GW - 029

AGWMR

2010

GW029

2009 Groundwater Monitoring Report
Buckeye Vacuum Unit, Lea County, New Mexico

NMOCD Discharge Permit: GW-029

Section: 1
Township: 18 South
Range: 34 East

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Stantec

September 2010

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1.0 SITE BACKGROUND

1.1 SITE LOCATION AND BACKGROUND

The Buckeye Vacuum Field Unit (Site) is located immediately south of County Road 57 within the location of a Targa compressor station. The Site legal description is (SW/4, SE/4), Section 1, Township 18 South, Range 34 East, Lea County, New Mexico. The Site was originally owned and operated by Texaco Exploration and Production Inc. (Texaco) and operated as the Texaco Buckeye Gas Plant. A Site Location Map is presented on Figure 1. The Site is registered with the New Mexico Oil Conservation Division under Discharge Permit GW-029.

1.2 REGIONAL SETTING

The Site is located in the vicinity of active oil fields and ranch land. A Site Plan is presented on Figure 2.

1.3 SITE GEOLOGIC/HYDROGEOLOGIC SETTING

The site rests on the Pliocene Ogallala Formation. The Ogallala is generally comprised of heterogeneous deposits of clay, silt, sand and gravel. The Ogallala Formation varies in thickness from approximately 100 to 200 feet. The surface consists mainly of thin eolian sands (Holocene) overlying fractured caliche (Holocene and Pleistocene).

Regional groundwater at the Site is reportedly contained within the High Plains/Ogallala aquifer system. The High Plains/Ogallala aquifer underlies approximately 174,000 square miles in parts of eight states: Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming. The aquifer is unconfined and is recharged by water infiltrating from above. Limited recharge occurs from precipitation and stream outflow. The aquifer's saturated zone is up to 1,400 feet thick but aquifer dimensions vary along its length. It is always relatively shallow with the water table typically less than 100 feet below ground surface (bgs).

Generally, the saturated thickness of the Ogallala Formation ranges from a few feet to more than 525 feet. Ogallala groundwater is generally fresh, containing between 300 and 1,000 milligrams per liter (mg/L) of total dissolved solids of which calcium, magnesium, and bicarbonate are the principal constituents. Some hydraulic continuity occurs between the Ogallala Formation and the underlying Cretaceous, Triassic, and Permian formations in many areas of the High Plains.

1.4 ENVIRONMENTAL/REMEDIATION HISTORY

In 1989, a total of 23 monitoring wells (TW-1 through TW-23) were installed at the Site to determine the source and delineate the extent of chloride concentrations in groundwater. Two extraction wells (RW-1 and RW-2) were also installed and continuously pumped to remediate groundwater at the Site. A casing leak in a production well located on the property (VG SAU

#58) was determined to be the source of elevated chloride concentrations. The production well was repaired in 1990 and plugged and abandoned in 2000.

Groundwater monitoring activities of all monitoring wells and the two extraction wells were conducted from 1990 through 1998. Thirteen monitoring wells were plugged and abandoned in 1999. Subsequent to the 1999 plugging event, nine monitoring wells were sampled on a quarterly basis. Monitoring well TW-23 was sampled on a monthly basis. As directed by the NMOCD, six monitoring wells and the two extraction wells were sampled on a semi-annual basis during 2000 and 2001 and monitoring well TW-23 was sampled quarterly. Pumping from extraction wells RW-1 and RW-2 ceased in 2001 and a third extraction well (RW-3), located in the vicinity of monitoring well TW-23, was installed in 2001. Groundwater recovery from extraction well RW-3 was initiated shortly after installation.

Following a sampling schedule directed by the NMOCD, groundwater monitoring activities continued at the Site during 2002. Chevron submitted a Groundwater Monitoring Summary and Closure Report to the NMOCD on December 20, 2002 requesting closure. Site closure was denied by the NMOCD in a letter dated March 19, 2003, and groundwater monitoring activities continued as directed.

Chevron conducted groundwater monitoring activities at the Site during 2003 and submitted an Annual Groundwater Monitoring Report, dated May 10, 2004, to the NMOCD. Based on the contents of that report, CEMC proposed a reduced sampling schedule, with seven monitoring wells (TW-10, TW-11, TW-13, TW-14, TW-17, TW-19, and TW-20) to be sampled for chloride and total dissolved solids (TDS) semi-annually, and three monitoring wells (TW-9, TW-15, and TW-23) to be sampled on a quarterly basis. The reduced sampling schedule was approved by NMOCD on September 30, 2004 and followed from 2005 through 2008.

Following the 2004 sampling schedule, groundwater samples were collected from three monitoring wells (TW-9, TW-15, and TW-23) in January and July 2009. Twelve monitoring and extraction wells (TW-9 TW-10, TW-11, TW-13, TW-14, TW-15, TW-17, TW-19, TW-20, TW-23, RW-2 and RW-3) were sampled in April and October 2009. The results are included in this report.

2.0 ASSESSMENT SCOPE OF WORK

The primary objectives of the groundwater gauging activities at the Site are to:

- Monitor groundwater elevations;
- Determine borehole annular volume to calculate purge volumes;
- Provide data to determine hydraulic gradient; and
- Utilize these data to compare to historical data for assessment of historical groundwater trends.

2.1 MONITORING WELL GAUGING

Monitoring wells were gauged with a dual-electrode open circuit water level indicator during each groundwater monitoring event. Depth to groundwater and total depth of well measurements were collected and entered onto field data sheets. Data from each event was utilized to calculate groundwater elevation contours, which were then employed to determine an apparent groundwater gradient and direction of flow.

2.2 GROUNDWATER GRADIENT AND CONTOURS

Data collected during the April 2009 event indicated the groundwater elevation ranged from approximately 3,858.25 (TW-20) to approximately 3,860.01 (TW-17) feet above mean sea level (MSL) across the Site. The groundwater flow direction is toward the northeast with an average hydraulic gradient of approximately 0.0023 vertical feet per horizontal foot (ft/ft). A potentiometric groundwater surface map depicting groundwater elevation conditions in April 2009 is presented on Figure 3. Groundwater elevation data collected from monitoring wells located on the adjacent Buckeye Compressor Station property to the north were used to assist in the generation of the potentiometric surface.

Data collected during the October 2009 event indicated the groundwater elevation ranged from approximately 3,857.43 (TW-20) to approximately 3,859.50 (TW-17) feet above MSL across the Site. The groundwater flow direction is toward the northeast with an average hydraulic gradient of approximately 0.0026 vertical feet per horizontal foot (ft/ft). A potentiometric groundwater surface map depicting groundwater elevation conditions in October 2009 is presented on Figure 4. Groundwater elevation data collected from monitoring wells located on the adjacent Buckeye Compressor Station property to the north were again used to assist in the generation of the potentiometric surface.

Based on data collected throughout the reporting period, the Site appears to have maintained a consistent groundwater flow direction and relatively consistent gradient and distribution. Groundwater elevations have fallen an average of 1.2 feet across the site since 2003. A Historical Summary of Groundwater Gauging Results is presented in Table 1 and copies of Groundwater Monitoring Data Sheets for each event are presented as Appendix A.

2.3 GROUNDWATER REMEDIATION AND WASTE MANAGEMENT

Groundwater is currently pumped from extraction well RW-3 on an alternating pumping (six hours on) and recovery (48 hours off) schedule to flush residual chloride from the capillary zone in the vicinity of VG SAU #58. The extracted groundwater is used as non-contact cooling water at the Chevron Buckeye CO_2 Plant, located north of the site, across County Road 57.

3.0 GROUNDWATER SAMPLING PROTOCOL AND ANALYSIS

The primary objectives of the groundwater monitoring activities at the Site are:

- To collect groundwater samples to assess groundwater conditions at the Site; and
- To monitor migration of the chloride concentrations in groundwater.

The primary constituents of concern at the Site are chloride and TDS. As per the Annual Groundwater Monitoring Report of April 25, 2005, Chevron will continue to sampling the ten monitoring wells until chloride concentrations have been remediated to below the New Mexico Water Quality Control Commission (NMWQCC) standards for a minimum of four consecutive quarters or four consecutive longer term sampling events.

Quarterly groundwater samples were collected on January 19, April 13-14, July 6, and October 1, 2009 from monitoring wells TW-9, TW-15, and TW-23. Semi-annual sampling of all the monitoring wells was conducted on April 13-14 and October 1.

3.1 GROUNDWATER MONITORING WELL SAMPLING PROTOCOL

Following groundwater gauging, low-flow sampling techniques were used to sample each monitoring well. The wells were purged and sampled using a Grundfos Redi-Flo pump and disposable polyethylene tubing. The tubing was lowered into the well to the midpoint of the well screen. Once the tubing was placed at the correct elevation in the well, the initial water level was measured and recorded before purging began. The pump was started at its lowest speed setting and speed was slowly increased until discharge occurred. The water level and pumping rate were monitored and recorded every three to five minutes (or as appropriate) during purging.

During well purging, indicator field parameters (pH, oxidation-reduction potential [ORP], conductivity, temperature, and dissolved oxygen [DO]) were measured using a multi-meter with flow-through-cell, and recorded approximately every three to five minutes. Purging was considered complete and sampling began when all the indicator field parameters stabilized or three well volumes were removed. Stabilization was considered to be achieved when three consecutive readings, taken at three to five minute intervals, were within the following limits:

- DO (10%)
- Conductivity (3%)
- Temperature (3%)
- pH (± 0.1 unit)
- ORP (± 10 millivolts)

Depth to water was measured immediately prior to sample collection. Water samples for laboratory analyses were collected before water passed through the flow-through-cell. All sample containers were filled by allowing the pump discharge to flow gently down the inside of the container with minimal turbulence.

Groundwater field measurements were recorded on the Groundwater Monitoring Data Sheets included in Appendix A.

3.2 SAMPLE HANDLING AND ANALYSIS

Following collection, water samples were labeled, logged on a laboratory chain of custody, and placed on ice in an insulated cooler to maintain a temperature of approximately 40°F (4°C). The water was transmitted to Lancaster Laboratories in Lancaster, Pennsylvania for analysis. Proper chain of custody documentation was maintained throughout the sampling and analysis process.

Sample analyses conducted on groundwater samples during the 2009 events include the following:

- chloride EPA Method 300.0;
- TDS by SM20 2540C.

3.3 GROUNDWATER ANALYTICAL RESULTS

The constituents of concern in groundwater at the Site are chloride and TDS. A Historical Summary of Groundwater Analytical Results is presented in Table 2. Laboratory analytical reports for each sampling event of 2009 are presented as Appendix B.

3.3.1 January 2009 Sampling Event

Groundwater samples were collected from monitoring wells TW-9, TW-15 and TW-23 on January 19, 2009. Reported chloride concentrations were 82.6 mg/L (TW-9), 108 mg/L (TW-15), and 177 mg/L (TW-23). These concentrations are all below the NMWQCC standard of 250 mg/L. All reported TDS concentrations were below the NMWQCC standard of 1,000 mg/L.

3.3.2 April 2009 Sampling Event

Chloride concentrations measured in twelve groundwater samples collected on April 13-14, 2009 ranged from 27.8 mg/L (TW-19) to 1,250 mg/L (RW-3). All reported chloride concentrations from the groundwater samples collected were below the NMWQCC standard of 250 mg/L with the exception of the groundwater sample collected from extraction well RW-3. An isopleth map of chloride concentrations for the April 2009 sampling event is presented on Figure 5.

3.3.3 July 2009 Sampling Event

Groundwater samples were collected from monitoring wells TW-9 and TW-15 on July 6, 2009. Reported chloride concentrations were 75.4 mg/L (TW-9), 66.5 (TW-15) and 48.2 mg/L (TW-23). These concentrations are all below the NMWQCC standard of 250 mg/L. All reported TDS concentrations were below the NMWQCC standard of 1,000 mg/L.

3.3.4 October 2009 Sampling Event

Chloride concentrations reported for the twelve groundwater samples collected on October 1, 2009 ranged from 29.5 mg/L (TW-19) to 1,320 mg/L (RW-3). All chloride concentrations from the groundwater samples collected were below the NMWQCC standard of 250 mg/L with the exception of the groundwater sample collected from extraction well RW-3. An isopleth map of chloride concentrations for the October 2009 sampling event is presented in Figure 6.

Historical chloride data trending graphs for the monitoring well network are included as Figures 7 through 18.

4.0 QUALITY ASSURANCE/QUALITY CONTROL

Quality objectives for groundwater monitoring data include:

- Collection of data in accordance with procedures as appropriate for its intended use;
- Maintaining sufficient quality data to meet scientific and legal scrutiny;
- Generation of representative data of known and acceptable precision and accuracy; and
- Evaluation of data that is consistent in content and quality.

Steps were taken to insure the integrity of collected water samples and analytical results. Sections 2.1, 3.1 and 3.2 present discussions of the procedures used in field quality assurance and quality control (QA/QC). The pump was decontaminated with an Alconox© wash and a distilled-water rinse prior to beginning field activities and between all wells.

Specific QA/QC procedures implemented for this project are described below.

4.1 DUPLICATE SAMPLES

A field duplicate sample is a second sample collected at the same location as the original sample. Duplicate samples are collected simultaneously or in immediate succession, using identical recovery techniques, and treated in an identical manner during storage, transportation, and analysis. Duplicate samples are collected to assure accuracy of testing methods by the laboratory.

The following table presents chloride analytical results for wells sampled during the 2009 semi-annual events compared to their respective duplicate sample results.

Date	Original Sample ID	Original Sample Analytical Results	Duplicate Sample ID	Duplicate Sample Analytical Result
4/14/09	TW-15	87.1	Dup 1	95.2
10/01/09	TW-14	154	Dup #100	163

Chloride analytical results for duplicate samples indicate acceptable laboratory precision and defendable analytical data.

4.2 HOLDING TIME LIMITS

Holding times before extraction and analysis are specified in USEPA, *Test Methods for Evaluating Solid Waste Physical/Chemical Methods*, SW-846. All laboratory analysis were performed within specified holding times. No quality control issues were identified due to lengthened holding time.

4.3 LABORATORY QA/QC

Laboratory QA/QC data is provided in the laboratory analytical reports presented as Appendix B.

5.0 OVERVIEW, CONCLUSIONS, AND RECOMMENDATIONS

The following overview, conclusions, and recommendations are based upon data collected during the 2009 groundwater sampling events.

5.1 PROJECT OVERVIEW

The Site is located immediately south of County Road 57 within the location of a Dynegy compressor station. The Site legal description is (SW/4, SE/4), Section 36, Township 17 South, Range 34 East, Lea County, New Mexico. The Site was originally owned and operated by Texaco and operated as the Texaco Buckeye Gas Plant.

Quarterly groundwater sampling and gauging activities were conducted on January 19, April 13-14, July 6, and October 1, 2009 from monitoring wells TW-9, TW-15, and TW-23. Semi-annual sampling and gauging of all the monitoring wells was conducted on April 13-14 and October 9-14.

5.2 CONCLUSIONS

Chloride concentration trending graphs are shown on Figures 7-18 for the 12 Site wells. The following findings and conclusions can be drawn from the 2009 groundwater monitoring events:

- The depth to groundwater is approximately 128 feet below ground surface and groundwater flow direction is toward the northeast, with an approximate hydraulic gradient of 0.002 vertical feet per horizontal foot;
- All monitoring wells, with the exception of extraction well RW-3, have exhibited chloride concentrations below the NMWQCC standard of 250 mg/L for a minimum of four consecutive quarters;
- The chloride concentration trend is decreasing for monitoring well TW-23. Chloride concentrations for the last four quarters of sampling have been below the NMWQCC standard of 250 mg/L;
- The chloride concentration trend is increasing for extraction well RW-3. Chloride concentrations have been above the NMWQCC standard of 250 mg/L during every sampling event since May of 2004;
- Extraction well RW-2 has exhibited chloride concentrations below the NMWQCC standard since groundwater samples were first collected on May 28, 2004. The only exception was the sampling event in October 2005, where the chloride concentration was measured at 264 mg/L. Chloride concentrations have been below the NMWQCC standard in groundwater samples collected from RW-2 in 2006, 2007, 2008, and 2009;
- TDS concentrations measured in the groundwater samples collected during 2009 were below the NMWQCC standard of 1,000 mg/L for all of the monitoring and extraction wells except for groundwater samples collected from RW-3. The highest TDS concentration measured from extraction well RW-3 was 2,850 mg/L (October 2009);

- All wells have exhibited chloride concentrations below the standard of 250 mg/L for the past four years with the exception of monitoring well TW-23 and extraction well RW-3; and
- Monitoring wells TW-10, TW-13, and TW-14 have slightly increasing chloride concentration trends. However, chloride concentrations remain below the NMWQCC standard.
- The chloride isopleth concentration map was developed from two separate sampling events in 2004. Due to the variability in sample collection frequency and in the sampling results, only the highest concentrations from the February and August 2004 sampling events are shown on Figure 19. A substantial decrease in horizontal extents of the chloride concentrations in groundwater is evident when compared to the September 2009 chloride data (Figure 6).

5.3 RECOMMENDATIONS

Chevron, NMOCD, and Stantec met on October 21, 2009 in Santa Fe, NM to discuss the Site. Chevron and Stantec proposed the following to NMOCD:

- Discontinue the sampling schedule approved by NMOCD on September 30, 2004;
- Reduce analytical analyses to chloride only;
- Reduce sampling frequency to semi-annual;
- Monitor the following wells:
  - Upgradient: TW-17
  - Source Area: RW-3
  - Down gradient: TW-10, TW-13, and TW-14.
- Plug and abandon all remaining wells with the exception of:
  - Monitoring wells to be added to Buckeye Compressor monitoring well network: TW-11 and TW-13
  - Down gradient wells: TW-9 and TW-20.
- Re-evaluate the Site following two years of semi-annual sampling; and
- Discuss optimization of recovery well pumping rate with the operators of the CO_2 Plant.

NMOCD agreed verbally to the proposed changes to the sampling protocol, the monitoring well abandonment, and the optimization of the recovery well. A formal written approval is expected from NMOCD prior to the first 2010 sampling event scheduled for April.

