge end time		

Notes:
HH:MM = Hour : Minute
°C = Degrees Celcius
us/cm - Microsiemen per centimeter
SU = Standard unit

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

I

APPENDIX

Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix I
2009 Data Verification Summaries

3994-003

MALCOLM PIRNIE

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY SITE MONITORING WELLS – JANUARY 2009

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the January 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic and Inorganic Data Review (USEPA, 1999 and 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of seventeen groundwater samples were collected and submitted to TestAmerica for the following parameters:

- metals by USEPA Methods 200.7, 200.8, and 245.1;
- alkalinity by Standard Method M 2320 B;
- anions (chloride, nitrate, nitrite, and sulfate) by Standard Method E300.0;
- total dissolved solids by Standard Method M 2540 C;
- perchlorate by USEPA Method 314.0; and
- volatile organic compounds (VOCs) by USEPA Method 8260B and 524.2.

Additionally, six field quality assurance samples (i.e., field duplicate and trip blanks) were collected and analyzed as part of the sampling program. Table A-1 lists the samples and associated analytical parameters.

2.0 DATA QUALITY ASSESMENT

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- Sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks and trip blanks);

- surrogate recovery (organic parameters);
- laboratory control samples (LCS) Recover and Relaive Percent Difference (RPD);
- Matrix Spike/Matrix Spike Duplicates (MS/MSD) Recovery and RPD;
- field duplicate; and
- other applicable QC parameters.

Results that required qualification based on the data verification are summarized in Table A-2.

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 S AMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples were received intact and at the correct temperature (4±2° Celsius) at the project laboratory except for the following:

- The samples collected on January 14, 15, and 16, 2009, were received intact at 1° Celsius, 1.8° Celsius, and 0.2° Celsius, respectively. These temperature outliers did not significantly impact sample results, so data qualification was not required.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified by the project laboratory. Target compounds were not detected in the blanks.

2.4.2 Trip Blank

Trip blanks were analyzed at the appropriate frequency. Target compounds were not detected in the trip blanks.

2.5 SURROGATES

Surrogates for all organic parameters were recovered within acceptance limits.

2.6 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits except for the following:

- For the analytical batch P9A1419, the LCS duplicate percent recovery exceeded the control limits for vinyl acetate. Data qualification was not required because the associated samples were not detected for this analyte.
- For the analytical batch P9A1540, the LCS duplicate percent recovery exceeded the control limits for vinyl acetate. Data qualification was not required because the associated samples were not detected for this analyte.
- For the analytical batch P9A2132, the RPD between the LCS and LCS duplicate recoveries exceeded the control limits for mercury. Data qualification was not required because the associated samples were not

detected for this analyte and the LCS and LCS duplicate percent recoveries were within acceptance limits.

2.7 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD were within acceptance limits except for the following:

- The MS/MSD percent recoveries associated with the analytical batch P9A1419 were outside of acceptance limits for vinyl acetate. Data qualification was not required because the spiked sample was not project-specific (i.e., batch QC).
- The MS/MSD percent recoveries associated with the analytical batch P9A1344 were outside of acceptance limits for calcium and sodium. Data qualification was not required because the spiked samples were not project-specific (i.e., batch QC).
- The MS/MSD percent recoveries and RPD between MS and MSD percent recoveries associated with the analytical batch P9A1347 were outside acceptance limits for silver. Data qualification was not required because the spiked samples were non project-specific (i.e., batch QC).
- The MS/MSD percent recoveries associated with the analytical batch P9A1545 were outside acceptance limits for silver. Samples MW-9, MW-8, MW-10, MW-4, and MW-6 were qualified "UJ" to indicate a potential low bias. MW-3 was spiked separately for this batch and the MS/MSD recoveries for this sample were within acceptance limits.

- The MS/MSD percent recoveries associated with the analytical batch P9A1634 were outside acceptance limits for calcium and sodium. Data qualification was not required because the spiked samples were non project-specific (i.e., batch QC).
- The MS/MSD percent recoveries associated with the analytical batch P9A1636 were outside acceptance limits for silver. Data qualification was not required because the spiked samples were non project-specific (i.e., batch QC).
- The MS/MSD percent recoveries associated with the analytical batch P9A1932 were outside acceptance limits for calcium and sodium. Calcium and sodium results for samples MW-14 and MW-13 were qualified "J" to indicate a potential bias.
- The MS/MSD percent recoveries associated with the analytical batch P9A1934 were outside acceptance limits for silver. Samples MW-5, MW-14, and MW-13 were qualified "UJ" to indicate a potential low bias.
- The MS prevent recovery associated with the analytical batch P9A2634 was outside acceptance limits for isopropylbenzene. Data qualification was not required because the spiked sample was not project-specific (i.e., batch QC).
- The MS/MSD percent recoveries associated with the analytical batch P9A2323 were outside acceptance limits for silver. Data qualification was not required because the spiked sample was non project-specific (i.e., batch QC).

2.8 DUPLICATES

2.8.1 Field Duplicates

One field duplicate was collected during this monitoring event and submitted for analysis. The RPD between the field duplicate and its associated samples were calculated and presented in Table A-3. Field duplicates were evaluated by the following criteria:

- If an analyte is detected at a concentration greater than five times the method reporting limit, the RPD should be less than 25 percent.
- If an analyte is detected between the sample and field duplicate less than five times the method reporting limit, the difference between the sample and the field duplicate should not exceed the method reporting limit.

The field duplicate met acceptance criteria.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS attained for the field samples was 99 percent (out of 1,332 total results, 12 required data qualification). The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table A-4. All of the results were considered usable for the intended purposes and the project DQOs have been met.

Table A-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
TB011209	PSA0574-01	1/12/2009	TB	VOCs, 1,4-Dioxane
POE	PSA0574-02	1/12/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
PW-1	PSA0574-03	1/12/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
TB011409	PSA0670-01	1/14/2009	TB	VOCs, 1,4-Dioxane
MW-9	PSA0670-02	1/14/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-8	PSA0670-03	1/14/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-10	PSA0670-04	1/14/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-4	PSA0670-05	1/14/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-3	PSA0670-06	1/14/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-6	PSA0670-07	1/14/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
TB011509	PSA0776-01	1/15/2009	TB	VOCs, 1,4-Dioxane
MW-7	PSA0776-02	1/15/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-15	PSA0776-03	1/15/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate, General Chemistry
MW-11	PSA0776-04	1/15/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
TB011609	PSA0837-01	1/16/2009	TB	VOCs, 1,4-Dioxane
MW-5	PSA0837-02	1/16/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-14	PSA0837-03	1/16/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate, General Chemistry
FD011609	PSA0837-04	1/16/2009	FD of MW-13	VOCs, 1,4-Dioxane, Metals, Perchlorate, General Chemistry
MW-13	PSA0837-05	1/16/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate, General Chemistry
MW-1	PSA1171-01	1/23/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-2	PSA1171-02	1/23/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-12	PSA1171-03	1/23/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
TB012309	PSA1171-04	1/23/2009	TB	VOCs

Notes:

Metals = arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

POE, PW-1, MW-13, MW-14, MW-15 and FD011609 were also analyzed for calcium, magnesium, potassium, and sodium.

VOCs = volatile organic compounds analyzed by USEPA Method 8260B; POE was analyzed by USEPA Method 524.2; TB011209 was analyzed by both methods.

Perchlorate = USEPA Method 314.0.