6.0 STATEMENT OF LIMITATIONS

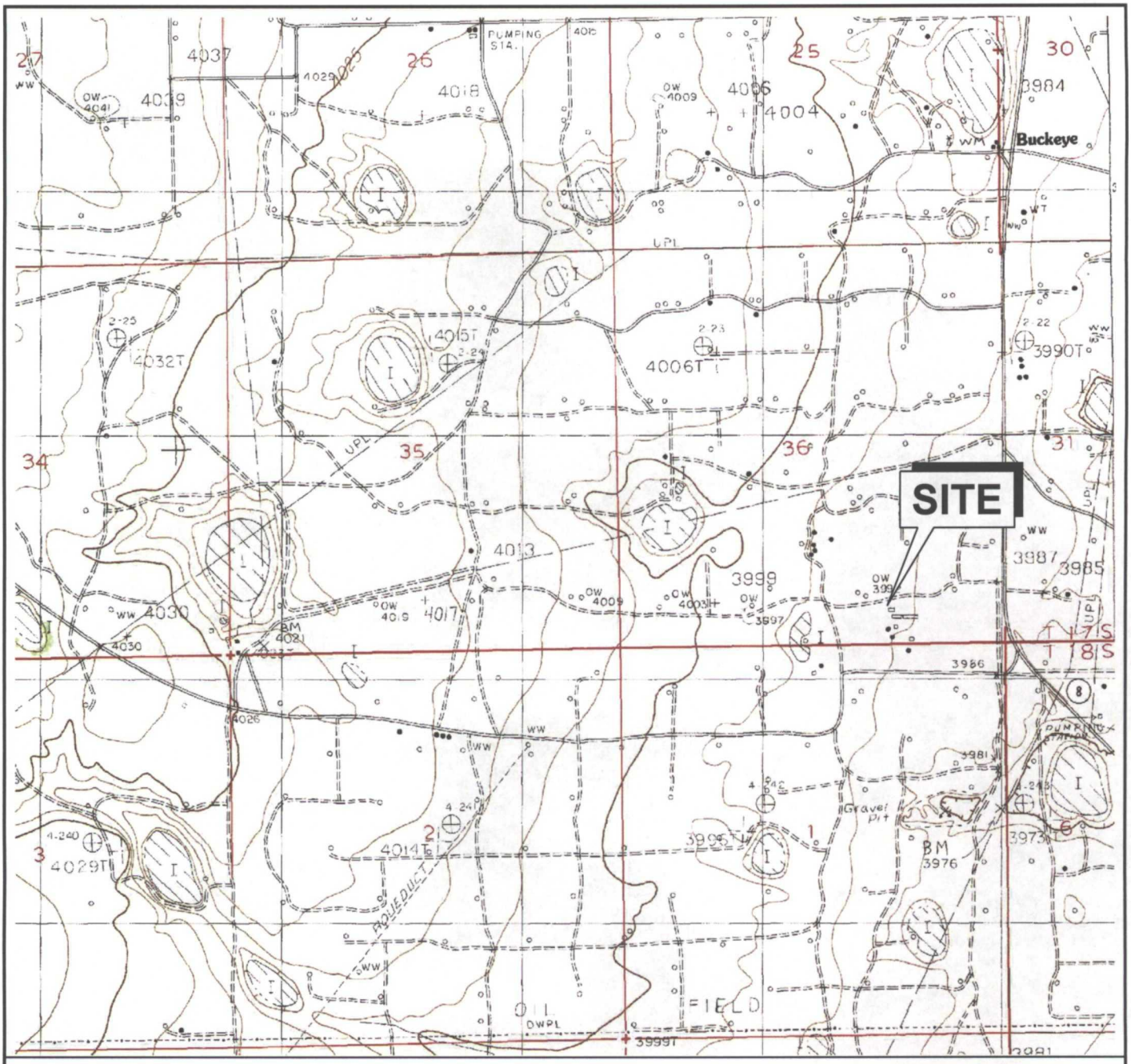
The conclusions and recommendations contained in this report are based upon professional opinions with regard to the subject matter. These opinions have been arrived at in accordance with currently accepted hydrogeologic and engineering standards and practices applicable to the Site. Stantec derived the data in this report primarily from visual inspections, examination of records in the public domain, and interviews with individuals having information about the Site.

This report is based, in part, on information supplied to Stantec by a third-party source. Efforts have been made to substantiate the third-party information; however, Stantec can not guarantee the information completeness or accuracy. Descriptions and protocol presented in this report are intended to summarize activities conducted by Stantec in 2009.

7.0 REFERENCES

2007 Annual Groundwater Monitoring Report dated January 2008.

2008 Annual Groundwater Monitoring Report dated January 2009.



REFERENCE: USGS 7.5 MINUTE QUADRANGLE; LOVINGTON SOUTHEAST, NEW MEXICO, 1985

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FOR:			FIGURE:
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY BUCKEYE VACUUM FIELD UNIT LEA COUNTY, NEW MEXICO		SITE LOCATION MAP	1

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212200146	SRW	MJC	SAM	11/10/09

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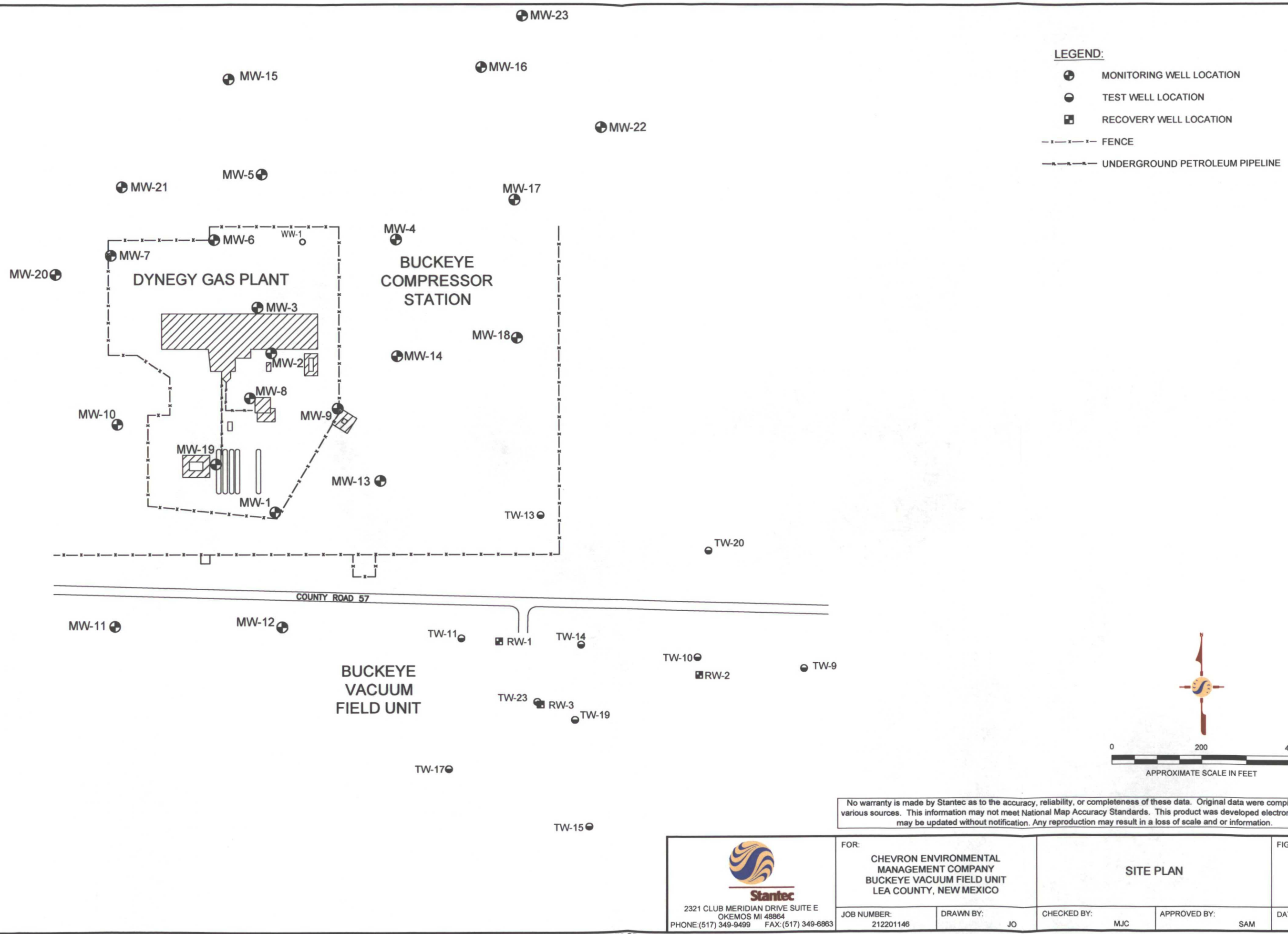

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LEA COUNTY, NEW MEXICO

SITE PLAN

FIGURE: 2

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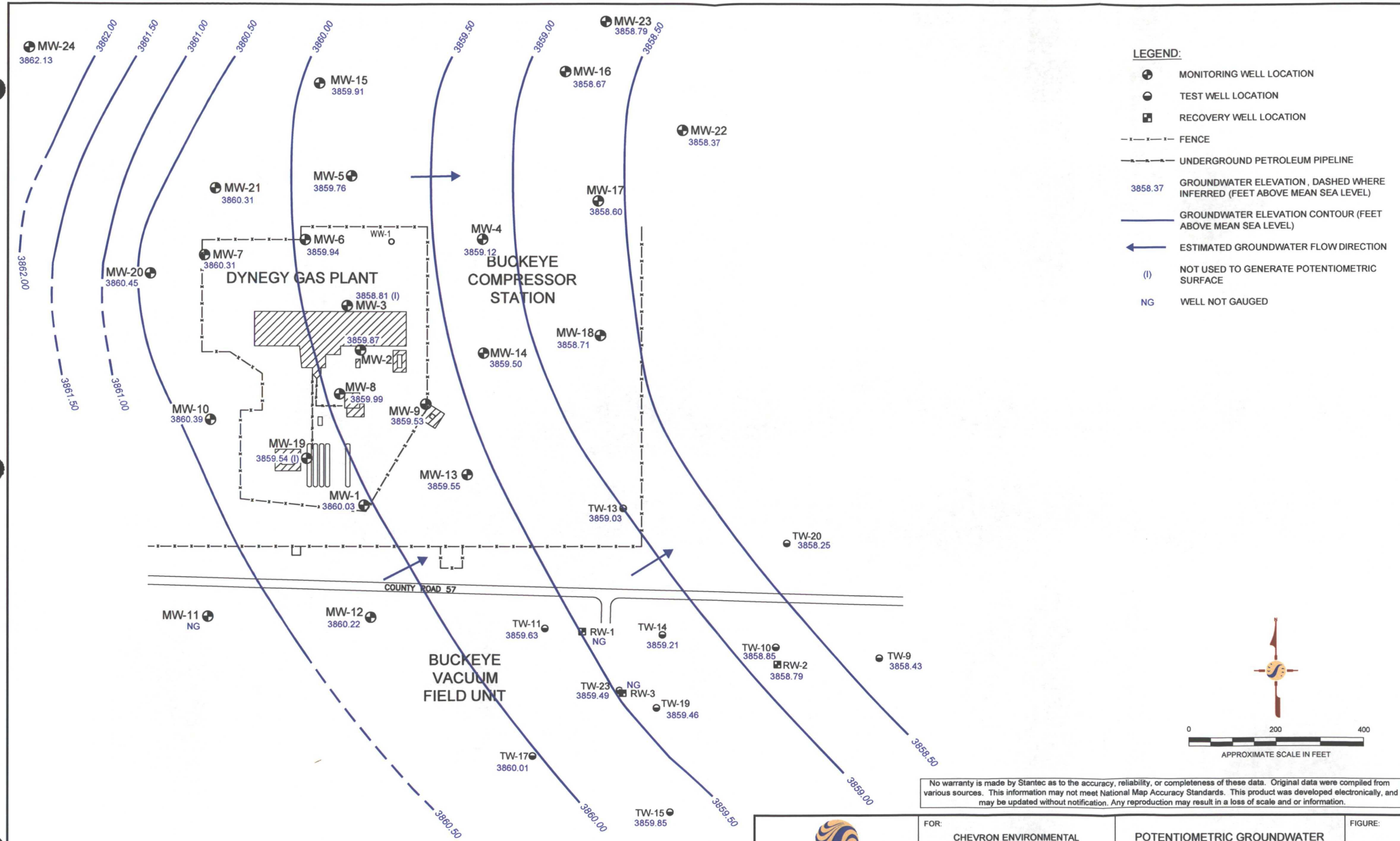

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POTENTIOMETRIC GROUNDWATER SURFACE MAP APRIL 2009

FIGURE: 3

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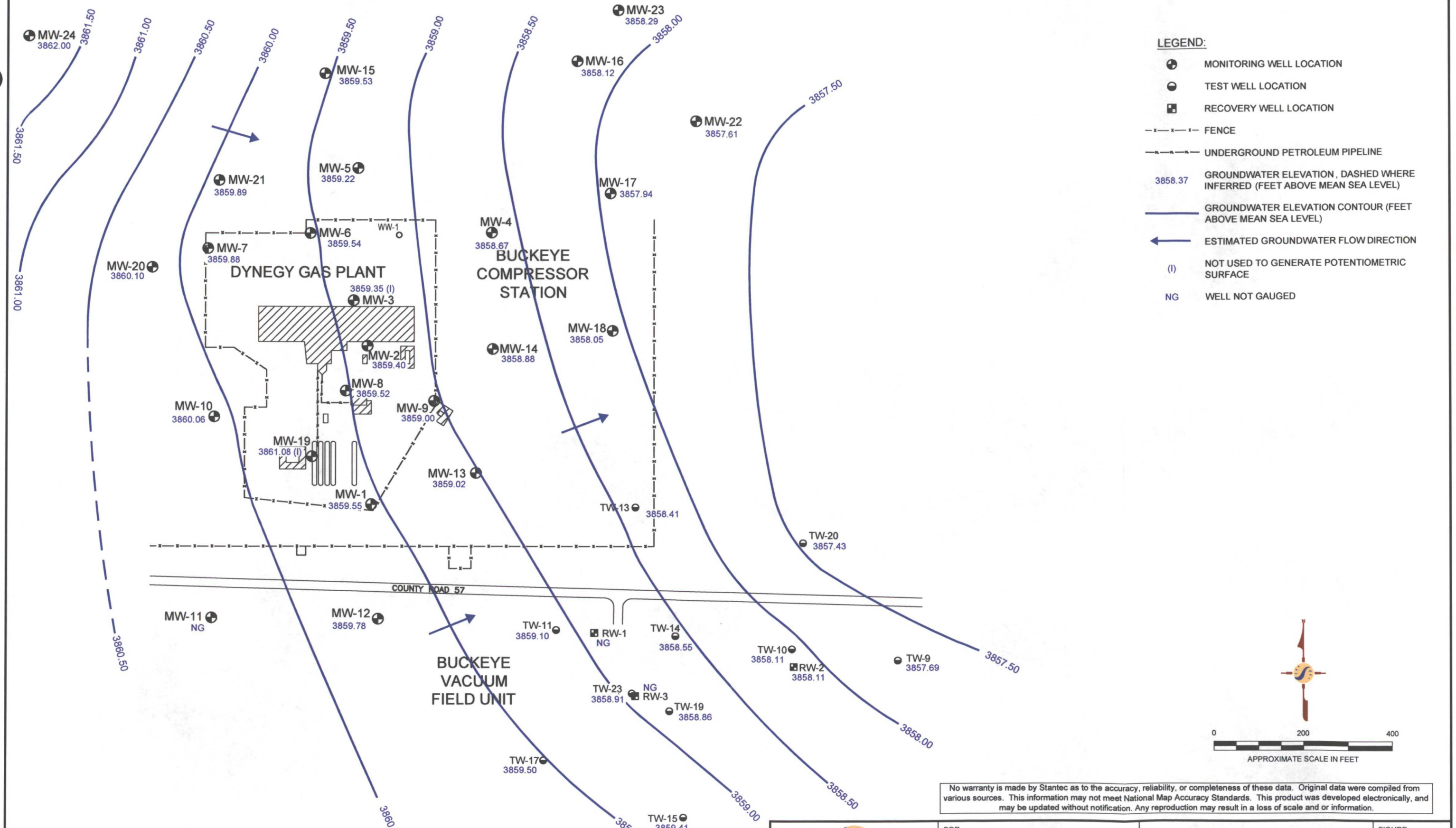

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POTENTIOMETRIC GROUNDWATER SURFACE MAP OCTOBER 2009

FIGURE: 4

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
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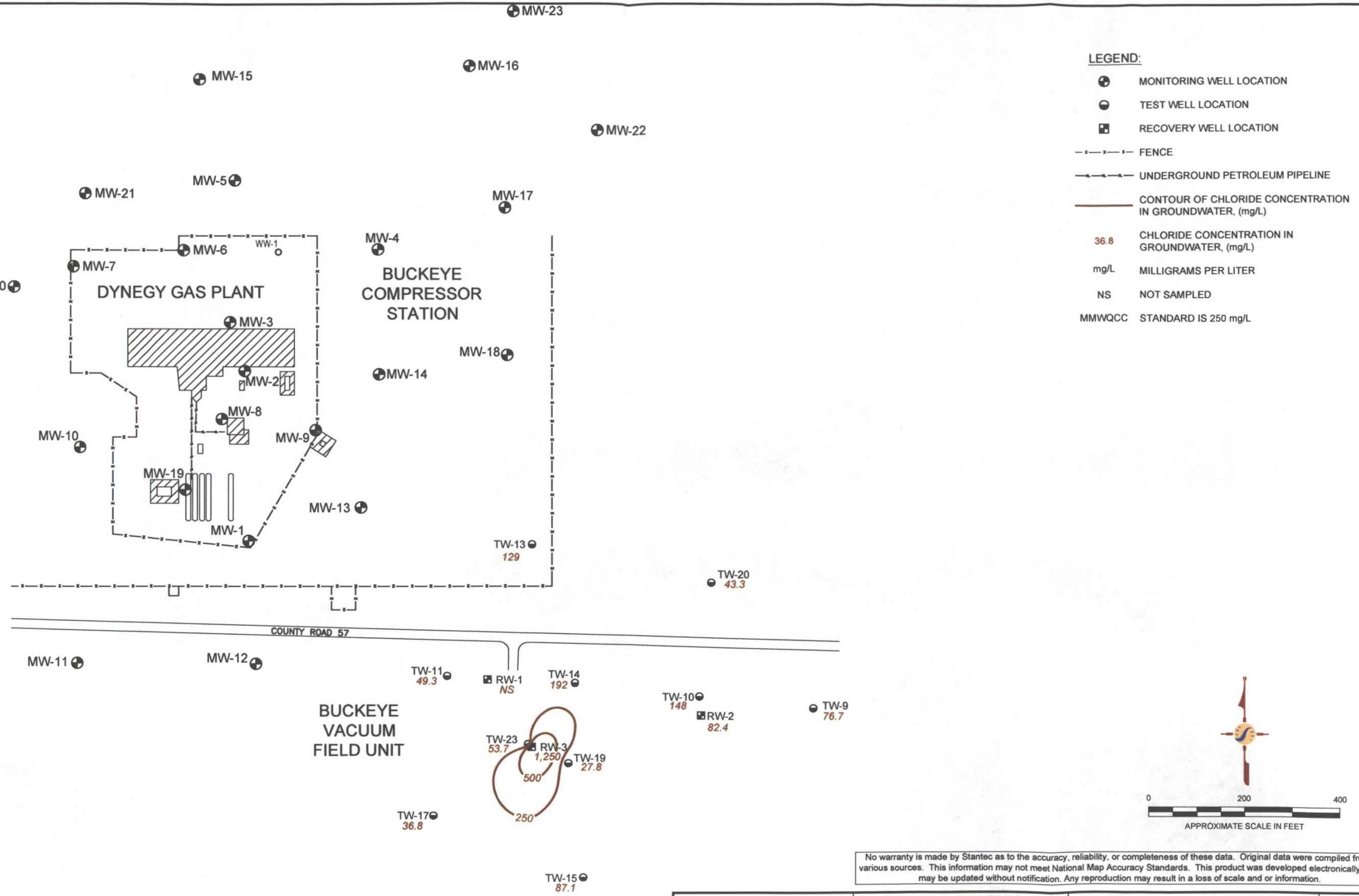

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ISOPLETH MAP OF CHLORIDE CONCENTRATIONS IN GROUNDWATER APRIL 2009

FIGURE: 5

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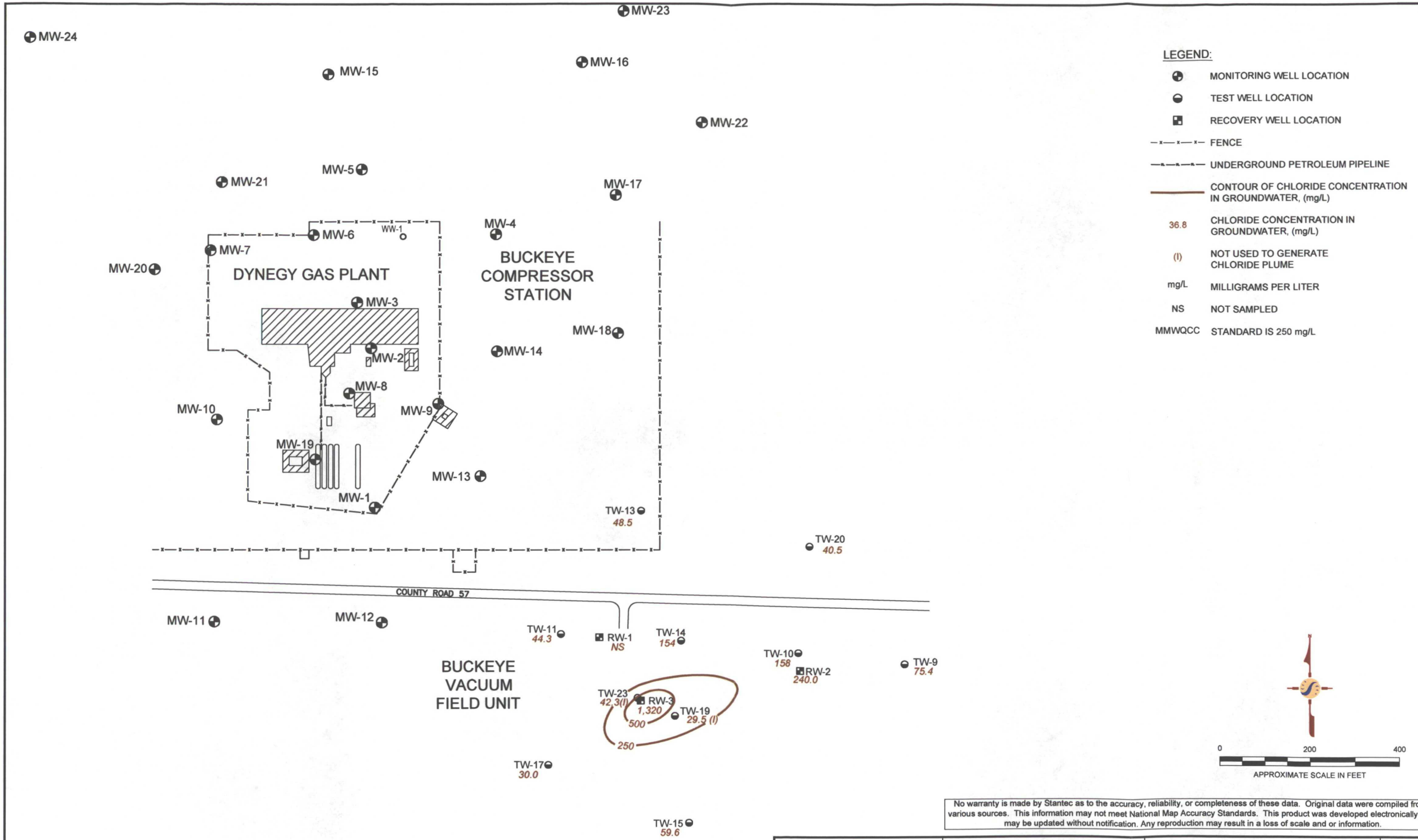

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ISOPLETH MAP OF CHLORIDE CONCENTRATIONS IN GROUNDWATER OCTOBER 2009

FIGURE: 6

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FIGURE 7
TW-9 CHLORIDE CONCENTRATION TREND