General Chemistry = alkalinity, chloride, nitrate, nitrite, sulfate, total dissolved solids

N = normal field sample

FD = field duplicate

TB = trip blank

Table A-2
Qualified Results

Sample ID	Analyte	Result	Units	Data Qualifier	Comments
MW-9	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries
MW-8	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries
MW-10	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries
MW-4	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries
MW-6	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries
MW-14	Calcium	63	mg/l	J	Qualified due to low MS/MSD recoveries
MW-14	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries
MW-14	Sodium	51	mg/l	J	Qualified due to low MS/MSD recoveries
MW-13	Calcium	33	mg/l	J	Qualified due to low MS/MSD recoveries
MW-13	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries
MW-13	Sodium	51	mg/l	J	Qualified due to low MS/MSD recoveries
MW-5	Silver	<0.0010	mg/l	UJ	Qualified due to low MS/MSD recoveries

Notes:
mg/L - milligrams per liter
J = estimated result
UJ = estimated reporting limit
MS/MSD = matrix spike / matrix spike duplicate
ND = analyte not detected

Table A-3
Field Duplicate Summary

Sample ID / Field Duplicate ID	Parameters	Sample Result	Field Duplicate Result	RPD (%)
MW-13/ FD011609	**Metals (mg/l)**			
	Arsenic	0.0042	0.0043	2.4
	Barium	0.070	0.071	1.4
	Cadmium	<0.0010	<0.0010	NC
	Calcium	33	33	<1.0
	Chromium	0.0012	0.0012	<1.0
	Lead	<0.0010	<0.0010	NC
	Magnesium	15	15	<1.0
	Mercury	<0.00020	<0.00020	NC
	Potassium	2.7	2.7	<1.0
	Selenium	<0.0020	<0.0020	NC
	Silver	<0.0010	<0.0010	NC
	Sodium	51	50	2.0
	Other Inorganics (ug/l)			
	Perchlorate	190	180	5.4
	Volatile Organic Compounds (ug/l)			
	1,4-Dioxane	<2.0	<2.0	NC
	All Other Analytes	ND	ND	NC
	General Chemistry (mg/l)			
	Alkalinity as CaCO3	230	220	4.4
	Bicarbonate Alkalinity as CaCO3	230	220	4.4
	Carbonate Alkalinity as CaCO3	<6.0	<6.0	NC
	Chloride	15	15	<1.0
	Hydroxide Alkalinity as CaCO3	<6.0	<6.0	NC
	Nitrate-N	1.2	1.2	<1.0
	Nitrite-N	<0.20	<0.20	NC
	Sulfate	20	20	<1.0
	Total Dissolved Solids	260	260	<1.0

Notes:

RPD = Relative percent difference; [(difference)/(average)]*100

ND = No analytes detected

NC = Not calculated

Field duplicate RPD acceptance limits is 25 percent for results greater than 5 times the reporting limit; for results less than 5 times the reporting limit, the difference between sample and field duplicate results should be less than the reporting limit

Table A-4
Completeness Summary

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Volatile Organic Compounds (8260)					
All Analytes	16	16	100	16	100
1,4-Dioxane	17	17	100	17	100
Volatile Organic Compounds (524.2)					
All Analytes	1	1	100	1	100
Metals					
Arsenic	17	17	100	17	100
Barium	17	17	100	17	100
Cadmium	17	17	100	17	100
Calcium	5	3[a]	60	5	100
Chromium	17	17	100	17	100
Lead	17	17	100	17	100
Magnesium	5	5	100	5	100
Mercury	17	17	100	17	100
Potassium	5	5	100	5	100
Selenium	17	17	100	17	100
Silver	17	9[a]	53	17	100
Sodium	5	3[a]	60	5	100
General Chemistry					
Alkalinity as CaCO3	3	3	100	3	100
Bicarbonate Alkalinity as CaCO3	3	3	100	3	100
Carbonate Alkalinity as CaCO3	3	3	100	3	100
Chloride	3	3	100	3	100
Hydroxide Alkalinity as CaCO3	3	3	100	3	100
Nitrate-N	3	3	100	3	100
Nitrite-N	3	3	100	3	100
Sulfate	3	3	100	3	100
Total Dissolved Solids	3	3	100	3	100
Other Inorganics					
Perchlorate	17	17	100	17	100

Notes:
Number of samples used in completeness calculations includes field samples but not field duplicates or trip blanks.
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

a = Qualified due to matrix spike/matrix spike duplicate outlier.

DATA VERIFICATION SUMMARY FOR PERCHLORATE COMPARISON GROUNDWATER MONITORING SAMPLES – JANUARY 2009

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the January 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Inorganic Data Review (USEPA, 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of ten groundwater samples were collected and submitted to TestAmerica for the following parameters:

- perchlorate by USEPA Method 332.0

Table B-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody;
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks);
- Laboratory Control Samples (LCS) Recovery and Relative Percent Difference (RPD);
- Matrix Spike/Matrix Spike Duplicates (MS/MSD) Recovery and RPD; and
- field duplicate.

Results did not require qualification based on the data verification.

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 S AMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples were received intact and at the correct temperature (4±2° Celsius) at the project laboratory except for the following:

- Two of the three coolers delivered to the laboratory on January 14, 2009 were received intact at 0.8° Celsius and 1.2° Celsius. These temperature outliers did not significantly impact sample results, so data qualification was not required.
- The cooler delivered to the laboratory on January 16, 2009 was received intact at 0.2° Celsius. This temperature outlier did not significantly impact sample results, so data qualification was not required.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified by the project laboratory. Target compounds were not detected in the blanks.

2.5 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits.

2.6 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD were within acceptance limits.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =

(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS attained for the field samples was 100 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table B-2. All of the results were considered usable for the intended purposes and the project DQOs have been met.

Table B-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
MW-9	PSA0671-01	1/14/2008	N	Perchlorate by USEPA Method 332.0
MW-8	PSA0672-01	1/14/2009	N	Perchlorate by USEPA Method 332.0
MW-10	PSA0673-01	1/14/2009	N	Perchlorate by USEPA Method 332.0
MW-4	PSA0674-01	1/14/2009	N	Perchlorate by USEPA Method 332.0
MW-3	PSA0675-01	1/14/2009	N	Perchlorate by USEPA Method 332.0
MW-7	PSA0777-01	1/15/2009	N	Perchlorate by USEPA Method 332.0
MW-15	PSA0778-01	1/15/2009	N	Perchlorate by USEPA Method 332.0
MW-11	PSA0779-01	1/15/2009	N	Perchlorate by USEPA Method 332.0
MW-14	PSA0843-01	1/16/2009	N	Perchlorate by USEPA Method 332.0
MW-12	PSA1174-01	1/23/2009	N	Perchlorate by USEPA Method 332.0

Notes:
N = normal field sample

Table B-2
Completeness Summary

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate 332.0	10	10	100	10	100

Notes:
Number of samples used in completeness calculations includes field samples and field duplicates, but not blanks.
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY SITE MONITORING WELLS – APRIL 2009

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the April 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic and Inorganic Data Review (USEPA, 1999 and 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of six groundwater samples were collected and submitted to TestAmerica for the following parameters:

- metals by USEPA Methods 200.7, 200.8, and 245.1;
- perchlorate by USEPA Method 314.0; and
- volatile organic compounds (VOCs) by USEPA Method 8260B.

Additionally, two field quality assurance samples (i.e., field duplicate and trip blank) were collected and analyzed as part of the sampling program. Table A-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks and trip blanks);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD);
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD.

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable.

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

The results associated with this sampling event required no data qualification.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples collected were received preserved and intact at the project laboratory. Samples were received at the correct temperature (4±2° Celsius) at the project laboratory.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified in the project laboratory's QAPP. Target compounds were not detected in method blanks.

2.4.2 Trip Blank

Trip blanks were analyzed at the appropriate frequency. Target compounds were not detected in the trip blanks.

2.5 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

LCS/LCSD percent recoveries and RPDs were within acceptance limits except for the following:

- For the analytical batch P9D2415, the LCS and LCS duplicate percent recoveries exceeded the control limits for vinyl acetate. Data qualification was not required because the associated samples were not detected for this analyte.