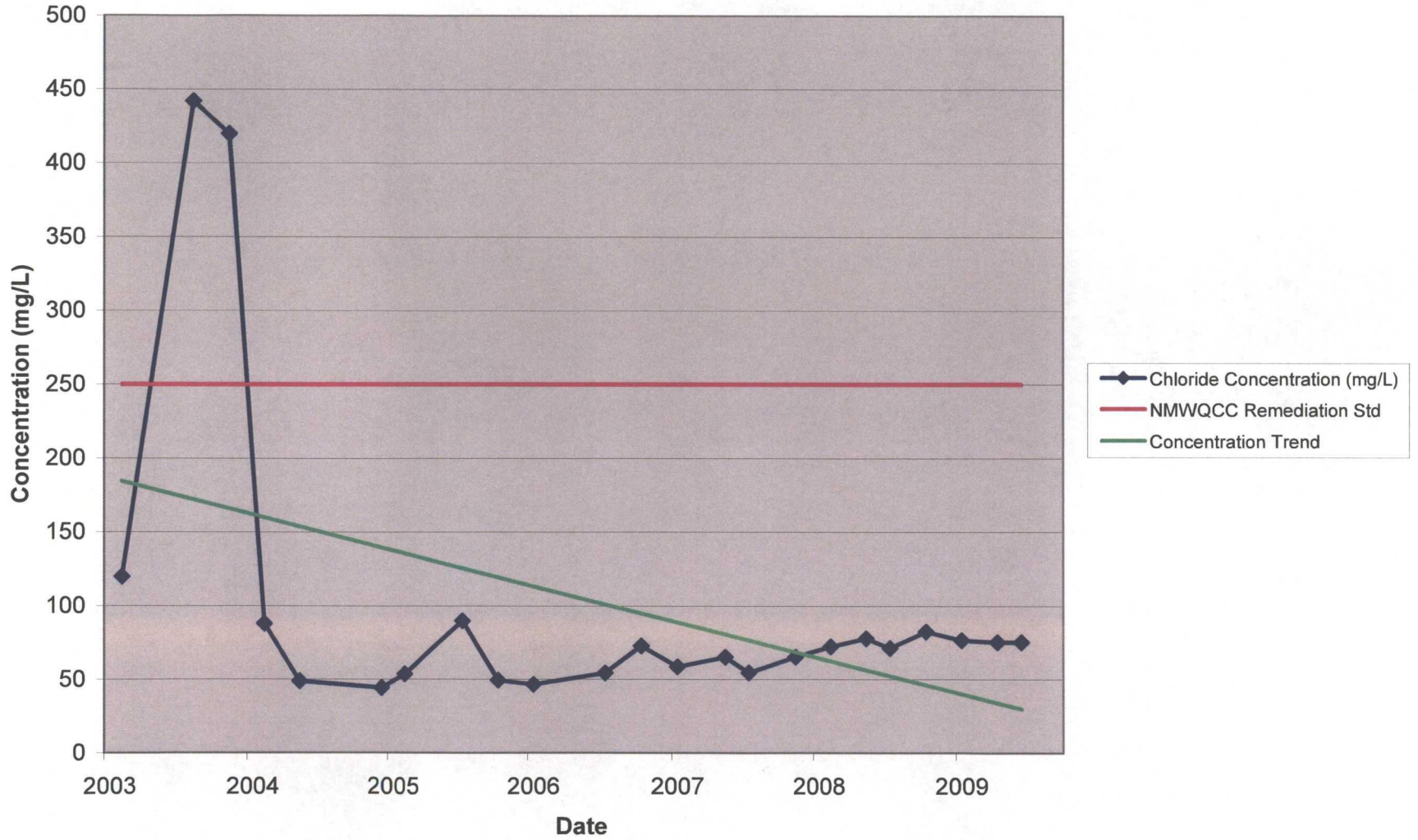


FIGURE 8
TW-10 CHLORIDE CONCENTRATION TREND

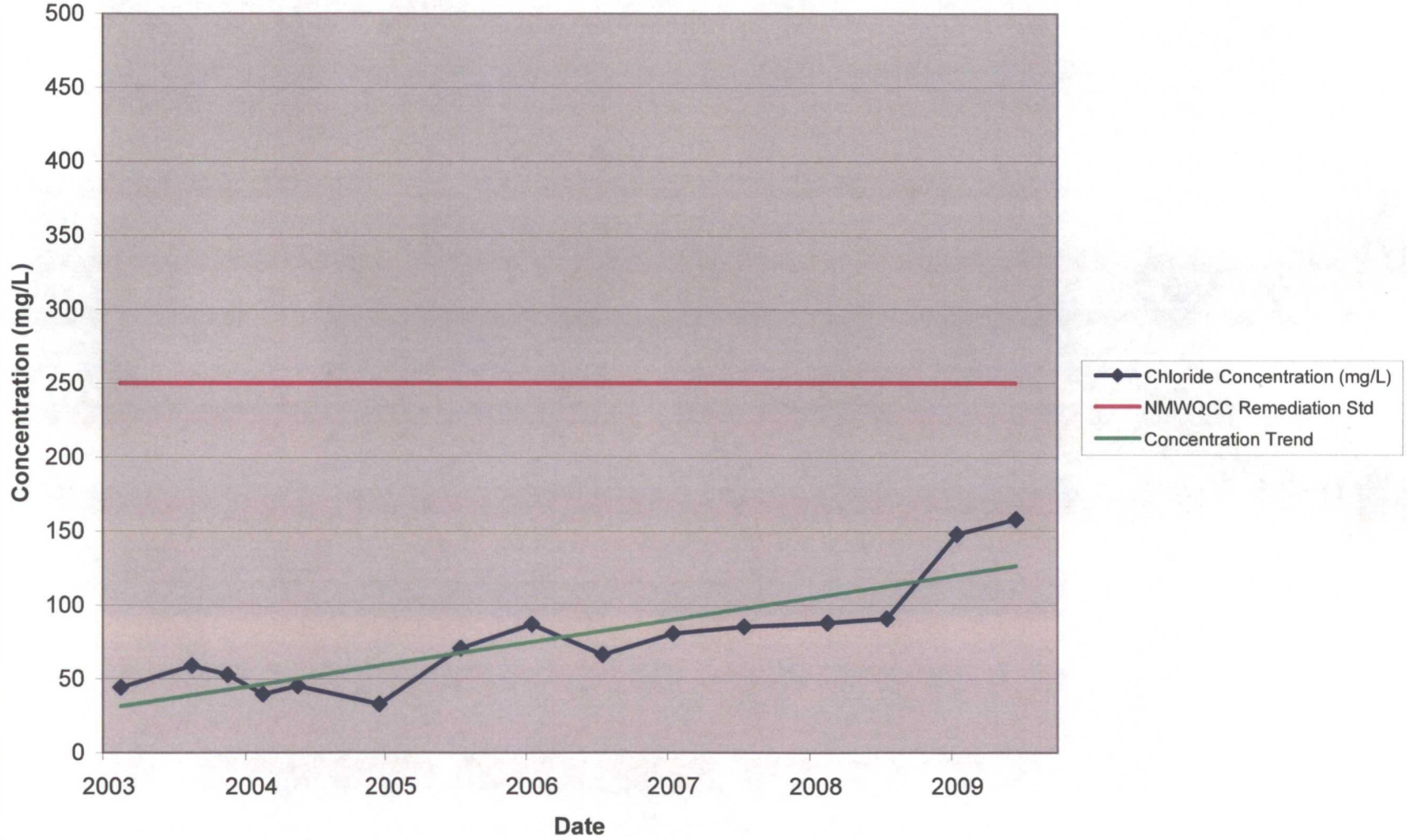


FIGURE 9
TW-11 CHLORIDE CONCENTRATION TREND

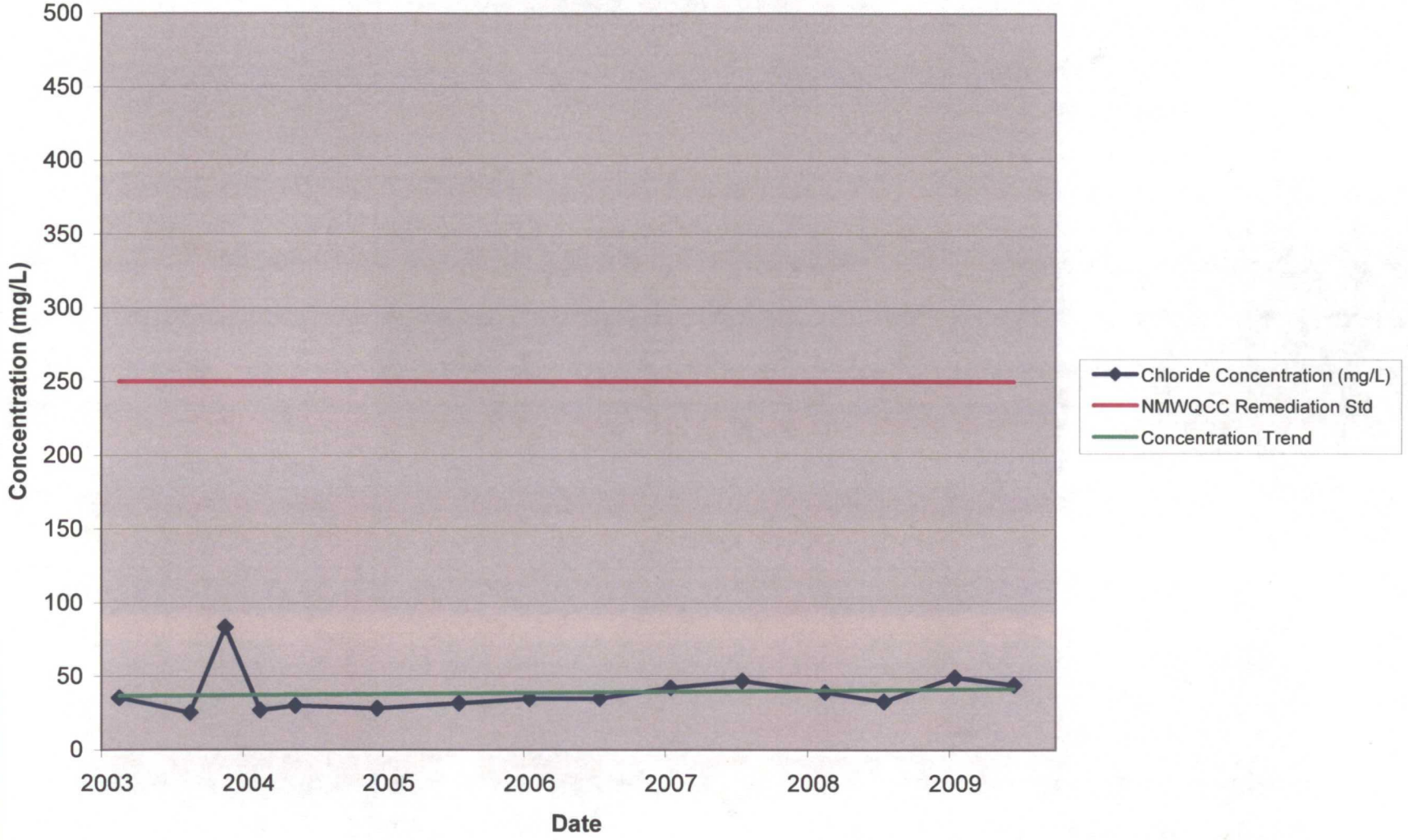


FIGURE 10
TW-13 CHLORIDE CONCENTRATION TREND

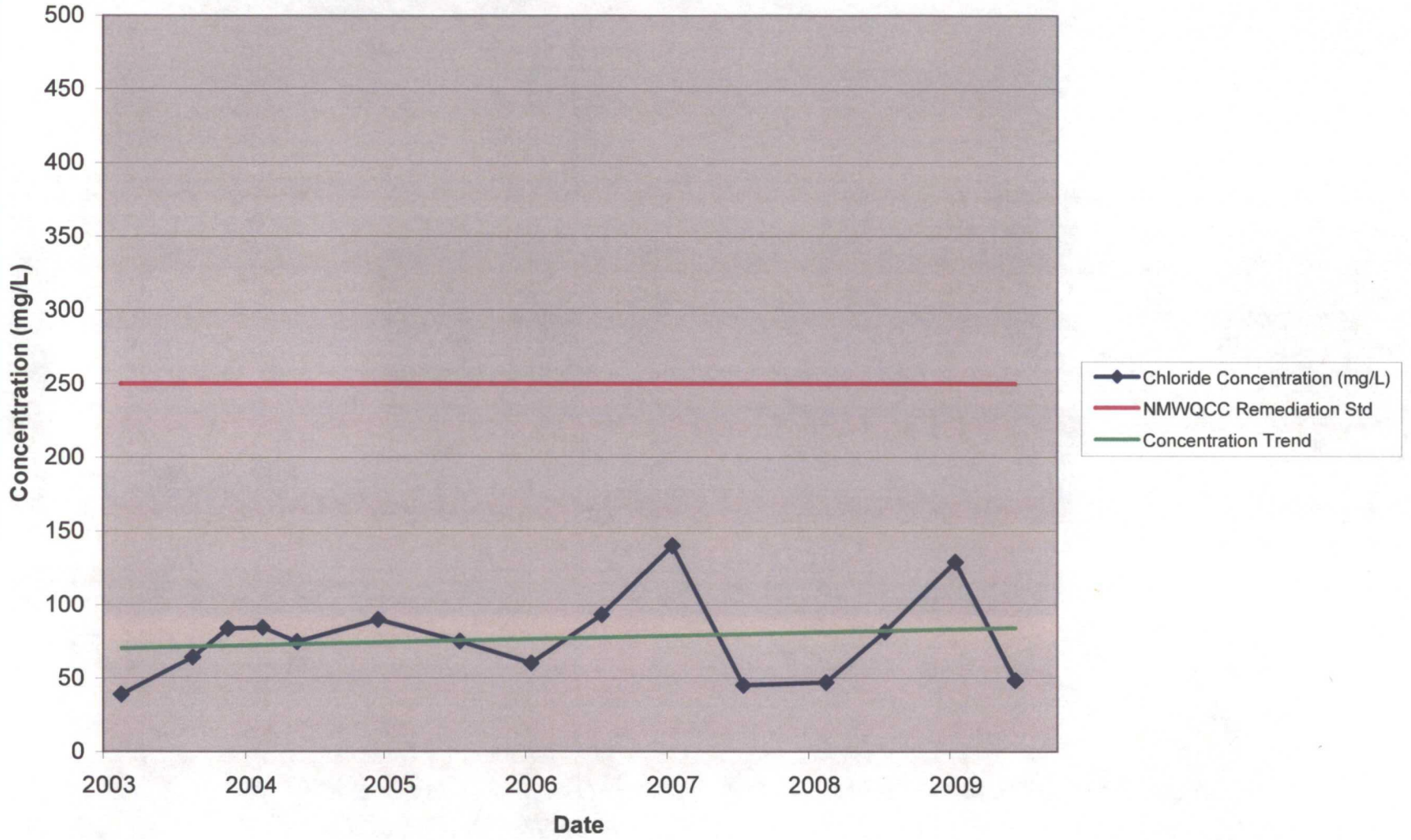


FIGURE 11
TW-14 CHLORIDE CONCENTRATION TREND

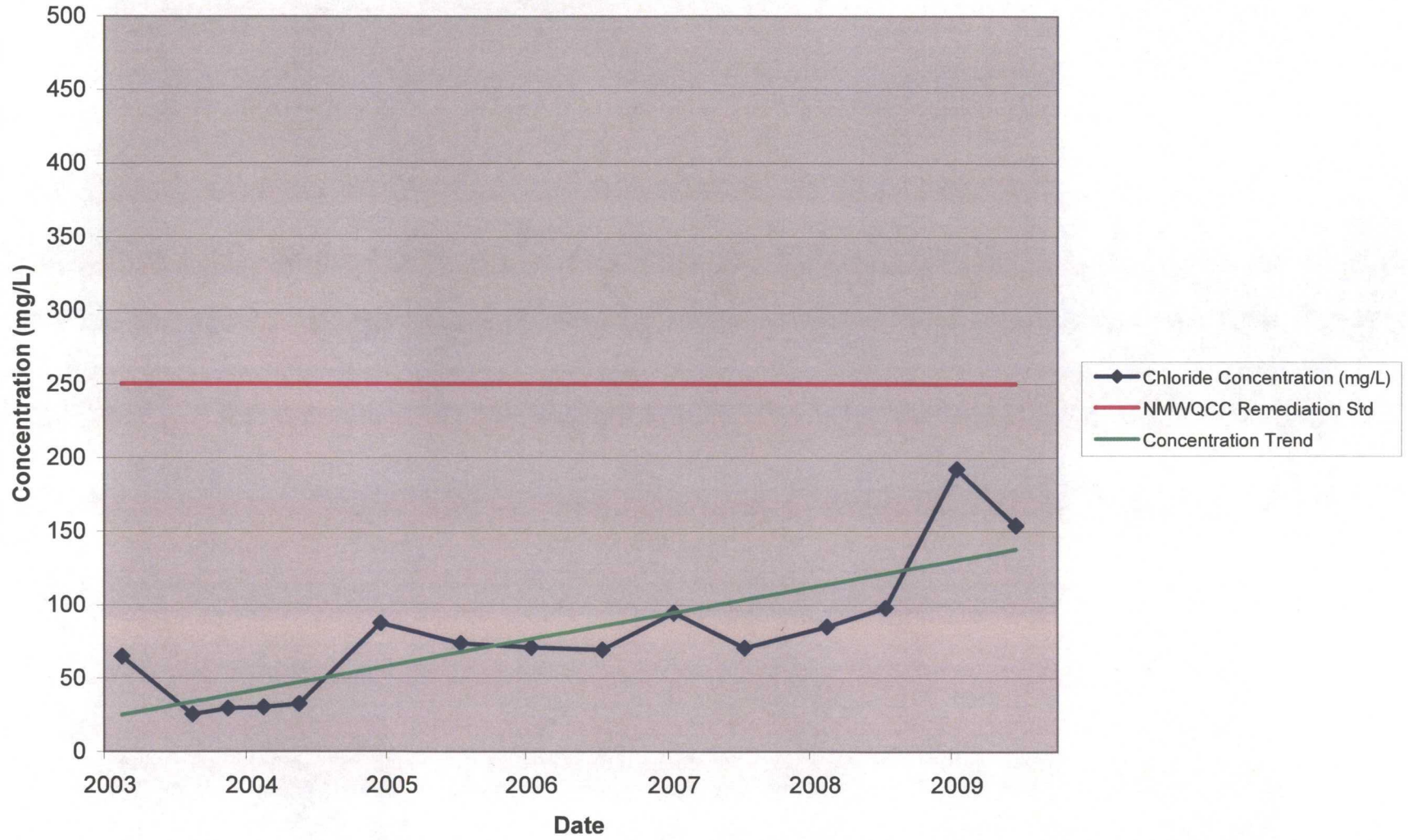


FIGURE 12
TW-15 CHLORIDE CONCENTRATION TREND

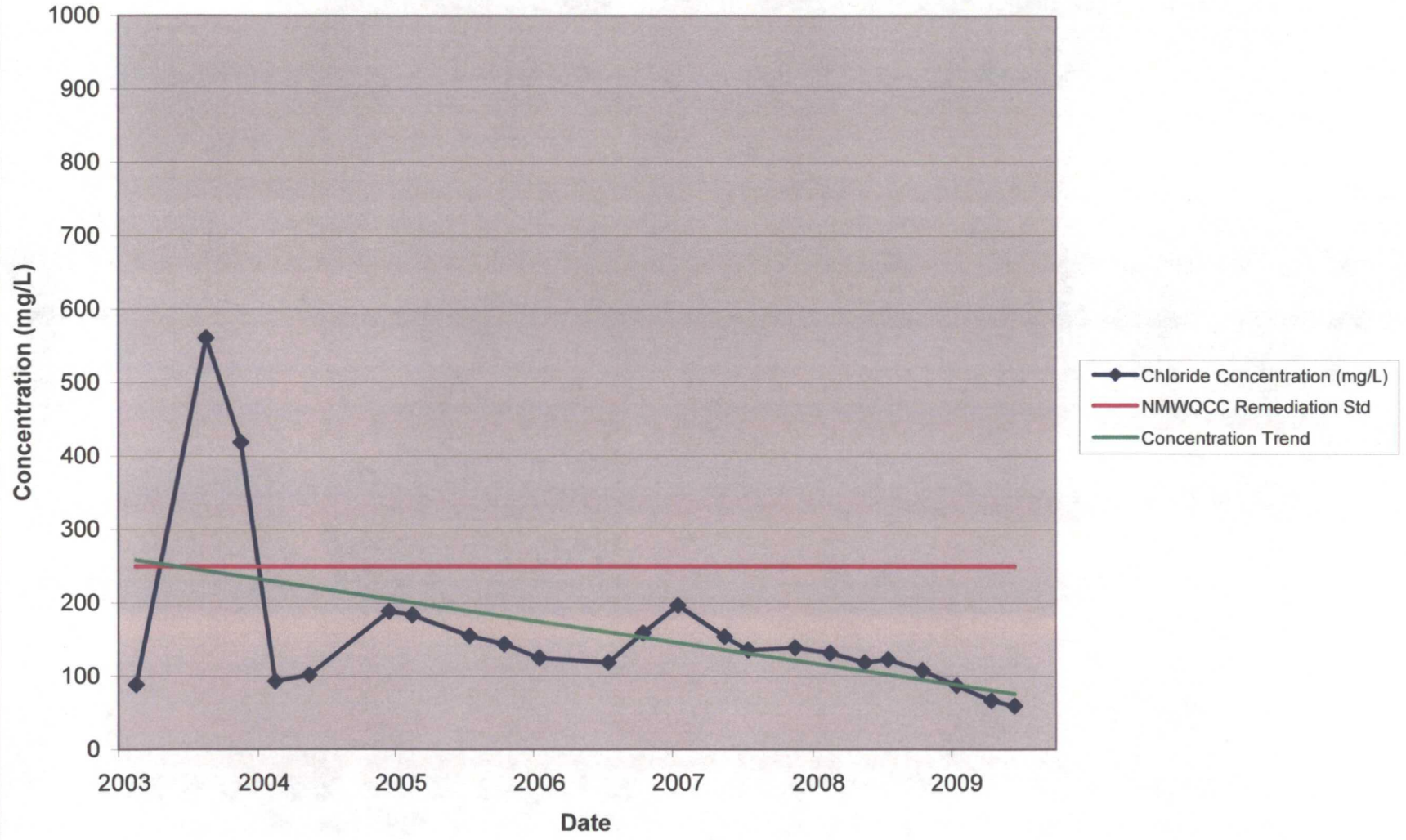


FIGURE 13
TW-17 CHLORIDE CONCENTRATION TREND

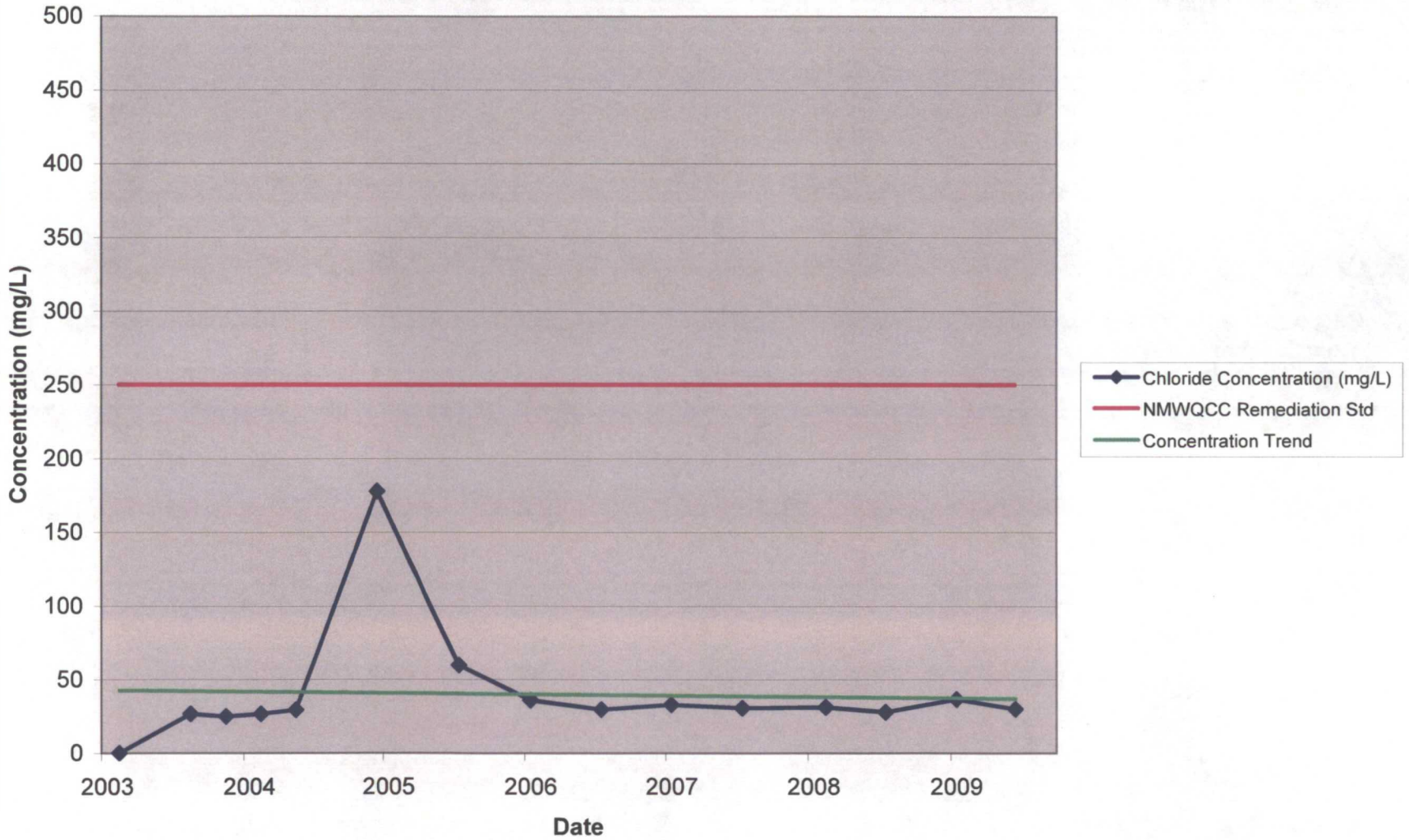


FIGURE 14
TW-19 CHLORIDE CONCENTRATION TREND

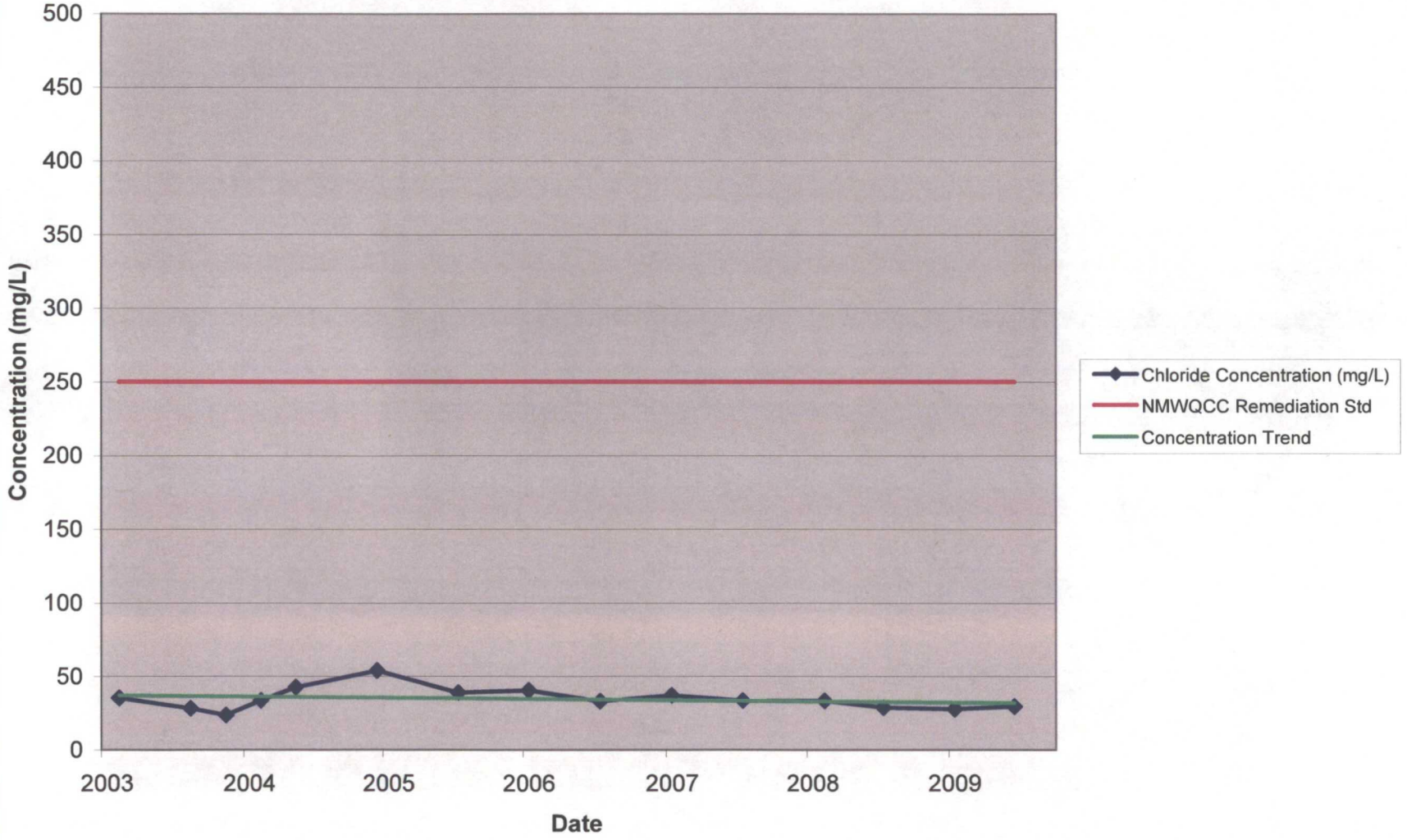


FIGURE 15
TW-20 CHLORIDE CONCENTRATION TREND

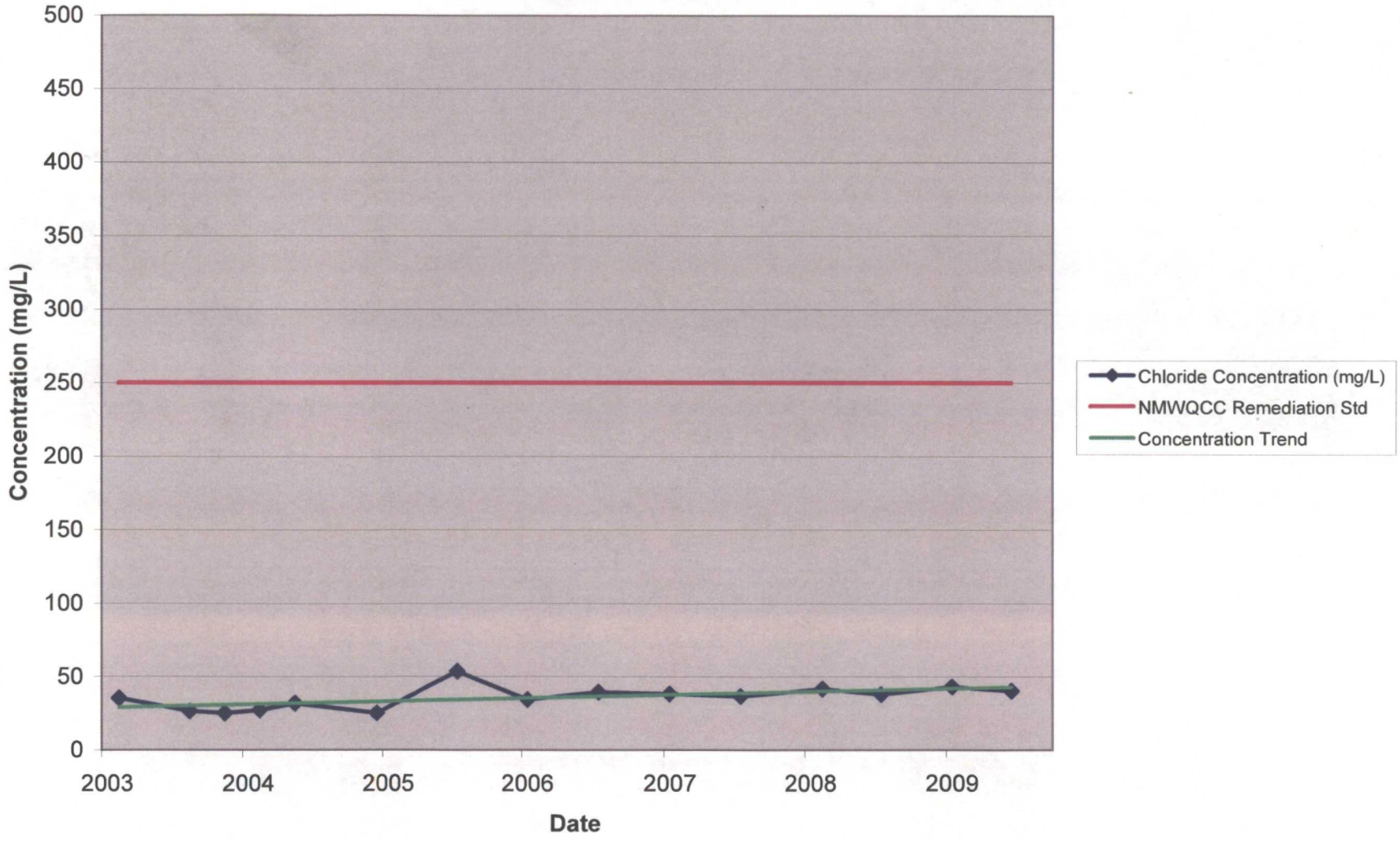


FIGURE 16
TW-23 CHLORIDE CONCENTRATION TREND

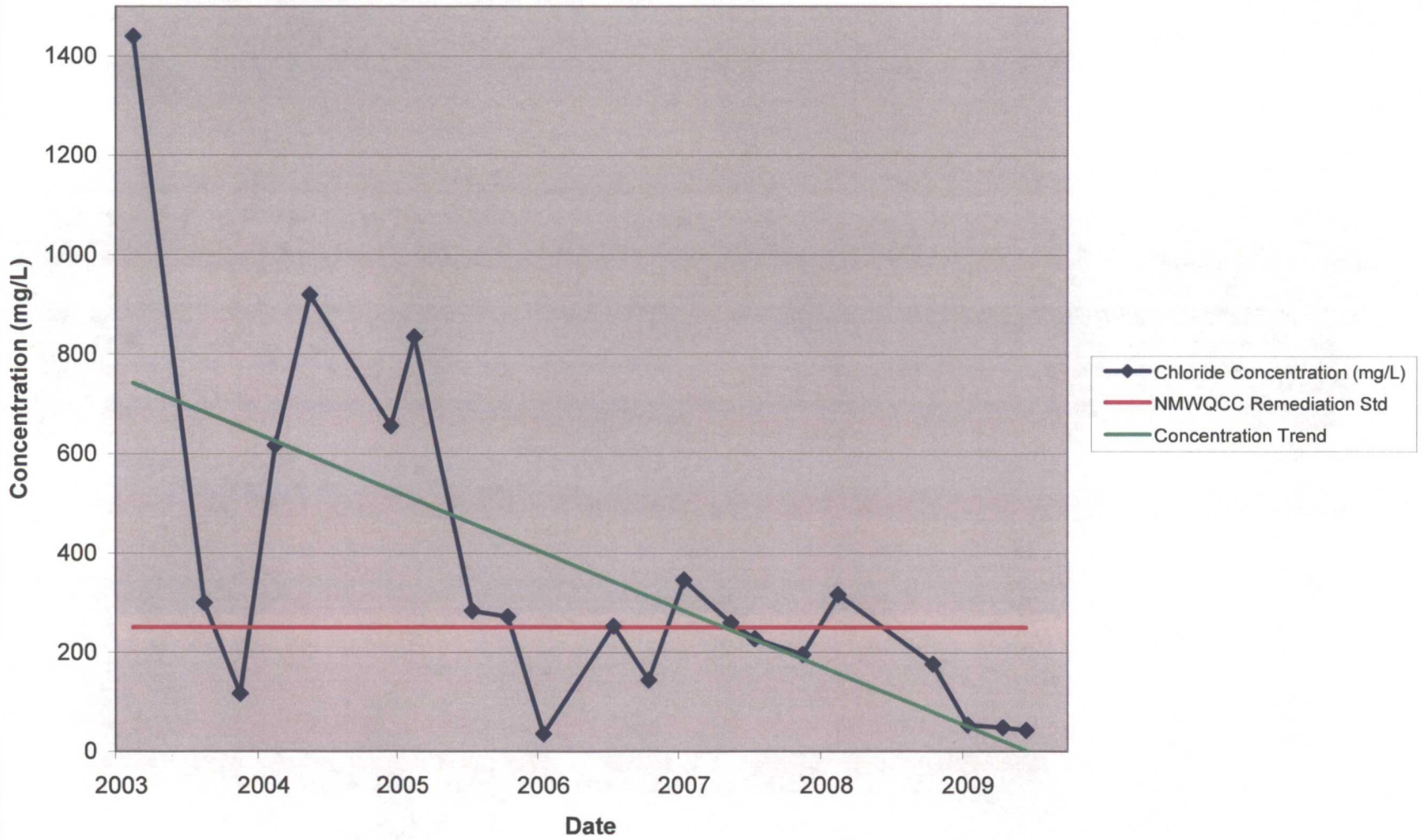


FIGURE 17
RW-2 CHLORIDE CONCENTRATION TREND

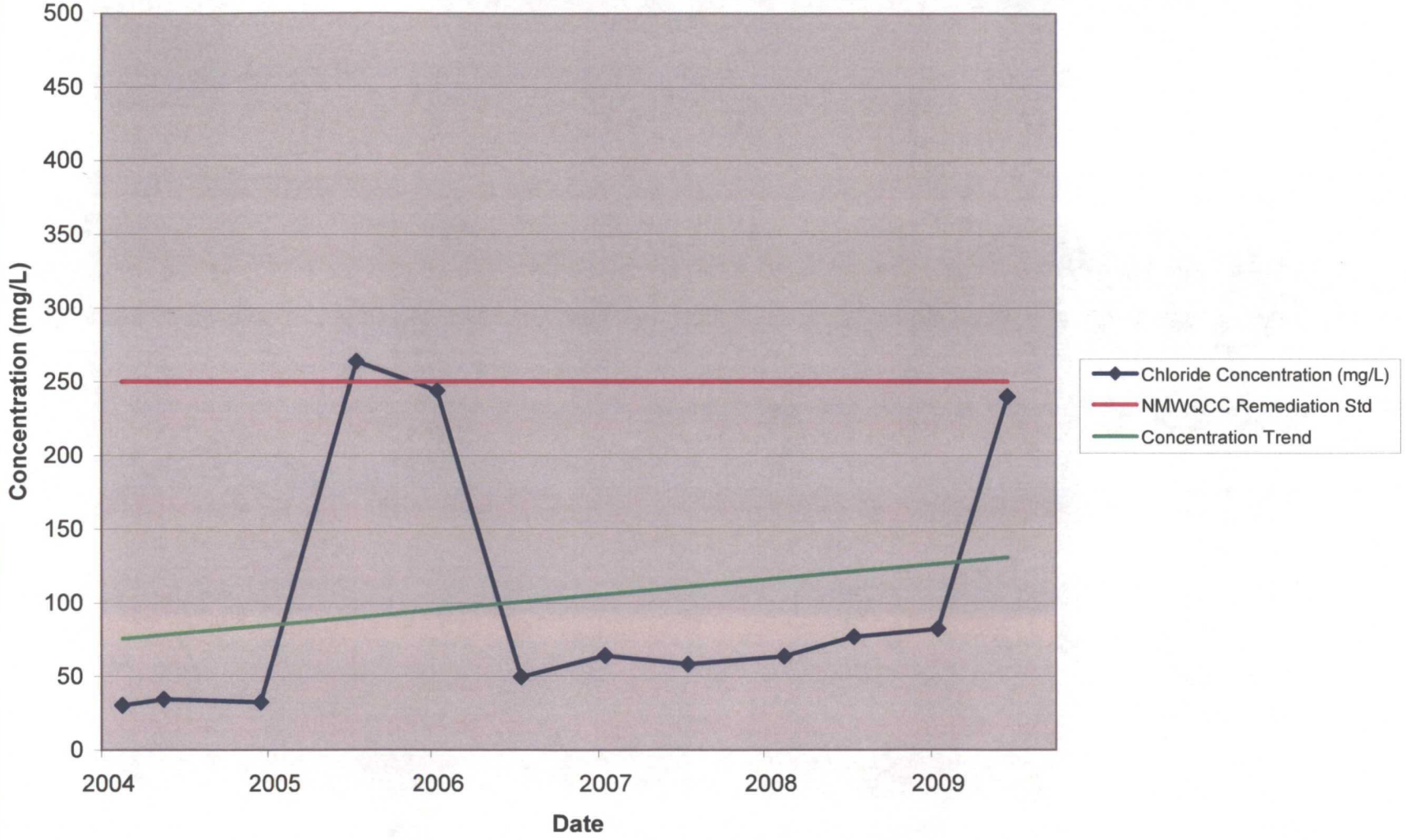
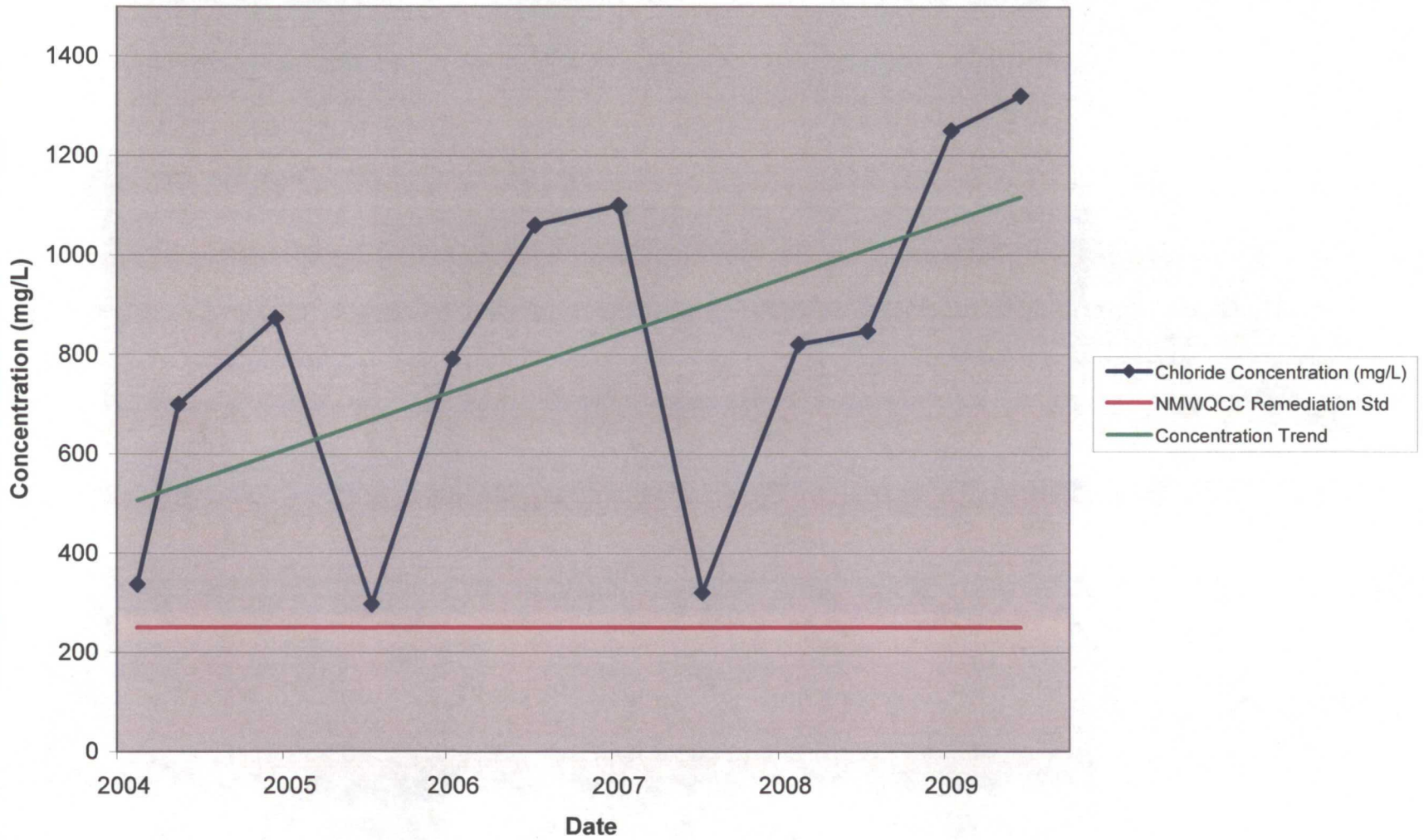
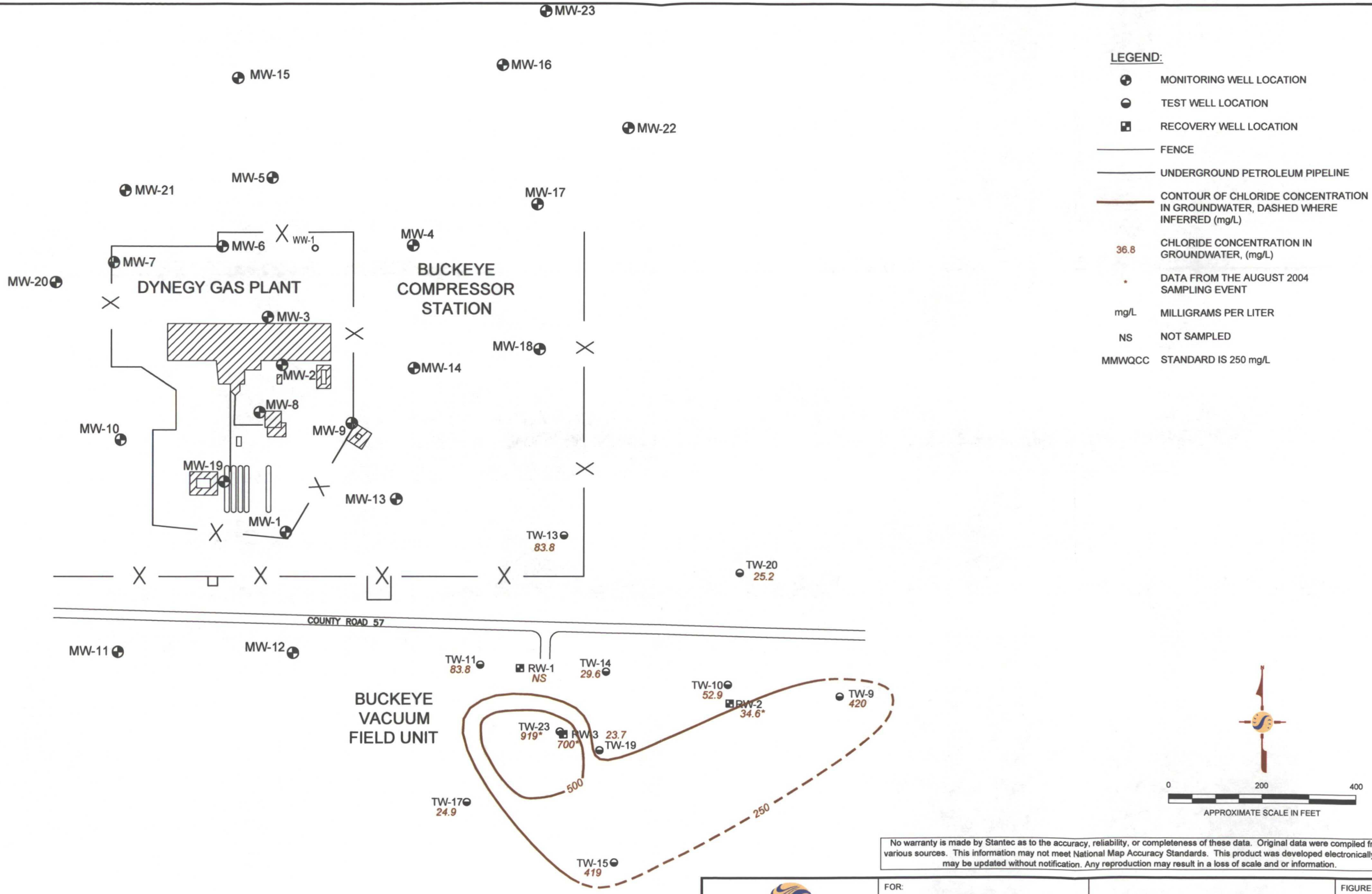


FIGURE 18
RW-3 CHLORIDE CONCENTRATION TREND





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FOR:
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
BUCKEYE VACUUM FIELD UNIT
LEA COUNTY, NEW MEXICO

ISOPLETH MAP OF CHLORIDE CONCENTRATIONS IN GROUNDWATER FEBRUARY AND AUGUST 2004

FIGURE: 19

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
212201146	SW	MJC	SAM	11/24/09

FILEPATH:P:\Chevron\Mid-Continent Abandonment\Site Files\Buckeye Vacuum Unit, Lea Co, NM\Drawings\2009\BUCKEYE Vacuum 2009.dwg|swhitaker|Nov 24, 2009 at 16:27|Layout: F7-Chloride Feb 2004|

Table 1
Summary of Historical Groundwater Elevations
Buckeye Vacuum Field Unit
Lea County, NM

Monitoring Well ID	Date Gauged	TOC Elevation (ft.)	Depth To Water (ft.)	Water Elevation (ft.)
TW-9	05/15/03	3988.69	129.01	3859.68
	11/18/03	3988.69	128.97	3859.72
	02/11/04	3988.69	128.62	3860.07
	05/27/04	3988.69	128.65	3860.04
	08/06/04	3988.69	128.64	3860.05
	03/03/05	3988.69	127.79	3860.90
	05/09/05	3988.69	128.67	3860.02
	11/01/05	3988.69	128.62	3860.07
	01/12/06	3988.69	129.05	3859.64
	04/03/06	3988.69	129.55	3859.14
	09/06/06	3988.69	129.20	3859.49
	10/03/06	3988.69	129.15	3859.54
	01/31/07	3988.69	126.39	3862.30
	04/23/07	3988.69	129.10	3859.59
	08/06/07	3988.69	128.98	3859.71
	10/02/07	3988.69	128.81	3859.88
	02/20/08	3988.69	128.92	3859.77
	05/21/08	3988.69	128.81	3859.88
	08/14/08	3988.69	129.58	3859.11
	10/09/08	3988.69	128.99	3859.70
	01/19/09	3988.69	130.05	3858.64
	04/09/09	3988.69	130.26	3858.43
	07/06/09	3988.69	130.36	3858.33
	09/28/09	3988.69	131.00	3857.69
TW-10	05/15/03	3987.87	127.99	3859.88
	11/19/03	3987.87	128.11	3859.76
	02/11/04	3987.87	127.69	3860.18
	05/28/04	3987.87	127.66	3860.21
	08/06/04	3987.87	127.69	3860.18
	03/03/05	3987.87	126.80	3861.07
	05/09/05	3987.87	126.68	3861.19
	11/01/05	3987.87	127.54	3860.33
	04/03/06	3987.87	128.47	3859.40
	10/03/06	3987.87	128.17	3859.70
	04/23/07	3987.87	128.14	3859.73
	10/02/07	3987.87	127.86	3860.01
	05/21/08	3987.87	127.89	3859.98
	10/09/08	3987.87	128.09	3859.78
	04/09/09	3987.87	129.02	3858.85
	09/28/09	3987.87	129.76	3858.11
TW-11	05/15/03	3989.11	128.97	3860.14
	11/19/03	3989.11	129.14	3859.97
	02/11/04	3989.11	128.67	3860.44
	05/28/04	3989.11	128.39	3860.72
	08/05/04	3989.11	128.42	3860.69
	03/03/05	3989.11	127.56	3861.55
	05/09/05	3989.11	127.41	3861.70
	11/01/05	3989.11	128.11	3861.00
	04/03/06	3989.11	128.97	3860.14
	10/03/06	3989.11	128.98	3860.13
	04/23/07	3989.11	128.94	3860.17
	10/02/07	3989.11	128.66	3860.45
	05/22/08	3989.11	128.69	3860.42
	10/09/08	3989.11	128.91	3860.20
	04/09/09	3989.11	129.48	3859.63
	09/28/09	3989.11	130.01	3859.10

Table 1
Summary of Historical Groundwater Elevations
Buckeye Vacuum Field Unit
Lea County, NM