2.6 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If the MS or MSD recovery for an analyte was above acceptance limits but the analyte was not detected in the associated analytical batch, then data qualification was not required.
- If the MS or MSD recovery for an analyte was above acceptance limits and the analyte was detected in the associated analytical batch, then analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

MS/MSD percent recoveries and RPDs were within acceptance limits except for the following:

- The MS and MS duplicate percent recoveries associated with the analytical batch P9D2415 were outside of acceptance limits for vinyl acetate. Data qualification was not required because the spiked sample was not project-specific (i.e., batch QC).
- The MS duplicate percent recoveries associated with the analytical batch P9D0776 were outside of acceptance limits for mercury. Data qualification was not required because the spiked samples were not project-specific (i.e., batch QC).
- The MS and MS duplicate percent recoveries associated with the analytical batch P9D1645 were outside acceptance limits for silver. Data qualification was not required because the spiked samples were non project-specific (i.e., batch QC).
- The MS and MS duplicate percent recoveries associated with the analytical batch P9D1603 were outside acceptance limits for calcium and sodium. Data qualification was not required because the spiked samples were non project-specific (i.e., batch QC).

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations were used to calculate the two types of completeness:

$$\%\ \text{Contract Completeness} = \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}}\right) \times 100$$

$$\%\ \text{Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}}\right) \times 100$$

The overall contract completeness, which includes the evaluation of protocol and contract deviations, which includes the evaluation of the QC parameters listed in Section 2.0, was 100 percent. The technical completeness attained for this monitoring period was 100 percent. The completeness results are provided in Table A-3. The results for the performance monitoring events were considered usable for the intended purposes and the project DQOs have been met.

Table A-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
TB041509	PSD0912-01	4/15/2009	TB	VOCs, 1,4-Dioxane
FD041509	PSD0912-02	4/15/2009	FD of MW-1	Perchlorate
MW-6	PSD0912-03	4/15/2009	N	Perchlorate
MW-5	PSD0912-04	4/15/2009	N	Perchlorate
MW-1	PSD0912-05	4/15/2009	N	Perchlorate
MW-2	PSD0912-06	4/15/2009	N	Perchlorate
PW-1	PSD0912-07	4/15/2009	N	VOCs, 1,4-Dioxane, Metals, Perchlorate
MW-13	PSD1030-01	4/16/2009	N	Perchlorate

Notes:
Metals = arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, calcium, magnesium, potassium, and sodium.
VOCs = volatile organic compounds analyzed by USEPA Method 8260B
Perchlorate = USEPA Method 314.0.
N = normal field sample
FD = field duplicate
TB = trip blank

Table A-2
Field Duplicate Summary

Sample ID / Field Duplicate ID	Parameters	Sample Result	Field Duplicate Result	RPD (%)
MW-1/ FD041509	Inorganics (ug/l)			
	Perchlorate	76	75	1.3

Notes:
RPD = Relative percent difference; [(difference)/(average)]*100
ND = No analytes detected
NC = Not calculated
Field duplicate RPD acceptance limits is 25 percent for results greater than 5 times the reporting limit; for results less than 5 times the reporting limit, the difference between sample and field duplicate results should be less than the reporting limit

Table A-3
Completeness Summary

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Volatile Organic Compounds (8260)					
All Analytes	1	1	100	1	100
1,4-Dioxane	1	1	100	1	100
Metals					
Arsenic	1	1	100	1	100
Barium	1	1	100	1	100
Cadmium	1	1	100	1	100
Calcium	1	1	100	1	100
Chromium	1	1	100	1	100
Lead	1	1	100	1	100
Magnesium	1	1	100	1	100
Mercury	1	1	100	1	100
Potassium	1	1	100	1	100
Selenium	1	1	100	1	100
Silver	1	1	100	1	100
Sodium	1	1	100	1	100
Other Inorganics					
Perchlorate	6	6	100	6	100

Notes:
Number of samples used in completeness calculations includes field samples but not field duplicates or trip blanks.
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY SITE MONITORING WELLS – JULY/AUGUST 2009

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the July and August 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic and Inorganic Data Review (USEPA, 1999 and 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 20 groundwater samples were collected and submitted to TestAmerica for the following parameters:

- metals by USEPA Methods 200.7, 200.8, and 245.1;
- perchlorate by USEPA Method 314.0; and
- volatile organic compounds (VOCs) by USEPA Method 8260B.

Additionally, four field quality assurance samples (i.e., field duplicates and trip blanks) were collected and analyzed as part of the sampling program. Table A-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks and trip blanks);
- surrogate recovery (for organic parameters);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD);

- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD; and
- field duplicate.

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable.

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

The results associated with this sampling event required no data qualification.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples collected were received preserved and intact at the project laboratory. Samples were received at the correct temperature (4±2° Celsius) at the project laboratory with the following exceptions:

- Samples collected on August 14, 17, and 18, 2009, were received at 1.1, 1.6, and 0.9 degrees Celsius, respectively. These temperature outliers did not significantly impact the sample results; therefore, data qualification was not required.
- Samples collected on September 14, 2009 were received at 12.4 degrees Celsius. Samples were delivered less than two hours after collection; therefore, data qualification was not required.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified in the project laboratory's QAPP. Target compounds were not detected in method blanks.

2.4.2 Trip Blank

Trip blanks were analyzed at the appropriate frequency as specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004). Target compounds were not detected in the trip blanks.

2.5 SURROGATE RECOVERY

Surrogate recoveries for the organic analyses were within laboratory acceptance limits.

2.6 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

LCS/LCSD percent recoveries and RPDs were within acceptance limits except for the following:

- For the analytical batch P9G1704, the LCS and LCS duplicate percent recoveries exceeded the control limits for iodomethane. Data qualification was not required because the associated samples were not detected for this analyte.
- For the analytical batch P9G2041, the LCS and LCS duplicate percent recoveries exceeded the control limits for acetone, and the LCS percent recovery exceeded the control limit for 2-butanone. Data qualification was

not required because the associated samples were not detected for these analytes.

2.7 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If the MS or MSD recovery for an analyte was above acceptance limits but the analyte was not detected in the associated analytical batch, then data qualification was not required.
- If the MS or MSD recovery for an analyte was above acceptance limits and the analyte was detected in the associated analytical batch, then analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

MS/MSD percent recoveries and RPDs were within acceptance limits except for the following:

- The MS and MS duplicate percent recoveries associated with the analytical batch P9G1704 were outside of acceptance limits for several analytes. Data qualification was not required because the only associated sample was a trip blank.
- The MS and MS duplicate percent recoveries associated with the analytical batch P9G0639 were outside acceptance limits for sodium. Data qualification was not required because the spiked sample was non project-specific (i.e., batch QC).
- The MS and MS duplicate percent recoveries associated with the analytical batch P9G0732 were outside acceptance limits for silver. Data qualification was not required because the spiked samples were non project-specific (i.e., batch QC).

2.8 DUPLICATES

2.8.1 Field Duplicates

One field duplicate was collected during this monitoring event and submitted for analysis. The RPD between the field duplicate and its associated sample was calculated and presented in Table A-2. The field duplicate was evaluated by the following criteria:

- If an analyte is detected at a concentration greater than five times the method reporting limit, the RPD should be less than 25 percent.
- If an analyte is detected between the sample and field duplicate less than five times the method reporting limit, the difference between the sample and the field duplicate should not exceed the method reporting limit.

The field duplicate met acceptance criteria.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations were used to calculate the two types of completeness:

$$\%\ \text{Contract Completeness} = \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}}\right) \times 100$$

$$\%\ \text{Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}}\right) \times 100$$

The overall contract completeness, which includes the evaluation of protocol and contract deviations, which includes the evaluation of the QC parameters listed in Section 2.0, was 100 percent. The technical completeness attained for this monitoring period was 100 percent. The completeness results are provided in Table A-3. The results for the performance monitoring events were considered usable for the intended purposes and the project DQOs have been met.

Table A-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
PW-1	PSG0211-01	7/6/2009	N	Perchlorate, VOCs, 1,4-Dioxane, Metals
TB070609-A	PSG0211-02	7/6/2009	TB	VOCs
TB070609-B	PSG0211-03	7/6/2009	TB	1,4-Dioxane
MW-13	PSH0759-01	8/13/2009	N	Perchlorate
MW-15	PSH0759-02	8/13/2009	N	Perchlorate
MW-14	PSH0759-03	8/13/2009	N	Perchlorate
TB081409	PSH0843-01	8/14/2009	TB	VOCs, 1,4-Dioxane
FD081409	PSH0843-02	8/14/2009	FD of MW-2	Perchlorate, VOCs, 1,4-Dioxane
MW-12	PSH0843-03	8/14/2009	N	Perchlorate
MW-1	PSH0843-04	8/14/2009	N	Perchlorate, VOCs, 1,4-Dioxane
MW-2	PSH0843-05	8/14/2009	N	Perchlorate, VOCs, 1,4-Dioxane
MW-5	PSH0903-01	8/17/2009	N	Perchlorate
MW-4	PSH0987-01	8/18/2009	N	Perchlorate
MW-3	PSH0987-02	8/18/2009	N	Perchlorate
MW-10	PSH0987-03	8/18/2009	N	Perchlorate
MW-11	PSH0987-04	8/18/2009	N	Perchlorate
MW-7	PSH0987-05	8/18/2009	N	Perchlorate
MW-8	PSH0987-06	8/18/2009	N	Perchlorate, Metals
MW-6	PSH0987-07	8/18/2009	N	Perchlorate
MW-9	PSH0987-08	8/18/2009	N	Perchlorate
MW-18-195	PSI0277-01	9/3/2009	N	Perchlorate
MW-18-PT	PSI0716-01	9/14/2009	N	Perchlorate
MW-18-295	PSI0717-01	9/14/2009	N	Perchlorate
MW-18-390	PSI0888-01	9/16/2009	N	Perchlorate

Notes:

Metals = arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. In addition, calcium, magnesium, potassium, and sodium were analyed for PW-1.

VOCs = volatile organic compounds analyzed by USEPA Method 8260B; Sample POE was analyzed by USEPA Method 524.2.

N = normal field sample

TB = trip blank

Table A-2
Field Duplicate Summary

Sample ID / Field Duplicate ID	Parameters	Sample Result	Field Duplicate Result	RPD (%)
MW-2/ FD081409	Volatile Organic Compounds (ug/l)			
	1,4-Dioxane	2.7	2.8	3.6
	All Other Analytes	ND	ND	NC
	Other Inorganics (ug/l)			
	Perchlorate	95	96	1.0

Notes:

RPD = Relative percent difference; [(difference)/(average)]*100

ND = No analytes detected

NC = Not calculated

Field duplicate RPD acceptance limits is 25 percent for results greater than 5 times the reporting limit; for results less than 5 times the reporting limit, the difference between sample and field duplicate results should be less than the reporting limit

Table A-3
Completeness Summary

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate 314.0	20	20	100	20	100
Volatile Organic Compounds (8260)					
All analytes	3	3	100	3	100
1,4-Dioxane	3	3	100	3	100
Metals					
Arsenic	2	2	100	2	100
Barium	2	2	100	2	100
Cadmium	2	2	100	2	100
Calcium	1	1	100	1	100
Chromium	2	2	100	2	100
Lead	2	2	100	2	100
Magnesium	1	1	100	1	100
Mercury	2	2	100	2	100
Potassium	1	1	100	1	100
Selenium	2	2	100	2	100
Silver	2	2	100	2	100
Sodium	1	1	100	1	100

Notes:
Number of samples used in completeness calculations includes field samples, but not field duplicates or blanks.
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

DATA VERIFICATION SUMMARY FOR PERCHLORATE COMPARISON GROUNDWATER MONITORING SAMPLES – AUGUST 2009

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the August 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Inorganic Data Review (USEPA, 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 10 groundwater samples were collected and submitted to TestAmerica for the following parameters:

- perchlorate by USEPA Method 332.0.

Table B-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody
- sample preservation and Temperature Upon Laboratory Receipt;
- holding Times;
- method blanks;
- Laboratory Control Sample (LCS) Recovery;
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD; and
- other applicable QC parameters.

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable.

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

The results associated with this sampling event that required data qualification are provided in Table B-2.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples collected were received preserved and intact at the project laboratory. Samples were received at the correct temperature (4±2° Celsius) at the project laboratory except the following:

- Samples collected on August 18, 2009 were received at 0.1 degrees Celsius. The temperature outlier did not significantly impact the sample results; therefore, data qualification was not required.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limit set by the respective USEPA method.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified in the project laboratory's QAPP. Target compounds were not detected in method blanks.

2.5 LCS RECOVERY AND RPD

LCS percent recoveries were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

LCS percent recoveries were within acceptance limits.

2.6 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If the MS or MSD recovery for an analyte was above acceptance limits but the analyte was not detected in the associated analytical batch, then data qualification was not required.
- If the MS or MSD recovery for an analyte was above acceptance limits and the analyte was detected in the associated analytical batch, then analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

MS/MSD percent recoveries and RPDs were within acceptance limits.

2.7 OTHER APPLICABLE QC PARAMETERS

2.7.1 Internal Standard Recovery

The Internal Standard recovery was outside of method limits for the analytical batch PH24075, and matrix interference was confirmed. Associated samples were qualified "UJ" and "J" to indicate a potential bias.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations were used to calculate the two types of completeness:

$$\%\ \text{Contract Completeness} = \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}}\right) \times 100$$

$$\%\ \text{Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}}\right) \times 100$$

The overall contract completeness, which includes the evaluation of protocol and contract deviations, which includes the evaluation of the QC parameters listed in Section 2.0, was 0 percent. The technical completeness attained for this monitoring period was 100 percent. The completeness results are provided in Table B-3. The results for the performance monitoring events were considered usable for the intended purposes and the project DQOs have been met.

Table B-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
MW-14	PSH0760-01	8/13/2009	N	Perchlorate by USEPA Method 332.0
MW-15	PSH0761-01	8/13/2009	N	Perchlorate by USEPA Method 332.0
MW-12	PSH0845-01	8/14/2009	N	Perchlorate by USEPA Method 332.0
MW-9	PSH0988-01	8/18/2009	N	Perchlorate by USEPA Method 332.0
MW-8	PSH0989-01	8/18/2009	N	Perchlorate by USEPA Method 332.0
MW-7	PSH0990-01	8/18/2009	N	Perchlorate by USEPA Method 332.0
MW-3	PSH0991-01	8/18/2009	N	Perchlorate by USEPA Method 332.0
MW-4	PSH0992-01	8/18/2009	N	Perchlorate by USEPA Method 332.0
MW-10	PSH0993-01	8/18/2009	N	Perchlorate by USEPA Method 332.0
MW-11	PSH0994-01	8/18/2009	N	Perchlorate by USEPA Method 332.0

Notes:
N = normal field sample

Table B-2
Qualified Results

Sample ID	Analyte	Result	Units	Data Qualifier	Comments
MW-14	Perchlorate	1.1	ug/l	J	Qualified due to Internal Standard recovery outisde the method limits.
MW-15	Perchlorate	0.83	ug/l	J	Qualified due to Internal Standard recovery outisde the method limits.
MW-12	Perchlorate	0.78	ug/l	J	Qualified due to Internal Standard recovery outisde the method limits.
MW-9	Perchlorate	0.78	ug/l	J	Qualified due to Internal Standard recovery outisde the method limits.
MW-8	Perchlorate	1.0	ug/l	J	Qualified due to Internal Standard recovery outisde the method limits.
MW-7	Perchlorate	0.70	ug/l	J	Qualified due to Internal Standard recovery outisde the method limits.
MW-3	Perchlorate	0.64	ug/l	J	Qualified due to Internal Standard recovery outisde the method limits.
MW-4	Perchlorate	0.71	ug/l	J	Qualified due to Internal Standard recovery outisde the method limits.
MW-10	Perchlorate	0.93	ug/l	J	Qualified due to Internal Standard recovery outisde the method limits.
MW-11	Perchlorate	2.1	ug/l	J	Qualified due to Internal Standard recovery outisde the method limits.