Monitoring Well ID	Date Gauged	TOC Elevation (ft.)	Depth To Water (ft.)	Water Elevation (ft.)
TW-13	05/15/03	3988.73	128.85	3859.88
	11/18/03	3988.73	128.89	3859.84
	02/11/04	3988.73	128.67	3860.06
	05/27/04	3988.73	128.67	3860.06
	08/06/04	3988.73	128.66	3860.07
	03/03/05	3988.73	127.74	3860.99
	05/09/05	3988.73	127.68	3861.05
	11/01/05	3988.73	128.43	3860.30
	04/03/06	3988.73	129.31	3859.42
	10/03/06	3988.73	129.13	3859.60
	04/23/07	3988.73	129.00	3859.73
	10/02/07	3988.73	128.76	3859.97
	05/21/08	3988.73	128.86	3859.87
	10/09/08	3988.73	128.96	3859.77
	04/09/09	3988.73	129.70	3859.03
	09/28/09	3988.73	130.32	3858.41
TW-14	05/15/03	3986.77	126.78	3859.99
	11/19/03	3986.77	127.28	3859.49
	02/11/04	3986.77	127.32	3859.45
	05/28/04	3986.77	126.44	3860.33
	08/05/04	3986.77	126.48	3860.29
	03/03/05	3986.77	125.55	3861.22
	05/09/05	3986.77	125.43	3861.34
	11/01/05	3986.77	126.24	3860.53
	04/03/06	3986.77	127.09	3859.68
	10/03/06	3986.77	127.05	3859.72
	04/23/07	3986.77	127.04	3859.73
	10/02/07	3986.77	126.67	3860.10
	05/22/08	3986.77	126.66	3860.11
	10/09/08	3986.77	126.98	3859.79
	04/09/09	3986.77	127.56	3859.21
	09/28/09	3986.77	128.22	3858.55
TW-15	05/15/03	3984.14	123.50	3860.64
	11/19/03	3984.14	123.76	3860.38
	02/11/04	3984.14	123.34	3860.80
	05/27/04	3984.14	123.06	3861.08
	08/05/04	3984.14	123.07	3861.07
	03/03/05	3984.14	122.18	3861.96
	05/09/05	3984.14	122.13	3862.01
	11/01/05	3984.14	122.68	3861.46
	01/12/06	3984.14	123.33	3860.81
	04/03/06	3984.14	123.65	3860.49
	09/06/06	3984.14	123.61	3860.53
	10/03/06	3984.14	123.59	3860.55
	01/31/07	3984.14	123.33	3860.81
	04/23/07	3984.14	123.59	3860.55
	08/06/07	3984.14	123.58	3860.56
	10/02/07	3984.14	123.24	3860.90
	02/20/08	3984.14	123.40	3860.74
	05/21/08	3984.14	123.39	3860.75
	08/14/08	3984.14	123.77	3860.37
	10/09/08	3984.14	123.64	3860.50
	01/19/09	3984.14	124.03	3860.11
	04/09/09	3984.14	124.29	3859.85
	07/06/09	3984.14	124.28	3859.86
	09/28/09	3984.14	124.73	3859.41

Table 1
Summary of Historical Groundwater Elevations
Buckeye Vacuum Field Unit
Lea County, NM

Monitoring Well ID	Date Gauged	TOC Elevation (ft.)	Depth To Water (ft.)	Water Elevation (ft.)
TW-17	05/15/03	3986.01	122.87	3863.14
	11/19/03	3986.01	125.64	3860.37
	02/11/04	3986.01	125.15	3860.86
	05/28/04	3986.01	124.89	3861.12
	08/05/04	3986.01	124.88	3861.13
	03/03/05	3986.01	124.06	3861.95
	05/09/05	3986.01	123.97	3862.04
	11/01/05	3986.01	124.50	3861.51
	04/03/06	3986.01	125.40	3860.61
	10/03/06	3986.01	125.45	3860.56
	04/23/07	3986.01	125.43	3860.58
	10/02/07	3986.01	125.19	3860.82
	05/22/08	3986.01	125.20	3860.81
	10/09/08	3986.01	125.48	3860.53
	04/09/09	3986.01	126.00	3860.01
	09/28/09	3986.01	126.51	3859.50
TW-19	05/15/03	3985.70	121.80	3863.90
	11/19/03	3985.70	126.25	3859.45
	02/11/04	3985.70	125.31	3860.39
	05/27/04	3985.70	125.11	3860.59
	08/05/04	3985.70	125.14	3860.56
	03/03/05	3985.70	124.26	3861.44
	05/09/05	3985.70	124.02	3861.68
	11/01/05	3985.70	124.79	3860.91
	04/03/06	3985.70	125.66	3860.04
	10/02/06	3985.70	125.78	3859.92
	04/23/07	3985.70	126.25	3859.45
	10/02/07	3985.70	125.28	3860.42
	05/22/08	3985.70	125.34	3860.36
	10/09/08	3985.70	125.80	3859.90
	04/09/09	3985.70	126.24	3859.46
	09/28/09	3985.70	126.84	3858.86
TW-20	05/15/03	3988.40	129.07	3859.33
	11/18/03	3988.40	128.93	3859.47
	02/11/04	3988.40	128.69	3859.71
	05/27/04	3988.40	128.69	3859.71
	08/06/04	3988.40	128.67	3859.73
	03/03/05	3988.40	127.79	3860.61
	05/09/05	3988.40	127.69	3860.71
	11/01/05	3988.40	128.74	3859.66
	04/03/06	3988.40	129.59	3858.81
	10/03/06	3988.40	129.20	3859.20
	04/23/07	3988.40	129.12	3859.28
	10/02/07	3988.40	128.84	3859.56
	05/21/08	3988.40	128.84	3859.56
	10/09/08	3988.40	128.98	3859.42
	04/09/09	3988.40	130.15	3858.25
	09/28/09	3988.40	130.97	3857.43

Table 1
Summary of Historical Groundwater Elevations
Buckeye Vacuum Field Unit
Lea County, NM

Monitoring Well ID	Date Gauged	TOC Elevation (ft.)	Depth To Water (ft.)	Water Elevation (ft.)
TW-23	05/15/03	3984.58	124.42	3860.16
	11/19/03	3984.58	125.95	3858.63
	02/11/04	3984.58	124.16	3860.42
	05/27/04	3984.58	123.94	3860.64
	08/05/04	3984.58	124.03	3860.55
	03/03/05	3984.58	123.10	3861.48
	05/09/05	3984.58	122.98	3861.60
	11/01/05	3984.58	123.71	3860.87
	01/12/06	3984.58	124.06	3860.52
	04/03/06	3984.58	124.52	3860.06
	09/06/06	3984.58	124.52	3860.06
	10/02/06	3984.58	124.81	3859.77
	01/31/07	3984.58	124.12	3860.46
	04/23/07	3984.58	126.02	3858.56
	08/06/07	3984.58	124.64	3859.94
	10/02/07	3984.58	124.20	3860.38
	02/20/08	3984.58	124.19	3860.39
	05/22/08	3984.58	124.25	3860.33
	08/14/08	3984.58	124.76	3859.82
	10/09/08	3984.58	124.85	3859.73
	01/19/09	3984.58	125.21	3859.37
	04/09/09	3984.58	125.09	3859.49
	07/06/09	3984.58	125.14	3859.44
	09/28/09	3984.58	125.67	3858.91
RW-2	05/15/03	3987.04	NG	NG
	11/18/03	3987.04	NG	NG
	02/11/04	3987.04	NG	NG
	05/28/04	3987.04	126.82	3860.22
	08/06/04	3987.04	126.81	3860.23
	03/03/05	3987.04	126.90	3860.14
	05/09/05	3987.04	125.84	3861.20
	11/01/05	3987.04	NG	NG
	04/03/06	3987.04	127.61	3859.43
	10/03/06	3987.04	127.33	3859.71
	04/23/07	3987.04	127.40	3859.64
	10/02/07	3987.04	126.97	3860.07
	05/21/08	3987.04	127.02	3860.02
	10/09/08	3987.04	127.25	3859.79
	04/09/09	3987.04	128.25	3858.79
	09/28/09	3987.04	128.93	3858.11
RW-3	05/15/03	NG		
	11/18/03	NG		
	02/11/04	NG		
	05/27/04	3984.18	123.50	3860.68
	08/06/04	3984.18	123.58	3860.60
	03/03/05	3984.18	122.67	3861.51
	05/09/05	3984.18	122.54	3861.64
	11/01/05	3984.18	126.72	3857.46
	04/03/06	NG		
	10/03/06	NG		
	05/22/08	NG		
	10/09/08	NG		
	04/09/08	NG		
	09/28/09	NG		

NOTES:

NG - Not Gauged

Table 2
Summary of Historical Analytical Results
Buckeye Vacuum Field Unit
Lea County, NM

NMWQCC Remediation Standards (mg/L)		250	1,000
Monitoring Well ID	**Sample Date**	**Chloride (mg/L)**	**Total Dissolved Solids (mg/L)**
TW-9	05/15/03	120	NA
	11/18/03	**442**	892
	02/11/04	**420**	972
	05/27/04	88.2	461
	08/06/04	49.0	385
	03/03/05	44.5	239
	05/09/05	53.7	378
	10/27/05	89.9	431
	01/12/06	49.6	325
	04/05/06	46.7	321
	10/02/06	54.5	319
	01/31/07	73.0	309
	04/24/07	58.8	324
	08/06/07	65.2	320
	10/03/07	54.6	322
	02/20/08	65.5	342
	05/21/08	72.5	331
	08/14/08	78.0	351
	10/09/08	71.5	371
	01/19/09	82.6	388
	04/13/09	76.7	376
	07/06/09	75.4	417
	10/01/09	75.4	356
TW-10	05/15/03	44.3	NA
	11/19/03	59.1	369
	02/11/04	52.9	372
	05/28/04	39.9	344
	08/06/04	45.4	354
	03/03/05	33.0	226
	10/27/05	71.0	372
	04/05/06	87.4	406
	10/03/06	66.6	375
	04/24/07	81.0	389
	10/03/07	85.6	385
	05/21/08	88.1	408
	10/09/08	91.1	456
	04/13/09	148	532
	10/01/09	158	622
TW-11	05/15/03	35.4	NA
	11/19/03	25.3	307
	02/11/04	83.8	610
	05/28/04	27.0	274
	08/05/04	30.1	269
	03/03/05	28.4	174
	10/27/05	31.8	260
	04/05/06	34.8	269
	10/03/06	35.1	265
	04/24/07	42.3	285
	10/04/07	47.0	388
	05/22/08	39.3	256
	05/22/08 (Dup-1)	39.1	253
	10/13/08	33.0	269
	10/13/08 (Dup-1)	39.3	284
	04/14/09	49.3	270
	10/01/09	44.3	289

Table 2
Summary of Historical Analytical Results
Buckeye Vacuum Field Unit
Lea County, NM

NMWQCC Remediation Standards (mg/L)		250	1,000
Monitoring Well ID	**Sample Date**	**Chloride (mg/L)**	**Total Dissolved Solids (mg/L)**
TW-13	05/15/03	39.0	NA
	11/18/03	64.3	560
	02/11/04	83.8	610
	05/27/04	84.5	625
	08/06/04	74.8	596
	03/03/05	90.0	502
	10/26/05	75.1	485
	04/06/06	60.3	429
	10/03/06	93.5	546
	04/25/07	140	921
	10/04/07	45.2	892
	05/21/08	47.1	614
	10/13/08	81.7	798
	04/14/09	129	1,000
	10/01/09	48.5	709
TW-14	05/15/03	65.0	NA
	11/19/03	25.4	368
	02/11/04	29.6	339
	05/28/04	30.3	346
	08/05/04	32.7	347
	03/03/05	87.9	340
	10/27/05	73.9	419
	04/05/06	71.1	421
	10/03/06	69.6	424
	04/24/07	94.6	444
	10/04/07	70.7	425
	05/22/08	85.2	421
	10/13/08	98.1	463
	04/14/09	192	600
	10/01/09	154	727
	10/1/2009 (Dup-#100)	163	714
TW-15	05/15/03	88.6	NA
	11/19/03	**561**	**1,132**
	02/11/04	**419**	908
	05/27/04	93.4	439
	08/05/04	102	545
	03/03/05	189	577
	05/09/05	184	711
	10/27/05	155	569
	01/12/06	144	486
	04/05/06	125	557
	10/02/06	119	503
	01/31/07	159	480
	04/25/07	197	594
	08/06/07	154	502
	10/04/07	136	636
	02/20/08	139	502
	05/21/08	132	483
	08/14/08	119	498
	10/13/08	123	547
	01/19/09	108	477
	04/14/09	87.1	446
	4/14/2009 (Dup-1)	95.2	450
	07/06/09	66.5	432
	10/01/09	59.6	389

Table 2
Summary of Historical Analytical Results
Buckeye Vacuum Field Unit
Lea County, NM

NMWQCC Remediation Standards (mg/L)		250	1,000
Monitoring Well ID	**Sample Date**	**Chloride (mg/L)**	**Total Dissolved Solids (mg/L)**
TW-17	05/15/03	31.9	NA
	11/19/03	26.7	295
	02/11/04	24.9	294
	05/28/04	26.7	302
	08/05/04	29.4	306
	03/03/05	178	565
	10/26/05	59.9	362
	04/05/06	36.1	294
	10/03/06	29.8	296
	04/24/07	32.9	311
	10/04/07	30.8	310
	05/22/08	31.2	281
	10/13/08	28.0	303
	04/14/09	36.8	304
	10/01/09	30.0	314
TW-19	05/15/03	35.4	NA
	11/19/03	28.3	325
	02/11/04	23.7	387
	05/27/04	33.6	287
	08/05/04	42.8	344
	03/03/05	54.2	224
	10/27/05	39.0	293
	04/06/06	40.5	308
	10/02/06	33.2	290
	04/24/07	37.3	287
	10/03/07	33.7	293
	05/22/08	33.5	275
	10/13/08	28.8	277
	04/13/09	27.8	278
	10/01/09	29.5	296
TW-20	05/15/03	35.4	NA
	11/18/03	26.5	328
	02/11/04	25.2	353
	05/27/04	27.1	316
	08/06/04	31.8	338
	03/03/05	25.3	232
	10/26/05	53.7	351
	04/06/06	34.3	329
	10/03/06	39.4	310
	04/24/07	38.2	324
	10/03/07	36.8	340
	05/21/08	41.7	315
	10/09/08	38.1	338
	04/13/09	43.3	330
	10/01/09	40.5	345

Table 2
Summary of Historical Analytical Results
Buckeye Vacuum Field Unit
Lea County, NM

NMWQCC Remediation Standards (mg/L)		250	1,000
Monitoring Well ID	**Sample Date**	**Chloride (mg/L)**	**Total Dissolved Solids (mg/L)**
TW-23	05/15/03	**1440**	NA
	11/19/03	**300**	964
	02/11/04	117	603
	05/27/04	**617**	**1,710**
	08/05/04	**919**	**2,000**
	03/03/05	**656**	**1,680**
	05/09/05	**835**	**2,680**
	10/27/05	**284**	**1,460**
	01/12/06	**272**	**1,090**
	04/06/06	35.2	**1,070**
	10/02/06	**253**	**1,070**
	01/31/07	144	626
	04/25/07	**346**	**1,260**
	08/06/07	**260**	**1,030**
	10/03/07	228	**1,110**
	02/20/08	196	944
	05/22/08	**317**	**1,300**
	01/19/09	177	882
	04/14/09	53.7	456
	07/06/09	48.2	445
	10/01/09	42.3	462
RW-2	05/28/04	30.4	306
	08/06/04	34.6	354
	03/03/05	32.4	244
	10/27/05	**264**	600
	04/07/06	244	767
	10/03/06	49.8	325
	04/25/07	64.3	331
	10/03/07	58.5	346
	05/21/08	63.9	350
	10/09/08	77.0	371
	04/13/09	82.4	382
	10/01/09	240.0	691
RW-3	05/27/04	**338**	854
	08/06/04	**700**	**1,620**
	03/03/05	**873**	**1,710**
	10/27/05	**298**	844
	04/07/06	**791**	**1,700**
	10/02/06	**1,060**	**1,930**
	04/24/07	**1,100**	**2,090**
	10/03/07	**321**	902
	05/22/08	**820**	**1,390**
	10/14/08	**847**	**1,630**
	04/13/09	**1,250**	**2,740**
	10/01/09	**1,320**	**2,850**

NOTES:
NMWQCC - New Mexico Water Quality Control Commission
TDS - Total Dissolved Solids
mg/L - milligrams per liter
NA - Not Available
BOLD - Exceeds NMWQCC standards

APPENDIX A
GROUNDWATER MONITORING DATA SHEETS

Stantec

FIRST QUARTER 2009

SECOR

GROUNDWATER SAMPLING FIELD DATA SHEET

SECOR PN: 89CH.49529.08.1000 DATE: 1-19-09 WELL NO. TW-9

FACILITY NAME: Buckeye Vacuum Field Unit TEMPERATURE: 58 °F

FIELD PERSONNEL: SB/DE WEATHER: Clear, Humid

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 130.08 FT. or IN.

B. Thickness of Free Product, if present: _____ Inches _____ FT. or IN.

C. Total Depth of well (TD) from top of casing/piezometer: 204 FT. or IN.

D. Height of Water Column in casing (h = TD - SWL): 73.92 FT. or IN.

E. **Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:**

	3 Well Vols.	5 Well Vols.		
2" Diameter =	0.5 gals/ft	0.82 gals/ft	x feet of water _____ =	_____ PV (Gal)
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water 73.92 =	147.84 PV (Gal)
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water _____ =	_____ PV (Gal)

PURGING METHOD: Bailer (Grundfos Pump) Bladder Pump DURATION: 50

OBSERVATIONS: Purge Start: 1128

Cum. PV (Gal)	Time	TDS	DO	ORP	pH	Temp.	Conduct.	SWL
	1145							127.51
	1155							127.50
	1205							125.50

TOTAL VOLUME OF WATER PURGED FROM WELL: _____

PURGE WATER STORED/DISPOSED OF WHERE/HOW: _____

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
	1218	1-500 ml Poly	Neat

COMMENTS:

350 Hz - 3 gpm

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well:
Original Water Column: 73.92 x 0.80 = --(144.84)
Collect sample when Depth to Water measures
Less than or equal to:

Signature: [signature]

SECOR
GROUNDWATER SAMPLING FIELD DATA SHEET

SECOR PN: 89CH.49529.08.1000 DATE: 1-19-08 WELL NO. TW-15

FACILITY NAME: Buckeye Vacuum Field Unit TEMPERATURE: 69 °F

FIELD PERSONNEL: SB/DE WEATHER: Clear, Sunny, Lt Breeze

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 124.03 FT. or IN.

B. Thickness of Free Product, if present: _____ Inches _____ FT. or IN.

C. Total Depth of well (TD) from top of casing/piezometer: 204 FT. or IN.

D. Height of Water Column in casing (h = TD - SWL): 79.97 FT. or IN.

E. **Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:**

	3 Well Vols.	5 Well Vols.		
2" Diameter =	0.5 gals/ft	0.82 gals/ft	x feet of water _____ =	_____ PV (Gal)
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water 79.97 =	159.94 PV (Gal)
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water _____ =	_____ PV (Gal)

PURGING METHOD: Bailer (Grundfos Pump) Bladder Pump DURATION: 54

OBSERVATIONS: Purge Start - 1505

Cum. PV (Gal)	Time	TDS	DO	ORP	pH	Temp.	Conduct.	SWL
	1515							124.75
	1525							127.78
	1535							127.73

TOTAL VOLUME OF WATER PURGED FROM WELL: _____

PURGE WATER STORED/DISPOSED OF WHERE/HOW: _____

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
_____	~~Heat~~	1-500 ml Poly	Heat
_____	1559	_____	_____
_____	_____	_____	_____

COMMENTS:

_____

_____

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well:
Original Water Column: 79.97 x 0.80 = --(140.02)
Collect sample when Depth to Water measures
Less than or equal to:

Signature: _____

SECOR

GROUNDWATER SAMPLING FIELD DATA SHEET

SECOR PN: 89CH.49529.08.1000 DATE: 1-19-09 WELL NO. TW-23

FACILITY NAME: Buckeye Vacuum Field Unit TEMPERATURE: _____ °F

FIELD PERSONNEL: SB/DE WEATHER: Clear / Sunny

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 125.21 FT. or IN.