Notes:
ug/L - micrograms per liter
J = estimated result

Table B-3
Completeness Summary

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate 332.0	11	0	0	11	100

Notes:
Number of samples used in completeness calculations includes field samples and field duplicates, but not blanks.
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY SITE MONITORING WELLS – OCTOBER/NOVEMBER 2009

1.0 INTRODUCTION

This summary presents data verification results for groundwater samples collected from Universal Propulsion Company, Inc. (UPCO) wells during the October and November 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic and Inorganic Data Review (USEPA, 1999 and 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 7 groundwater samples were collected and submitted to TestAmerica for the following parameters:

- perchlorate by USEPA Methods 314.0 and 332.0;
- metals by USEPA Methods 200.7, 200.8, and 245.1;
- volatile organic compounds (VOCs) by USEPA Method 8260B;
- alkalinity by Method M2320 B; and
- chloride and sulfate by USEPA Method 300.0.

Additionally, two field quality assurance samples (i.e., field duplicate and trip blank) were collected and analyzed as part of the sampling program. Table A-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks and trip blanks);
- surrogate recovery (for organic parameters);

- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD);
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD; and
- field duplicate.

Qualified results are summarized in Table A-2.

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J	The analyte was positively identified; however, the result should be considered an estimated value.
UJ	The reporting limit is considered an estimated value.
R	Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 S AMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples were received below the correct temperature (4±2° Celsius) at the project laboratory. Samples received by the laboratory on October 30, 2009 and November 2, 2009 had a temperature of 1.0° and 0.4° Celsius, respectively. These temperature outliers did not significantly impact sample results; therefore, data qualification was not required.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency. Target compounds were not detected in the method blanks.

2.4.2 Trip Blank

Trip blanks were analyzed at the appropriate frequency. Target compounds were not detected in the trip blank.

2.5 SURROGATE RECOVERY

Surrogates for all organic parameters were recovered within acceptance limits, with one exception. For sample PW-1, the surrogate recovery for toluene-d8 was below acceptance limits. The associated analytes were qualified "J" and "UJ" to indicate a potential low bias.

2.6 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits except for the following:

- The LCSD for analytical batch P9K0976 had high recovery for cis-1,3-dichloropropene (123 percent). Data qualification was not required because the analyte was not detected in the associated samples.

- The LCSD for analytical batch P9K0822 had high recovery for surrogate dibromofluoromethane (135 percent). Data qualification was not required because the LCS, MS, and MSD were all within control limits.

2.7 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD duplicate were within acceptance limits except for the following:

- The MS/MSD for analytical batch P9K0708 had low recoveries for 19 analytes and toluene-d8 surrogate (6 percent). Qualified data are provided in Table A-2.

- The MS/MSD for analytical batch P9K0263 had recoveries for calcium (-70 and -79 percent), magnesium (8 and 4 percent) and sodium (301 and 266 percent) that were outside acceptance limits. Data were qualified "J" for sample MW-18 for calcium and magnesium to indicate a potential low bias. Data qualification was not required for sodium because the result concentration was greater than four times the spiked concentration.

- The MS for analytical batch P9K0263 had low recovery for potassium (131 percent). Data qualification was not required because the MSD was within acceptance limits.

- The MS for analytical batch P9K0264 had low recovery (39 percent) and high RPD (56 percent) for silver. Data qualification was not required because the MSD was within acceptance limits.

2.8 DUPLICATES

2.8.1 Field Duplicates

One field duplicate was collected during each performance monitoring event and submitted for analysis. The RPDs between the field duplicate and its associated sample

were calculated and are presented in Table A-3. The field duplicates were evaluated by the following criteria:

- If an analyte is detected at a concentration greater than five times the method reporting limit, the RPD should be less than 25 percent.
- If an analyte is detected between the sample and field duplicate less than five times the method reporting limit, the difference between the sample and the field duplicate should not exceed the method reporting limit.

The field duplicate met acceptance criteria.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS/LCSD attained for the field samples was 82.4 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table A-4. All of the results were considered usable for the intended purposes and the project DQOs have been met.

Table A-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
MW-5	PSJ1782-01	10/28/2009	N	Perchlorate
MW-18	PSJ1782-02	10/30/2009	N	VOCs, Metals, Perchlorate, Inorganics
MW-13	PSJ1782-03	10/29/2009	N	Perchlorate
TB10309	PSJ1782-04	10/30/2009	TB	VOCs
FD102909	PSJ1782-05	10/29/2009	FD of MW-13	Perchlorate
MW-6	PSJ1782-06	10/30/2009	N	Perchlorate
PW-1	PSJ1782-07	10/30/2009	N	VOCs, Metals, Perchlorate
MW-1	PSK0024-01	11/2/2009	N	Perchlorate
MW-2	PSK0024-02	11/2/2009	N	Perchlorate

Notes:

N = normal field sample

FD = field duplicate

TB = trip blank

Inorganics = alkalinity, chloride, sulfate

Metals = arsenic, barium, cadmium, calcium, chromium, lead, magnesium, mercury, potassium, selenium, silver, sodium

VOCs = volatile organic compounds, including 1,4-dioxane, by EPA Method 8260B.

Perchlorate = EPA Method 314.0. MW-18 was also analyzed by EPA Method 332.0.

Table A-2
Qualified Results

Sample ID	Analyte	Result	Units	Data Qualifier	Comments
MW-18	Calcium	25	mg/l	J	Qualified due to low MS/MSD recovery
MW-18	Magnesium	12	mg/l	J	Qualified due to low MS/MSD recovery
PW-1	Bromoform	1.3	ug/l	J	Qualified due to low surrogate recovery
PW-1	n-Butylbenzene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	sec-Butylbenzene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	tert-Butylbenzene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	1,1-Dichloroethene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	1,1-Dichloropropene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	cis-1,3-dichloropropene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	trans-1,3-dichloropropene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Ethylbenzene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Iodomethane	<2.5	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Isopropylbenzene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	p-Isopropyltoluene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Naphthalene	<2.5	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	n-Propylbenzene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Styrene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Toluene	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	1,2,4-Trimethylbenzne	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	1,3,5-Trimethylbenzne	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Vinyl acetate	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	Vinyl chloride	<0.50	ug/l	UJ	Qualified due to low surrogate recovery and low MS/MSD recovery
PW-1	All other analytes[a]	ND	ug/l	UJ	Qualified due to low surrogate recovery

Notes:
ug/l = microgram per liter
J = Estimated result
UJ = Estimated detection limit
MS/MSD = Matrix spike/matrix spike duplicate samples
[a] Does not include acetone and total xylenes

Table A-3
Field Duplicate Summary

Sample ID / Field Duplicate ID	Parameters	Sample Result	Field Duplicate Result	RPD (%)
MW-13 / FD102908	**Inorganics (ug/l)**			
	Perchlorate by EPA 314.0	30	25	18.2

Notes:
RPD = Relative percent difference; [(difference)/(average)]*100

Table A-4
Completeness Summary

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate (Method 314.0)	7	7	100	7	100
Perchlorate (Method 332.0)	1	1	100	1	100
All other analytes	3	3	100	3	100
Volatile Organic Compounds (8260)					
1,1-Dichloroethene	2	1[a]	50	2	100
1,1-Dichloropropene	2	1[a,b]	50	2	100
1,2,4-Trimethylbenzne	2	1[a,b]	50	2	100
1,3,5-Trimethylbenzne	2	1[a,b]	50	2	100
1,4-Dioxane	2	2	100	2	100
Bromoform	2	1[a,b]	50	2	100
cis-1,3-dichloropropene	2	1[a,b]	50	2	100
Ethylbenzene	2	1[a,b]	50	2	100
Iodomethane	2	1[a,b]	50	2	100
Isopropylbenzene	2	1[a,b]	50	2	100
Naphthalene	2	1[a,b]	50	2	100
n-Butylbenzene	2	1[a,b]	50	2	100
n-Propylbenzene	2	1[a,b]	50	2	100
p-Isopropyltoluene	2	1[a,b]	50	2	100
sec-Butylbenzene	2	1[a,b]	50	2	100
Styrene	2	1[a,b]	50	2	100
tert-Butylbenzene	2	1[a,b]	50	2	100
Toluene	2	1[a,b]	50	2	100
trans-1,3-dichloropropene	2	1[a,b]	50	2	100
Vinyl acetate	2	1[a,b]	50	2	100
Vinyl chloride	2	1[a,b]	50	2	100
All other analytes	46	46	100	46	100
Metals					
Calcium	2	1[b]	50	2	100
Magnesium	2	1[b]	50	2	100
All other analytes	22	22	100	22	100
TOTAL	**125**	**103**	**82.4**	**125**	**100**

Notes:
Number of samples used in completeness calculations includes field samples, but not field duplicates or blanks.
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

[a] Qualified due to low surrogate recovery.
[b] Qualified due to low MS/MSD recovery

DATA VERIFICATION SUMMARY FOR SOIL-VAPOR MONITOR WELL SAMPLES – JANUARY 2009

1.0 INTRODUCTION

This summary presents data verification results for soil-gas samples collected from the soil-vapor monitoring well at Universal Propulsion Company, Inc. (UPCO) during the January 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic Data Review (USEPA, 1999), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 4 samples were collected and submitted to TestAmerica for the following parameters:

- volatile organic compounds (VOCs) by USEPA Method TO-15

Table C-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks); and
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD).

Results did not require qualification based on the data verification.

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

2.1 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples were received intact and at the correct temperature (ambient) at the project laboratory.

2.2 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.3 BLANK CONTAMINATION

Method blanks were performed at the required frequencies. Target compounds were not detected in the blanks.

2.4 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits with the following exceptions:

- The LCS duplicate for analytical batch P9A2115 had high recovery for benzyl chloride. Data qualification was not required because the associated samples were not detected for this analyte.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, and LCS/LCSD attained for the field samples was 100 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table C-2. All of the results were considered usable for the intended purposes and the project DQOs have been met.

Table C-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
SVMW-1-30-40	PSA0871-01	1/19/2009	N	VOCs
SVMW-1-90-100	PSA0871-02	1/19/2009	N	VOCs
SVMW-1-140-150	PSA0871-03	1/19/2009	N	VOCs
SVMW-1-190-200	PSA0871-04	1/19/2009	N	VOCs

Table C-2
Completeness Summary

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Volatile Organic Compounds by EPA Method TO-15					
All analytes	4	4	100	4	100

Notes:
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

DATA VERIFICATION SUMMARY FOR SOIL-VAPOR MONITOR WELL SAMPLES – APRIL 2009

1.0 INTRODUCTION

This summary presents data verification results for soil-gas samples collected from the soil-vapor monitoring well at Universal Propulsion Company, Inc. (UPCO) during the April 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic Data Review (USEPA, 1999), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of four samples were collected and submitted to TestAmerica for the following parameters:

- volatile organic compounds (VOCs) by USEPA Method TO-15

Table C-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD).

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable.

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

The results associated with this sampling event required no data qualification.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples collected were received preserved and intact at the project laboratory. Samples were received at the correct temperature (ambient) at the project laboratory.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified in the project laboratory's QAPP. Target compounds were not detected in method blanks.

2.5 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

LCS/LCSD percent recoveries and RPDs were within acceptance limits.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations were used to calculate the two types of completeness:

$$\%\ \text{Contract Completeness} = \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}}\right) \times 100$$

$$\%\ \text{Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}}\right) \times 100$$

The overall contract completeness, which includes the evaluation of protocol and contract deviations, which includes the evaluation of the QC parameters listed in Section 2.0, was 100 percent. The technical completeness attained for this monitoring period was 100 percent. The completeness results are provided in Table C-2. The results for the performance monitoring events were considered usable for the intended purposes and the project DQOs have been met.

Table C-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
SVMW-1-30-40	PSD0832-01	4/14/2009	N	VOCs
SVMW-1-90-100	PSD0832-02	4/14/2009	N	VOCs
SVMW-1-140-150	PSD0832-03	4/14/2009	N	VOCs
SVMW-1-190-200	PSD0832-04	4/14/2009	N	VOCs

Table C-2
Completeness Summary

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Volatile Organic Compounds by EPA Method TO-15					
All analytes	4	4	100	4	100

Notes:
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

DATA VERIFICATION SUMMARY FOR SOIL-VAPOR MONITOR WELL SAMPLES – AUGUST 2009

1.0 INTRODUCTION

This summary presents data verification results for soil-gas samples collected from the soil-vapor monitoring well at Universal Propulsion Company, Inc. (UPCO) during the August 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic Data Review (USEPA, 1999), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of four soil-gas samples were collected during the monitoring event and submitted to TestAmerica for the following parameters:

- volatile organic compounds (VOCs) by USEPA Method TO15.

Table C-1 presents a summary of the sample identifications, laboratory sample identifications, and requested analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks, common laboratory contaminants);
- Surrogate Recovery (for organic parameters);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD); and
- other applicable QC parameters.

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable.

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

Results from this monitoring/investigation event that required data qualification are provided in Table C-2.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples collected were received preserved and intact at the respective project laboratory. The samples were received by the laboratory at the correct temperature (20 degress Celsius).

2.3 HOLDING TIMES

All samples were analyzed within the method-specific holding time limits.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified in the project laboratory's QAPP. Target compounds were not detected in the method blanks.

2.4.2 Common Laboratory Contaminants

Per USEPA guidelines, common laboratory contaminants for VOC analysis are acetone, 2-butanone (MEK), cyclohexane, and methylene chloride. Analytical results are qualified if the detected sample concentration is less than 10 times the method reporting limit. Common lab contaminant compounds were detected in the samples and were qualified "J" to indicate a potential bias.

2.5 SURROGATE RECOVERY

Surrogate recoveries for the organic analyses were within laboratory acceptance limits.

2.6 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

LCS/LCSD percent recoveries and RPDs were within acceptance limits except for the following:

- The LCS and LCSD recoveries for 1,2,4-trichlorobenzene (138/150 percent) were above acceptance limits (65 to 135 percent) for the analytical batch P9I1029. Data qualification was not required because the associated samples were not detected for this analyte.
- The LCS and LCSD recoveries for 1,2,4-trichlorobenzene (156/161 percent) were above acceptance limits (65 to 135 percent) for the analytical batch P9I1102. Data qualification was not required because the associated samples were not detected for this analyte.
- The LCS recovery for 1,2,4-trimethylbenzene (136 percent) was above acceptance limits (65 to 135 percent) for the analytical batch P9I1102. Data qualification was not required because the LCSD recovery was within acceptance limits and the LCS recovery was barely outside acceptance limits.
- The LCS/LCSD RPD for 2-propanol (32 percent) was above its acceptance limit (25 percent) for analytical batch P9I1405. Data qualification was not required because the LCS/LCSD recoveries were within acceptance limits and the associated samples were not detected for this analyte.

2.7 OTHER APPLICABLE QC PARAMETERS

2.7.1 Calibration Verification Recovery

The calibration verification recovery was above the method control limit for 1,2,4-trichlorobenzene and 1,2,4-trimethylbenzene. Data qualification was not required because the analytes were not detected and data was not impacted.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations were used to calculate the two types of completeness:

$$\%\ \text{Contract Completeness} = \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}}\right) \times 100$$

$$\%\ \text{Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}}\right) \times 100$$

The overall contract completeness, which includes the evaluation of protocol and contract deviations, which includes the evaluation of the QC parameters listed in Section 2.0, was 97 percent (8 out of a total 248 results required qualification). The technical completeness attained for this monitoring period was 100 percent. The completeness results are provided in Table C-3. The results for the performance monitoring events were considered usable for the intended purposes and the project DQOs have been met.