B. Thickness of Free Product, if present: _____ Inches _____ FT. or IN.

C. Total Depth of well (TD) from top of casing/piezometer: 186.00 FT. or IN.

D. Height of Water Column in casing (h = TD - SWL): 60.79 FT. or IN.

E. **Useful approximate Purge Volumes (PV) per foot of water column for common casing sizes:**

	3 Well Vols.	5 Well Vols.		
2" Diameter =	0.5 gals/ft	0.82 gals/ft	x feet of water _____ =	_____ PV (Gal)
4" Diameter =	2.0 gals/ft	3.25 gals/ft	x feet of water 60.79 =	121.58 PV (Gal)
6" Diameter =	4.4 gals/ft	7.35 gals/ft	x feet of water _____ =	_____ PV (Gal)

PURGING METHOD: Bailer (Grundfos Pump) Bladder Pump DURATION: 1156

OBSERVATIONS:

Cum. PV (Gal)	Time	TDS	DO	ORP	pH	Temp.	Conduct.	SWL
	1157							125.52
	1209							125.60
	1217							125.62
	1223							125.62
	1237							125.63

TOTAL VOLUME OF WATER PURGED FROM WELL: _____

PURGE WATER STORED/DISPOSED OF WHERE/HOW: _____

SAMPLES COLLECTED: Depth to Water at time of sample collection: _____

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS, Cl (300.0)		500-mL (1)	None

COMMENTS:

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well:
Original Water Column: 60.79 x 0.80 = -(137.37)
Collect sample when Depth to Water measures
Less than or equal to:

Signature: _____

Stantec

SECOND QUARTER 2009

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 4/13/09 WELL NO. TW-9

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: ____ °F

FIELD PERSONNEL: SB/JI WEATHER: SUNNY

EQUIPMENT CALIBRATION: (YSI) QED Serial No.: ____

Spec. Conductivity: Standard: ____ Reading: ____ **;pH** Standard: 7 Reading ____ ;Standard 4 Reading: ____

Standard 10 Reading: ____ ; **ORP:** Standard: ____ Reading: ____ ; **DO:** T°C: ____ mmHg: ____ DO Conc.: ____

End-of-Day Recheck: Spec.Cond: ____ ;pH 7: ____ ;pH 4: ____ ;pH: 10 ____ ;ORP: ____

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 130.26 FT.

B. Thickness of Free Product, if present: ____ Inches ____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 202 + FT.

D. Height of Water Column in casing (h = TD - SWL): 71.74 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION: 13/2

OBSERVATIONS: **Purging Start Time:** 13/2

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1322	0.80	107.3	7.33	20.85	580	127.35	
	1327	0.76	104.2	7.34	21.04	582	127.34	
	1332	0.75	102.2	7.33	21.08	583	127.33	

PURGE WATER STORED/DISPOSED OF WHERE/HOW: ____

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/Cl	1332	500 ml 1	—

COMMENTS:

265 Hz

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:
Collect sample when Depth to Water measures **Less than or equal to**:

Original Water Column: 71.74 x 0.80 = -- (Total Depth of Well) 144.60

Signature: ____

8/2008

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 4/13/09 WELL NO. TW-10

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: 60 °F

FIELD PERSONNEL: SB/JI WEATHER: Sunny

EQUIPMENT CALIBRATION: (YSI) QED Serial No.:

Spec. Conductivity: Standard: Reading: ;**pH** Standard: 7 Reading ;Standard 4 Reading:

Standard 10 Reading: ; **ORP:** Standard: Reading: ; **DO:** T°C: mmHg: DO Conc.:

End-of-Day Recheck: Spec.Cond: ;pH 7: ;pH 4: ;pH: 10 ;ORP:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 129.02 FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 190.06 FT.

D. Height of Water Column in casing (h = TD - SWL): 61.04 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION: 1345

OBSERVATIONS: **Purging Start Time:** 1345

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1355	1.23	79.0	7.23	21.45	808	129.22	
	1400	1.16	71.7	7.23	21.40	806	129.23	
	1405	1.10	71.0	7.23	21.40	802	129.23	

PURGE WATER STORED/DISPOSED OF WHERE/HOW:

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/Cl	1405	500 ml / 1	-

COMMENTS:

265 Hz

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Collect sample when Depth to Water measures **Less than or equal to**:

Original Water Column: 61.04 x 0.80 = (Total Depth of Well) 141.22

Signature:

8/2008

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 4/14/09 WELL NO. TW-11

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: _____ °F

FIELD PERSONNEL: SB/JI WEATHER: Partly Cloudy

EQUIPMENT CALIBRATION: (YSI) QED Serial No.: _____

Spec. Conductivity: Standard: _____ Reading: _____ ;**pH** Standard: 7 Reading _____ ;Standard 4 Reading: _____

Standard 10 Reading: _____ ; **ORP:** Standard: _____ Reading: _____ ; **DO:** T°C: _____ mmHg: _____ DO Conc.: _____

End-of-Day Recheck: Spec.Cond: _____ ;pH 7: _____ ;pH 4: _____ ;pH: 10 _____ ;ORP: _____

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 129.48 FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 191.30 FT.

D. Height of Water Column in casing (h = TD - SWL): 61.82 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION: 1259

OBSERVATIONS: **Purging Start Time:** 1259

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1309	0.74	-148.5	7.44	22.41	442	127.12	
	1314	0.67	-131.3	7.45	22.42	439	127.12	
	1319	0.63	-104.7	7.46	22.73	440	127.12	
	1324	0.60	-96.0	7.47	22.64	437	127.12	
	1329	0.56	-89.3	7.47	22.52	438	127.12	

PURGE WATER STORED/DISPOSED OF WHERE/HOW: _____

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/Cl	1329	500 ml 1	—

COMMENTS:

265 Hz

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:
Collect sample when Depth to Water measures **Less than or equal to:**

Original Water Column: 61.82 x 0.80 = (Total Depth of Well) 141.89

Signature: _____

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 4/14/09 WELL NO. TW-13

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: °F

FIELD PERSONNEL: SB/JI WEATHER: Partly Cloudy

EQUIPMENT CALIBRATION: (YSI) QED Serial No.:

Spec. Conductivity: Standard: Reading: **;pH** Standard: 7 Reading ;Standard 4 Reading:

Standard 10 Reading: **; ORP:** Standard: Reading: **; DO:** T°C: mmHg: DO Conc.:

End-of-Day Recheck: Spec.Cond: ;pH 7: ;pH 4: ;pH: 10 :ORP:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 129.70 FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 177.62 FT.

D. Height of Water Column in casing (h = TD - SWL): 47.92 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION: 1344

OBSERVATIONS: **Purging Start Time:** 1344

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1354	0.60	38.9	6.67	21.97	1502	129.86	
	1359	0.36	46.8	6.68	22.11	1502	129.87	
	1404	0.23	51.9	6.67	22.03	1491	129.87	
	1409	0.20	57.1	6.67	22.34	1490	129.87	

PURGE WATER STORED/DISPOSED OF WHERE/HOW:

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/Cl	1409	500 ml 1	—

COMMENTS:

265 ft Pumped Purge Water 175 gal @ 1420

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:
Collect sample when Depth to Water measures **Less than or equal to**:

Original Water Column: 47.92 x 0.80 = (Total Depth of Well) 139.28

Signature:

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 4/14/09 WELL NO. TW-14

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: ____ °F

FIELD PERSONNEL: SB/JI WEATHER: Cloudy

EQUIPMENT CALIBRATION: (YSI) QED Serial No.: 06F1362 AB

Spec. Conductivity: Standard: 1,413 Reading: 1,098 ;**pH** Standard: 7 Reading 7.00 ;Standard 4 Reading: 4.00

Standard 10 Reading: 10.00 ; **ORP:** Standard: 240 Reading: 240 ; **DO:** T°C: 15.53 mmHg: 5.97 DO Conc.: ____

End-of-Day Recheck: Spec.Cond: ____ ;pH 7: ____ ;pH 4: ____ ;pH: 10 ____ ;ORP: ____

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 127.56 FT.

B. Thickness of Free Product, if present: ____ Inches ____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 189.93 FT.

D. Height of Water Column in casing (h = TD - SWL): 62.37 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION: 0930

OBSERVATIONS: **Purging Start Time:** 0930

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	0940	1.79	177.2	7.34	20.57	1020	127.77	
	0945	1.64	173.4	7.35	20.73	1017	127.75	
	0950	1.56	169.4	7.35	20.79	1016	127.79	

PURGE WATER STORED/DISPOSED OF WHERE/HOW: ____

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/Cl	0950	500 mL 1	—

COMMENTS:

265 Hz

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:
Collect sample when Depth to Water measures **Less than or equal to:**

Original Water Column: 62.37 x 0.80 = -- (Total Depth of Well) 140.03

Signature: ____

Dup #1

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 4/14/09 WELL NO. TW-15

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: °F

FIELD PERSONNEL: SB/JI WEATHER:

EQUIPMENT CALIBRATION: (YSI) QED Serial No.:

Spec. Conductivity: Standard: Reading: **;pH** Standard: 7 Reading ;Standard 4 Reading:

Standard 10 Reading: **; ORP:** Standard: Reading: **; DO:** T°C: mmHg: DO Conc.:

End-of-Day Recheck: Spec.Cond: ;pH 7: ;pH 4: ;pH: 10 ;ORP:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer:	124.29	FT.
B. Thickness of Free Product, if present: _____ Inches	_____	FT.
C. Total Depth of well (TD) from top of casing/piezometer:	202 +	FT.
D. Height of Water Column in casing (h = TD - SWL):	77.71	FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION: 1036

OBSERVATIONS: **Purging Start Time:** 1036

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1046	3.65	115.2	7.11	20.69	662	124.46	
	1051	3.51	113.4	7.11	20.83	663	124.46	
	1056	3.38	112.1	7.12	20.86	662	124.46	

PURGE WATER STORED/DISPOSED OF WHERE/HOW:

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/CC	1056	500 ml 1	—

COMMENTS:

265 H/2

Dup #1

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:
Collect sample when Depth to Water measures Less than or equal to:

Original Water Column: 77.71 x 0.80 = --(Total Depth of Well) 139.83

Signature:

8/2008

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 4/14/09 WELL NO. TW-17

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: °F

FIELD PERSONNEL: SB/JI WEATHER: Partly Cloudy

EQUIPMENT CALIBRATION: (YSI) QED Serial No.:

Spec. Conductivity: Standard: Reading: ;**pH** Standard: 7 Reading :Standard 4 Reading:

Standard 10 Reading: ; **ORP:** Standard: Reading: ; **DO:** T°C: mmHg: DO Conc.:

End-of-Day Recheck: Spec.Cond: ;pH 7: ;pH 4: ;pH: 10 :ORP:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 126.00 FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 181.30 FT.

D. Height of Water Column in casing (h = TD - SWL): 55.30 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION: 1109

OBSERVATIONS: **Purging Start Time:** 1109

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1119	0.32	100.5	7.31	20.82	459	126.25	
	1124	0.36	99.3	7.32	20.87	456	126.25	
	1129	0.53	98.3	7.33	20.94	461	126.25	

PURGE WATER STORED/DISPOSED OF WHERE/HOW:

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/Cl	1129	500 ml 1	—

COMMENTS:

265 ft

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:
Collect sample when Depth to Water measures **Less than or equal to:**

Original Water Column: 55.30 x 0.80 = -- (Total Depth of Well) 137.06

Signature:

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 4/13/09 WELL NO. TW-19

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: 61 °F

FIELD PERSONNEL: SB/JI WEATHER: Sunny

EQUIPMENT CALIBRATION: (YSI) QED Serial No.:

Spec. Conductivity: Standard: Reading: **;pH** Standard: 7 Reading ;Standard 4 Reading:

Standard 10 Reading: **; ORP:** Standard: Reading: **; DO:** T°C: mmHg: DO Conc.:

End-of-Day Recheck: Spec.Cond: ;pH 7: ;pH 4: ;pH: 10 ;ORP:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 126.24 FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 187.75 FT.

D. Height of Water Column in casing (h = TD - SWL): 61.51 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION: 1449

OBSERVATIONS: **Purging Start Time:** 1449

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1459	0.38	54.6	7.54	21.17	457	126.50	
	1504	0.28	50.8	7.54	21.27	457	126.48	
	1509	0.28	48.8	7.55	21.26	457	126.48	

PURGE WATER STORED/DISPOSED OF WHERE/HOW:

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/Cl	1509	500 ml / 1	—

COMMENTS:

265 Hz

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:
Collect sample when Depth to Water measures **Less than or equal to:**

Original Water Column: 61.51 x 0.80 = (Total Depth of Well) 138.54

Signature:

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 4/13/09 WELL NO. TW-20

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: _____ °F

FIELD PERSONNEL: SB/JI WEATHER: Sunny

EQUIPMENT CALIBRATION: (YSI) QED Serial No.: 06F1362 AB

Spec. Conductivity: Standard: 1,413 Reading: 1,046 **;pH** Standard: 7 Reading 7.00 ;Standard 4 Reading: 4.01

Standard 10 Reading: 10.00 ; **ORP:** Standard: 240 Reading: 240 ; **DO:** T°C: 13.28 mmHg: 943 DO Conc.: _____

End-of-Day Recheck: Spec.Cond: _____ ;pH 7: _____ ;pH 4: _____ ;pH: 10 _____ ;ORP: _____

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer:	130.15 FT.
B. Thickness of Free Product, if present: _____ Inches	_____ FT.
C. Total Depth of well (TD) from top of casing/piezometer:	202.+ FT.
D. Height of Water Column in casing (h = TD - SWL):	71.85 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION: 1240

OBSERVATIONS: **Purging Start Time:** 1240

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1250	0.70	118.3	7.27	21.16	508	130.30	
	1255	0.52	117.3	7.27	21.31	510	130.31	
	1300	0.44	115.3	7.27	21.39	511	130.32	

PURGE WATER STORED/DISPOSED OF WHERE/HOW: _____

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/Cl	1300	500 mL 1	—

COMMENTS:

265 Hz

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:
Collect sample when Depth to Water measures **Less than or equal to**:

Original Water Column: 71.85 x 0.80 = -- (Total Depth of Well) 144.52

Signature: _____

8/2008

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 4/14/09 WELL NO. TW-23

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: °F

FIELD PERSONNEL: SB/JI WEATHER: cloudy

EQUIPMENT CALIBRATION: (YSI) QED Serial No.:

Spec. Conductivity: Standard: Reading: **;pH** Standard: 7 Reading ;Standard 4 Reading:

Standard 10 Reading: **; ORP:** Standard: Reading: **; DO:** T°C: mmHg: DO Conc.:

End-of-Day Recheck: Spec.Cond: ;pH 7: ;pH 4: ;pH: 10 ;ORP:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 125.09 FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 179.40 FT.

D. Height of Water Column in casing (h = TD - SWL): 54.31 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION: 1005

OBSERVATIONS: **Purging Start Time:** 1005

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1015	0.41	138.5	8.80	20.50	637	125.24	
	1020	0.37	142.5	8.64	20.78	669	125.24	
	1025	0.45	144.0	8.45	20.92	711	125.24	

PURGE WATER STORED/DISPOSED OF WHERE/HOW:

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/Cl	1025	500 ml 1	—

COMMENTS:

265 Hz

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Collect sample when Depth to Water measures **Less than or equal to**:

Original Water Column: 54.31 x 0.80 = (Total Depth of Well) 135.95

Signature:

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 4/13/09 WELL NO. RW-2

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: 60 °F

FIELD PERSONNEL: SB/JI WEATHER: Sunny

EQUIPMENT CALIBRATION: (YSI) QED Serial No.:

Spec. Conductivity: Standard: Reading: **;pH** Standard: 7 Reading :Standard 4 Reading:

Standard 10 Reading: **; ORP:** Standard: Reading: **; DO:** T°C: mmHg: DO Conc.:

End-of-Day Recheck: Spec.Cond: ;pH 7: ;pH 4: ;pH: 10 ;ORP:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 128.25 FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 202 + FT.

D. Height of Water Column in casing (h = TD - SWL): 73.75 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION: 1412

OBSERVATIONS: **Purging Start Time:** 1412

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1422	1.40	80.3	7.31	20.27	606	128.24	
	1427	1.07	76.8	7.31	21.38	622	128.28	
	1432	0.92	76.7	7.30	21.36	621	128.29	
	1437	0.85	77.9	7.30	21.38	621	129.29	

PURGE WATER STORED/DISPOSED OF WHERE/HOW:

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/CL	1437	500 ml 1	—

COMMENTS:

265 Hz

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Collect sample when Depth to Water measures Less than or equal to:

Original Water Column: 73.75 x 0.80 = –(Total Depth of Well) 143.00

Signature:

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 4/13/09 WELL NO. RW-3

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: _____ °F

FIELD PERSONNEL: SB/JI WEATHER: Sunny

EQUIPMENT CALIBRATION: (YSI) QED Serial No.: _____

Spec. Conductivity: Standard: _____ Reading: _____ ;**pH** Standard: 7 Reading _____ ;Standard 4 Reading: _____

Standard 10 Reading: _____ ; **ORP:** Standard: _____ Reading: _____ ; **DO:** T°C: _____ mmHg: _____ DO Conc.: _____

End-of-Day Recheck: Spec.Cond: _____ ;pH 7: _____ ;pH 4: _____ ;pH: 10 _____ ;ORP: _____

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: _____ FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: _____ FT.

D. Height of Water Column in casing (h = TD - SWL): _____ FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION: _____

OBSERVATIONS: **Purging Start Time:** _____

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	

PURGE WATER STORED/DISPOSED OF WHERE/HOW: _____

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/Cl	1455	500 ml 1	—

COMMENTS:

Pumping Well / No Parameters

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:
Collect sample when Depth to Water measures **Less than or equal to:**

Original Water Column: _____ x 0.80 = _____ (Total Depth of Well)

Signature: _____

8/2008

Stantec

THIRD QUARTER 2009

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 7-6-09 WELL NO. TW-9

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: 70 °F

FIELD PERSONNEL: SB/JI WEATHER: Cloudy

EQUIPMENT CALIBRATION: (YSI) QED Serial No.: 06F1362 AB

Spec. Conductivity: Standard: 1,413 Reading: 1,413 **;pH** Standard: 7 Reading 7.00 ;Standard 4 Reading: 4.00

Standard 10 Reading: 10.00 ; **ORP:** Standard: 240 Reading: 240 ; **DO:** T°C: 24.09 mmHg: 7.62 DO Conc.:

End-of-Day Recheck: Spec.Cond: ;pH 7: ;pH 4: ;pH: 10 ;ORP:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 130.36 FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 202+ FT.