Table C-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
SVMW-1-90-100	PSH1061-01	8/19/2009	N	VOCs
SVMW-1-140-150	PSH1061-02	8/19/2009	N	VOCs
SVMW-1-190-200	PSH1061-03	8/19/2009	N	VOCs
SVMW-1-30-40	PSH1061-04	8/19/2009	N	VOCs

Table C-2
Qualified Results

Sample ID	Analyte	Result	Units	Data Qualifier	Comments
SVMW-1-90-100	Acetone	240	ppbv	J	Qualified due to common laboratory contaminant
SVMW-1-90-100	2-Butanone	35	ppbv	J	Qualified due to common laboratory contaminant
SVMW-1-90-100	Methylene Chloride	3.7	ppbv	J	Qualified due to common laboratory contaminant
SVMW-1-140-150	Acetone	390	ppbv	J	Qualified due to common laboratory contaminant
SVMW-1-140-150	2-Butanone	29	ppbv	J	Qualified due to common laboratory contaminant
SVMW-1-190-200	Cyclohexane	0.76	ppbv	J	Qualified due to common laboratory contaminant
SVMW-1-30-40	Acetone	610	ppbv	J	Qualified due to common laboratory contaminant
SVMW-1-30-40	Methylene Chloride	3.2	ppbv	J	Qualified due to common laboratory contaminant

Notes:
ppbv = parts per billion by volume
J = estimated result

Table C-3
Completeness Summary

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Volatile Organic Compounds by EPA Method TO-15					
Acetone	4	1[a]	100	4	100
2-Butanone	4	2[a]	100	4	100
Cyclohexane	4	3[a]	100	4	100
Methylene Chloride	4	2[a]	100	4	100
All analytes	4	4	100	4	100

Notes:
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

a = Qualified due to common laboratory contaminant

DATA VERIFICATION SUMMARY FOR SOIL-VAPOR MONITOR WELL SAMPLES – OCTOBER 2009

1.0 INTRODUCTION

This summary presents data verification results for soil-gas samples collected from the soil-vapor monitoring well at Universal Propulsion Company, Inc. (UPCO) during the October 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Organic Data Review (USEPA, 1999), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 4 samples were collected and submitted to TestAmerica for the following parameters:

- volatile organic compounds (VOCs) by USEPA Method TO-15

Table C-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks, common laboratory contaminants); and
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD).

Qualified results are summarized in Table C-2.

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples were received intact and at the correct temperature (ambient) at the project laboratory.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blanks

Method blanks were performed at the required frequencies. Target compounds were not detected in the blanks.

2.4.2 Common Laboratory Contaminants

Per USEPA guidelines, common laboratory contaminants for VOC analysis are acetone, 2-butanone (MEK), cyclohexane, and methylene chloride. Analytical results are qualified if the detected sample concentration is less than 10 times the method reporting limit. Common lab contaminant compounds were not detected in the samples associated with the monitoring events except for the following:

- Acetone was detected in samples SVMW-1-30-40, SVMW-1-140-150, and SVMW-1-190-200 collected October 27, 2009. Data were qualified "J" to indicate a potential bias.
- Methylene chloride was detected in samples SVMW-1-30-40 and SVMW-1-90-100 collected October 27, 2009. Data were qualified "J" to indicate a potential bias.

2.5 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicates were within acceptance limits.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)
x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, and LCS/LCSD attained for the field samples was 100 percent. The technical completeness, which included all QC parameters, attained for the field samples was 98 percent. The completeness results are provided in Table C-3. All of the results were considered usable for the intended purposes and the project DQOs have been met.

Table C-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
SVMW-1-30-40	PSJ1585-01	10/27/2009	N	VOCs
SVMW-1-90-100	PSJ1585-02	10/27/2009	N	VOCs
SVMW-1-140-150	PSJ1585-03	10/27/2009	N	VOCs
SVMW-1-190-200	PSJ1585-04	10/27/2009	N	VOCs

Notes:
N = Normal sample
VOCs = volatile organic compounds, analyzed by USEPA Method TO-15

Table C-2
Qualified Results

Sample ID	Analyte	Result	Units	Data Qualifier	Comments
SVMW-1-30-40	Acetone	1500	ug/m^3	J	Qualified due to presence of common laboratory contaminant
SVMW-1-30-40	Methylene chloride	270	ug/m^3	J	Qualified due to presence of common laboratory contaminant
SVMW-1-90-100	Methylene chloride	660	ug/m^3	J	Qualified due to presence of common laboratory contaminant
SVMW-1-140-150	Acetone	1400	ug/m^3	J	Qualified due to presence of common laboratory contaminant
SVMW-1-190-200	Acetone	360	ug/m^3	J	Qualified due to presence of common laboratory contaminant

Notes:
ug/m3 = microgram per cubic meter
J = Estimated result

Table C-3
Completeness Summary

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Volatile Organic Compounds by EPA Method TO-15					
Acetone	4	1[a]	25	4	100
Methylene chloride	4	2[a]	50	4	100
All other analytes	240	240	100.0	240	100
TOTAL	**248**	**243**	**98.0**	**248**	**100**

Notes:
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100
[a] Qualified due to presence of common laboratory contaminant.

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY PRIVATE WELLS – APRIL 2009

1.0 INTRODUCTION

This summary presents data verification results for private residential wells adjacent to Universal Propulsion Company, Inc. (UPCO) during the April 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Inorganic Data Review (USEPA, 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 12 groundwater samples were collected and submitted to TestAmerica for the following parameters:

- perchlorate by USEPA Method 314.0; and
- perchlorate by USEPA Method 332.0.

Table B-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD); and
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD.

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable.

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

The results associated with this sampling event required no data qualification.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples collected were received preserved and intact at the project laboratory. Samples were received at the correct temperature (4±2° Celsius) at the project laboratory except for the following:

- Two coolers containing multiple samples were received intact at 0.2° Celsius and 1.0° Celsius. These temperature outliers did not significantly impact sample results and data qualification was not required.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified in the project laboratory's QAPP. Target compounds were not detected in method blanks.

2.5 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".
- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

LCS/LCSD percent recoveries and RPDs were within acceptance limits.

2.6 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If the MS or MSD recovery for an analyte was above acceptance limits but the analyte was not detected in the associated analytical batch, then data qualification was not required.
- If the MS or MSD recovery for an analyte was above acceptance limits and the analyte was detected in the associated analytical batch, then analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

MS/MSD percent recoveries and RPDs were within acceptance limits.

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations were used to calculate the two types of completeness:

$$\%\ \text{Contract Completeness} = \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}}\right) \times 100$$

$$\% \text{ Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}}\right) \times 100$$

The overall contract completeness, which includes the evaluation of protocol and contract deviations, which includes the evaluation of the QC parameters listed in Section 2.0, was 100 percent. The technical completeness attained for this monitoring period was 100 percent. The completeness results are provided in Table B-2. The results for the performance monitoring events were considered usable for the intended purposes and the project DQOs have been met.

Table B-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
122 W Yearling	PSD1036-01	4/16/2009	N	Perchlorate[1]
	PSD1015-01	4/16/2009	N	Perchlorate[2]
106 W Yearling	PSD1025-01	4/16/2009	N	Perchlorate[1]
	PSD1014-01	4/16/2009	N	Perchlorate[2]
18 E Yearling	PSD1035-01	4/16/2009	N	Perchlorate[1]
	PSD1024-01	4/16/2009	N	Perchlorate[2]
204 E Yearling	PSD1026-01	4/16/2009	N	Perchlorate[1]
	PSD1023-01	4/16/2009	N	Perchlorate[2]
218 E Yearling	PSD1027-01	4/16/2009	N	Perchlorate[1]
	PSD1022-01	4/16/2009	N	Perchlorate[2]
25825 N 1st Place	PSD1031-01	4/16/2009	N	Perchlorate[1]
	PSD1017-01	4/16/2009	N	Perchlorate[2]
25903 N 2nd St	PSD1033-01	4/16/2009	N	Perchlorate[1]
	PSD1019-01	4/16/2009	N	Perchlorate[2]
412 E Yearling	PSD1028-01	4/16/2009	N	Perchlorate[1]
	PSD1021-01	4/16/2009	N	Perchlorate[2]
520 E Yearling	PSD1029-01	4/16/2009	N	Perchlorate[1]
	PSD1016-01	4/16/2009	N	Perchlorate[2]
616/604 E Yearling	PSD1034-01	4/16/2009	N	Perchlorate[1]
	PSD1020-01	4/16/2009	N	Perchlorate[2]
424 E Yearling	PSD1032-01	4/16/2009	N	Perchlorate[1]
	PSD1018-01	4/16/2009	N	Perchlorate[2]
16 E Yearling	PSD1070-01	4/17/2009	N	Perchlorate[1]
	PSD1068-01	4/17/2009	N	Perchlorate[2]

Notes:

[1] Perchlorate by USEPA Method 314.0

[2] Perchlorate by USEPA Method 332.0

N = normal field sample

Table B-2
Completeness Summary

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Perchlorate (USEPA Method 314.0)					
Perchlorate	12	12	100	12	100
Perchlorate (USEPA Method 332.0)					
Perchlorate	12	12	100	12	100

Notes:
Number of samples used in completeness calculations includes field samples but not field duplicates or trip blanks.
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

GROUNDWATER MONITORING DATA VERIFICATION SUMMARY PRIVATE WELLS – OCTOBER 2009

1.0 INTRODUCTION

This summary presents data verification results for private residential wells adjacent to Universal Propulsion Company, Inc. (UPCO) during the October 2009 monitoring event. The data review was performed in accordance with the procedures specified in the Remedial Investigation Workplan Vol. II Quality Assurance Project Plan (QAPP) (Hargis+Associates, Inc. 2004), USEPA Functional Guidelines for Inorganic Data Review (USEPA, 2002), and quality assurance and control parameters set by the project laboratory (TestAmerica).

A total of 12 groundwater samples were collected and submitted to TestAmerica for the following parameters:

- perchlorate by USEPA Method 314.0; and
- perchlorate by USEPA Method 332.0

Table B-1 lists the samples and associated analytical parameters.

2.0 QUALITY CONTROL PARAMETERS REVIEWED

Sample results were subject to a Level III data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody (CoC);
- sample preservation and temperature upon laboratory receipt;
- holding times;
- blank contamination (method blanks);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD); and
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD.

Results did not require qualification based on the data verification.

The data qualifiers used to qualify analytical results associated with QC parameters outside data quality objectives are defined below:

J The analyte was positively identified; however, the result should be considered an estimated value.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable

Results qualified as "J" or UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per USEPA guidelines. The results associated with this sampling event required no data qualification.

2.1 CHAIN-OF-CUSTODY

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 SAMPLE PRESERVATION AND TEMPERATURE UPON LABORATORY RECEIPT

Samples were received below the correct temperature (4±2° Celsius) at the project laboratory. Samples received by the laboratory on October 30, 2009 had a temperature of 1.0° Celsius. These temperature outliers did not significantly impact sample results; therefore, data qualification was not required.

2.3 HOLDING TIMES

Samples were extracted and analyzed within the holding time limits set by the respective USEPA methods.

2.4 BLANK CONTAMINATION

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency as specified by the project laboratory. Target compounds were not detected in the method blanks.

2.5 LCS RECOVERY AND RPD

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for LCS or LCS duplicate but the analyte was not detected in the associated batch, then data qualification was not required.
- If the analyte recovery was above acceptance limits for LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J".

- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J" for detected results).
- If the analyte recovery was less than 10 percent, the analyte results in the associated analytical batch were rejected and qualified "R".

Percent recoveries and RPDs for the LCS/LCS duplicate were within acceptance limits.

2.6 MS/MSD RECOVERY AND RPD

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If MS or MSD recovery for an analyte is above acceptance limits but the analyte is not detected in the associated analytical batch, then data qualification was not required.
- If MS or MSD recovery for an analyte is above acceptance limits and the analyte is detected in the associated analytical batch, the analyte results were qualified "J".
- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.
- Low MS/MSD recoveries for organic parameters result in the data qualification of the unspiked sample rather than the analytical batch.
- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

Percent recoveries and RPDs for the MS/MSD were within acceptance limits

3.0 COMPLETENESS SUMMARY

Two types of completeness were calculated for this project: contract and technical. As specified in the project DQOs, the goal for completeness for the site is 90 percent. Results indicated as not reportable by the laboratory are not included in the completeness calculations. The following equations are used to calculate the two types of completeness.

% Contract Completeness =
(Number of contract compliant results/
Number of reported results)
x 100

% Technical Completeness =
(Number of usable results/Number of reported results)

x 100

The overall contract completeness included the evaluation of the protocol and contract deviations for holding times, blanks, MS/MSD, and LCS attained for the field samples was 100 percent. The technical completeness, which included all QC parameters, attained for the field samples was 100 percent. The completeness results are provided in Table B-2. All of the results were considered usable for the intended purposes and the project DQOs have been met.

Table B-1
Sampling and Analysis Schedule

Sample ID	Lab ID	Collected	Sample Type	Parameters
122 W. Yearling	PSJ1794-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1806-01	10/30/2009	N	Perchlorate by EPA Method 332.0
16 E. Yearling	PSJ1791-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1803-01	10/30/2009	N	Perchlorate by EPA Method 332.0
18 E. Yearling	PSJ1792-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1804-01	10/30/2009	N	Perchlorate by EPA Method 332.0
204 E. Yearling	PSJ1783-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1795-01	10/30/2009	N	Perchlorate by EPA Method 332.0
218 E. Yearling	PSJ1789-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1801-01	10/30/2009	N	Perchlorate by EPA Method 332.0
25825 N. 1st Place	PSJ1784-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1796-01	10/30/2009	N	Perchlorate by EPA Method 332.0
25903 N. 2nd Street	PSJ1790-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1802-01	10/30/2009	N	Perchlorate by EPA Method 332.0
412 E. Yearling	PSJ1788-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1800-01	10/30/2009	N	Perchlorate by EPA Method 332.0
424 E. Yearling	PSJ1787-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1799-01	10/30/2009	N	Perchlorate by EPA Method 332.0
520 E. Yearling	PSJ1786-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1798-01	10/30/2009	N	Perchlorate by EPA Method 332.0
616/604 E. Yearling	PSJ1785-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1797-01	10/30/2009	N	Perchlorate by EPA Method 332.0
8 W. Yearling	PSJ1793-01	10/30/2009	N	Perchlorate by EPA Method 314.0
	PSJ1805-01	10/30/2009	N	Perchlorate by EPA Method 332.0

Notes:
N = Normal sample

Table B-2
Completeness Summary

Parameters	Total Number of Samples	Number in Contractual Compliance	Percent Contractual Compliance	Number of Usable Results	Percent Technical Compliance
Inorganics					
Perchlorate (Method 314.0)	12	12	100	12	100
Perchlorate (Method 332.0)	12	12	100	12	100

Notes:
Percent Contractual Compliance = (Number of contract compliant results/Number of reported results) * 100
Percent Technical Compliance = (Number of usable results/Number of reported results) * 100

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

J

APPENDIX

Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix J
Laboratory Reports (CD)

3994-003

MALCOLM PIRNIE

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

K

APPENDIX

Universal Propulsion Company, Inc.
2009 Annual Monitoring Report

Appendix K
Geophysical Data (CD)

3994-003

MALCOLM PIRNIE