D. Height of Water Column in casing (h = TD - SWL): 71.64 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION: _____

OBSERVATIONS: **Purging Start Time:** 1123

Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
1133	1.74	81.3	7.21	23.10	604	127.46	
1138	1.35	78.2	7.22	22.59	603	127.47	
1143	1.20	75.3	7.22	22.73	607	127.47	
1148	1.00	71.8	7.22	22.80	612	127.47	
1153	0.92	70.0	7.23	23.06	613	127.47	

PURGE WATER STORED/DISPOSED OF WHERE/HOW: _____

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/CL	1153	500 ml / 1	—

COMMENTS:

265 Hz

asing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:
Collect sample when Depth to Water measures **Less than or equal to:**

Original Water Column: 71.64 x 0.80 = -- (Total Depth of Well) 144.68

Signature: _____

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 7-6-09 WELL NO. TW-15

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: 77 °F

FIELD PERSONNEL: SB/JI WEATHER: cloudy

EQUIPMENT CALIBRATION: (YSI) QED Serial No.:

Spec. Conductivity: Standard: Reading: **;pH** Standard: 7 Reading ;Standard 4 Reading:

Standard 10 Reading: **; ORP:** Standard: Reading: **; DO:** T°C: mmHg: DO Conc.:

End-of-Day Recheck: Spec.Cond: ;pH 7: ;pH 4: ;pH: 10 ;ORP:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 124.28 FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 202+ FT.

D. Height of Water Column in casing (h = TD - SWL): 77.72 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION:

OBSERVATIONS: **Purging Start Time:** 1318

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1328	4.53	59.1	7.11	21.97	658	124.55	
	1333	4.05	59.1	7.11	22.10	659	124.55	
	1338	3.80	58.9	7.10	22.07	660	124.55	
	1343	3.66	58.6	7.10	22.03	659	124.55	

PURGE WATER STORED/DISPOSED OF WHERE/HOW:

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/cl	1343	500 ml / 1	—

COMMENTS:

270 Hz

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Collect sample when Depth to Water measures **Less than or equal to**:

Original Water Column: 77.72 x 0.80 = --(Total Depth of Well) 139.82

Signature:

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 7-6-09 WELL NO. TW-23

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: 78 °F

FIELD PERSONNEL: SB/JI WEATHER: cloudy

EQUIPMENT CALIBRATION: (YSI) QED Serial No.:

Spec. Conductivity: Standard: Reading: **;pH** Standard: 7 Reading ;Standard 4 Reading:

Standard 10 Reading: ; **ORP:** Standard: Reading: ; **DO:** T°C: mmHg: DO Conc.:

End-of-Day Recheck: Spec.Cond: ;pH 7: ;pH 4: ;pH: 10 ;ORP:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 125.14 FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 179.40 FT.

D. Height of Water Column in casing (h = TD - SWL): 54.26 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION:

OBSERVATIONS: **Purging Start Time:** 1357

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1407	2.25	44.0	8.02	22.71	630	125.31	
	1412	1.70	43.7	8.65	22.68	670	125.31	
	1417	1.54	43.3	8.40	22.67	722	125.31	
	1422	1.67	42.1	8.32	22.70	745	125.31	

PURGE WATER STORED/DISPOSED OF WHERE/HOW:

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS / cl	1422	500 mL 1	—

COMMENTS:

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:
Collect sample when Depth to Water measures **Less than or equal to**:

Original Water Column: 54.26 x 0.80 = --(Total Depth of Well) 135.99

Signature:

8/2008

Stantec

FOURTH QUARTER 2009

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 10/1/09 WELL NO. TW-19

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: ______ °F

FIELD PERSONNEL: J. Longwell WEATHER: Clear / Slight Breeze

EQUIPMENT CALIBRATION: (YSI) QED Serial No.: 07G00513

Spec. Conductivity: Standard: 1413 Reading: 1412 @23.29 ;pH Standard: 7 Reading 7.00 @23.36 ;Standard 4 Reading: 4.00 @23.47

Standard 10 Reading: 9.98 @23.55 ; ORP: Standard: 240 Reading: 240.0 @25.15; DO: T°C: 32.69 mmHg: 6.27 BP DO Conc.: 658.1

End-of-Day Recheck: Spec.Cond: 1495 ;pH 7: 7.09 ;pH 4: 4.00 ;pH: 10 9.86 ;ORP: 230.9

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 126.84 FT.

B. Thickness of Free Product, if present: ______ Inches ______ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 187.67 FT.

D. Height of Water Column in casing (h = TD - SWL): 60.83 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION: ______

OBSERVATIONS: Purging Start Time: 0931

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	0933	3.64	81.6	7.13	22.05	0.442	127.15	
	0938	0.99	72.0	7.34	21.82	0.430	127.13	
	0943	1.31	64.8	7.36	22.59	0.431	127.13	
	0948	1.82	54.4	7.37	22.75	0.431	127.13	
	0953	1.94	48.8	7.38	22.97	0.431	127.14	
	0958	2.07	46.4	7.35	22.88	0.431	127.14	
	1003							

→ @ Sample Lgt Grey
No Color / No Odor / Clear

PURGE WATER STORED/DISPOSED OF WHERE/HOW: ______

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
~~[illegible]~~ JC	0958	~~[illegible]~~ JC	~~[illegible]~~ JC
Cl - (300.0) TDS		500ml Poly (1)	

COMMENTS:

224 Hz

ng Capacities:
2-inch hole.........0.16 gal/lin ft.
4-inch hole.........0.65 gal/lin ft.
6.5-inch hole.......1.70 gal/lin ft
8-inch hole.........2.60 gal/lin ft
10-inch hole........4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:
Collect sample when Depth to Water measures **Less than or equal to**:

Original Water Column: 60.83 x 0.80 = -- (Total Depth of Well) 139.01

Signature: JC

8/2008

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 10/1/09 WELL NO. TW-17

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: 76 °F

FIELD PERSONNEL: J. Longwell WEATHER: Clear/Breezy

EQUIPMENT CALIBRATION: (YSI) QED Serial No.:

Spec. Conductivity: Standard: Reading: **;pH** Standard: 7 Reading: ;Standard 4 Reading:

Standard 10 Reading: ; **ORP:** Standard: Reading: ; **DO:** T°C: mmHg: DO Conc.:

End-of-Day Recheck: Spec.Cond: ;pH 7: ;pH 4: ;pH: 10 ;ORP:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 126.51 FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 181.27 FT.

D. Height of Water Column in casing (h = TD - SWL): 54.76 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION:

OBSERVATIONS: **Purging Start Time:** 1013

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1014	3.78	44.9	7.29	23.41	0.447	126.81	
	1019	0.73	43.0	7.16	21.77	0.487	126.83	
	1024	0.60	39.9	7.15	21.88	0.448	126.83	
	1029	0.95	38.2	7.15	21.95	0.449	126.84	
	1034	1.00	36.5	7.13	21.96	0.449	126.84	
	1039	1.11	34.0	7.13	21.96	0.448	126.84	

No Color / No Odor / Clear

PURGE WATER STORED/DISPOSED OF WHERE/HOW:

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
1 (300.0) TDS	1039	500cc Poly (1)	—

COMMENTS:

274 Hz

ng Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:
Collect sample when Depth to Water measures **Less than or equal to:**

Original Water Column: 54.76 x 0.80 = –(Total Depth of Well) 137.46

Signature:

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 10/1/09 WELL NO. TW-20

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: 70 °F

FIELD PERSONNEL: T. Longwell WEATHER: Clear / Breezy

EQUIPMENT CALIBRATION: (YSI) QED Serial No.:

Spec. Conductivity: Standard: Reading: ;**pH** Standard: 7 Reading ;Standard 4 Reading:

Standard 10 Reading: ; **ORP:** Standard: Reading: ; **DO:** T°C: mmHg: DO Conc.:

End-of-Day Recheck: Spec.Cond: ;pH 7: ;pH 4: ;pH: 10 ;ORP:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 130.97 FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 202 FT.

D. Height of Water Column in casing (h = TD - SWL): 71.03 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION:

OBSERVATIONS: **Purging Start Time:** 1058

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1101	3.00	27.6	7.30	23.50	0.480	131.16	
	1106	0.67	27.9	7.15	21.65	0.486	131.16	
	1111	1.08	26.8	7.17	21.83	0.486	131.16	
	1116	0.93	26.4	7.18	21.88	0.486	131.17	
	1121	0.85	26.2	7.18	21.94	0.486	131.17	
	1126	0.81	26.3	7.18	21.99	0.486		

No Color / No Odor / Clear

PURGE WATER STORED/DISPOSED OF WHERE/HOW:

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS / Cl (300.0)	1126	500mL Poly (1)	—

COMMENTS:

274 Hz

ng Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Collect sample when Depth to Water measures **Less than or equal to:**

Original Water Column: 71.03 x 0.80 = –(Total Depth of Well) 145.18

Signature: DSC

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 10/1/09 WELL NO. TW-11

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: 80 °F

FIELD PERSONNEL: T. Longwell WEATHER: Clear / Breezy

EQUIPMENT CALIBRATION: (YSI) QED Serial No.:

Spec. Conductivity: Standard: Reading: ;**pH** Standard: 7 Reading ;Standard 4 Reading:

Standard 10 Reading: ; **ORP:** Standard: Reading: ; **DO:** T°C: mmHg: DO Conc.:

End-of-Day Recheck: Spec.Cond: ;pH 7: ;pH 4: ;pH: 10 ;ORP:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 130.01 FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 191.25 FT.

D. Height of Water Column in casing (h = TD - SWL): 61.24 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION:

OBSERVATIONS: **Purging Start Time:** 1146

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1147	2.10	50.1	7.63	23.88	0.424	130.19	
	1152	0.50	41.9	7.34	22.65	0.429	130.20	
	1157	0.42	36.2	7.33	23.17	0.429	130.20	
	1202	0.39	30.0	7.32	23.39	0.431	130.20	
	1207	0.38	25.2	7.37	23.45	0.432	130.20	
	1212							

No Color / No Odor / Clear

PURGE WATER STORED/DISPOSED OF WHERE/HOW:

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS / Cl-(300.0)	1207	500ml Poly (1)	

COMMENTS:

274 MZ

g Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Collect sample when Depth to Water measures **Less than or equal to:**

Original Water Column: 61.24 x 0.80 = (Total Depth of Well) 142.26

Signature:

8/2008

Stantec

GROUNDWATER SAMPLING FIELD DATA SHEET

PROJECT NO.: 212201144 DATE: 10/1/09 WELL NO. TW-23

FACILITY NAME: Buckeye Vacuum Field TEMPERATURE: 83 °F

FIELD PERSONNEL: T. Longwell WEATHER: Clear / Breezy

EQUIPMENT CALIBRATION: (YSI) QED Serial No.:

Spec. Conductivity: Standard: Reading: ;pH Standard: 7 Reading ;Standard 4 Reading:

Standard 10 Reading: ; **ORP:** Standard: Reading: ; **DO:** T°C: mmHg: DO Conc.:

End-of-Day Recheck: Spec.Cond: ;pH 7: ;pH 4: ;pH: 10 ;ORP:

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: 125.67 FT.

B. Thickness of Free Product, if present: _____ Inches _____ FT.

C. Total Depth of well (TD) from top of casing/piezometer: 178.25 FT.

D. Height of Water Column in casing (h = TD - SWL): 52.58 FT.

PURGING METHOD: (Grundfos) Bladder Peristaltic Fultz DURATION:

OBSERVATIONS: **Purging Start Time:** 1212

	Time	DO (±10%)	ORP(±10mV)	pH(±0.1)	Temp.(±3%)	Conduct.(±3%)	SWL	
	1213	0.02	47.6	8.12	22.99	0.627	125.92	
	1218	0.38	41.7	8.13	22.87	0.680	125.93	
	1223	0.39	40.6	8.14	22.80	0.673	125.93	
	1228	0.42	34.3	8.15	22.92	0.687	126.98	
	1233	0.47	29.1	8.13	22.88	0.697	126.00	
	1239							

PURGE WATER STORED/DISPOSED OF WHERE/HOW:

SAMPLES COLLECTED:

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
TDS/Cl (300.0)	1233	500-c Poly (1)	—

COMMENTS:

274

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft
8-inch hole.....2.60 gal/lin ft
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Collect sample when Depth to Water measures Less than or equal to:

Original Water Column: 52.58 x 0.80 = –(Total Depth of Well) 136.19

Signature:

8/2008

APPENDIX B
LABORATORY ANALYTICAL REPORTS

Stantec

FIRST QUARTER 2009

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax:717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

713-937-7973

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1129250. Samples arrived at the laboratory on Friday, January 23, 2009. The PO# for this group is 89CH.49529.08 and the release number is BUCKEYE-SA.

Client Description	Lancaster Labs Number
TW-9 Grab Water Sample	5583163
TW-15 Grab Water Sample	5583164
TW-23 Grab Water Sample	5583165

ELECTRONIC COPY TO	STANTEC International, Inc.	Attn: Steve Bell
ELECTRONIC COPY TO	STANTEC International, Inc.	Attn: Bill Goldsby

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Questions? Contact your Client Services Representative
Wendy A Kozma at (717) 656-2300

Respectfully Submitted,

Robert Heisey

Robert Heisey
Senior Specialist

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. WW5583163 **Group No. 1129250**

TW-9 Grab Water Sample
Buckeye Vacuum

Collected:01/19/2009 12:18 by SB

Account Number: 11842

Submitted: 01/23/2009 09:00
Reported: 02/04/2009 at 16:54
Discard: 03/07/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00212	Total Dissolved Solids	n.a.	388	9.7	mg/l	1
00224	Chloride	16887-00-6	82.6	20.0	mg/l	100

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00212	Total Dissolved Solids	SM20 2540 C	1	01/26/2009 08:38	Susan E Hibner	1
00224	Chloride	EPA 300.0	1	02/03/2009 14:36	Ashley M Heckman	100

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW5583164 **Group No. 1129250**

TW-15 Grab Water Sample
Buckeye Vacuum

Collected:01/19/2009 15:59 by SB

Account Number: 11842

Submitted: 01/23/2009 09:00
Reported: 02/04/2009 at 16:54
Discard: 03/07/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00212	Total Dissolved Solids	n.a.	477	9.7	mg/l	1
00224	Chloride	16887-00-6	108	20.0	mg/l	100

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00212	Total Dissolved Solids	SM20 2540 C	1	01/26/2009 08:38	Susan E Hibner	1
00224	Chloride	EPA 300.0	1	02/03/2009 14:52	Ashley M Heckman	100

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW5583165 **Group No. 1129250**

TW-23 Grab Water Sample
Buckeye Vacuum

Collected:01/19/2009 12:40 by SB

Account Number: 11842

Submitted: 01/23/2009 09:00
Reported: 02/04/2009 at 16:54
Discard: 03/07/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
00212	Total Dissolved Solids	n.a.	882	38.8	mg/l	1
00224	Chloride	16887-00-6	177	40.0	mg/l	200

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00212	Total Dissolved Solids	SM20 2540 C	1	01/26/2009 08:38	Susan E Hibner	1
00224	Chloride	EPA 300.0	1	02/03/2009 15:08	Ashley M Heckman	200

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Analysis Report

Quality Control Summary

Client Name: STANTEC International, Inc. Group Number: 1129250
Reported: 02/04/09 at 04:54 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 09026021201A	Sample number(s): 5583163-5583165							
Total Dissolved Solids	N.D.	9.7	mg/l	90		80-120		
Batch number: 09034196601A	Sample number(s): 5583163-5583165							
Chloride	N.D.	0.20	mg/l	99		90-110		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 09026021201A	Sample number(s): 5583163-5583165 UNSPK: 5583165 BKG: 5583165								
Total Dissolved Solids	102	102	54-143	0	12	882	894	1	9
Batch number: 09034196601A	Sample number(s): 5583163-5583165 UNSPK: P583861 BKG: P583861								
Chloride	94		90-110			174	172	1 (1)	20

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Chevron Generic Analysis Request/Chain of Custody

006906

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. #: 11842 Sample #: 5583163-65 SCR#: _____

Grp # 1129250

Facility #: Buckeye Vacuum Field - 89CH.09529.08
Site Address: Buckeye, New Mexico
Chevron PM: M Hudson Lead Consultant: B. Goldsby
Consultant/Office: Stanley - Houston
Consultant Prj. Mgr.: Bill Goldsby
Consultant Phone #: 713-937-7973 Fax #: 281-507-3578
Sampler: SB, JL, JT
Service Order #: _____ ☐ Non SAR: _____

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Water	Oil ☐ Air ☐	Total Number of Containers	BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates	TPH G	TPH D ☐ Extended Rng. ☐ Silica Gel Cleanup	Lead Total ☐ Diss. ☐ Method	VPH/EPH	NWTPH-HCID ☐ quantification	TDS	Cl- (300.0)		
TW-9	1-19-09	1218	✓			✓		1									✓	✓		
TW-15	1-19-09	1559	✓			✓		1									✓	✓		
TW-23	1-19-09	1240	✓			✓		1									✓	✓		

Matrix: ☐ Potable ☐ NPDES ☑

Preservation Codes: — —

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

Comments / Remarks

Turnaround Time Requested (TAT) (please circle)
(STD. TAT) 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk _____ Other.

	Date	Time		Date	Time
Relinquished by: Steve Reed	1/22/09	1500 7200	Received by:		
Relinquished by:			Received by:		
Relinquished by:			Received by:		
Relinquished by Commercial Carrier: UPS (FedEx) Other _____			Received by: Brenda Barclay	1-23-09	0900
Temperature Upon Receipt 4.4 C°			Custody Seals Intact? (Yes) No		

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Stantec

SECOND QUARTER 2009

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax:717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

713-937-7973

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

April 29, 2009

SAMPLE GROUP

The sample group for this submittal is 1140565. Samples arrived at the laboratory on Wednesday, April 15, 2009. The PO# for this group is 89CH.49529.08 and the release number is BUCKEYE-SA.

Client Description	Lancaster Labs Number
TW-20 Grab Water Sample	5646821
TW-9 Grab Water Sample	5646822
TW-10 Grab Water Sample	5646823
RW-2 Grab Water Sample	5646824
TW-19 Grab Water Sample	5646825
RW-3 Grab Water Sample	5646826
TW-14 Grab Water Sample	5646827
TW-23 Grab Water Sample	5646828
TW-15 Grab Water Sample	5646829
TW-17 Grab Water Sample	5646830
TW-11 Grab Water Sample	5646831
TW-13 Grab Water Sample	5646832
DUP #1 Grab Water Sample	5646833

METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Chronicle.

ELECTRONIC STANTEC International, Inc. Attn: Steve Bell

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax:717-656-2681 • www.lancasterlabs.com

Analysis Report

COPY TO
ELECTRONIC COPY TO STANTEC International, Inc. Attn: Bill Goldsby

Questions? Contact your Client Services Representative
Wendy A Kozma at (717) 656-2300

Respectfully Submitted,

Robert Heisey
Senior Specialist

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. WW 5646821

Group No. 1140565
NM

TW-20 Grab Water Sample
Buckeye Vacuum

Collected: 04/13/2009 13:00 by SB

Account Number: 11842

Submitted: 04/15/2009 09:10
Reported: 04/29/2009 at 07:11
Discard: 05/30/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		mg/l	mg/l	
00224	Chloride	16887-00-6	43.3	10.0	50
SM20 2540 C	**Wet Chemistry**		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	330	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09112196102A	04/23/2009 00:28	Ashley M Heckman	50
00212	Total Dissolved Solids	SM20 2540 C	1	09106021201A	04/16/2009 08:48	Susan A Engle	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5646822

Group No. 1140565
NM

TW-9 Grab Water Sample
Buckeye Vacuum

Collected: 04/13/2009 13:32 by SB

Account Number: 11842

Submitted: 04/15/2009 09:10
Reported: 04/29/2009 at 07:11
Discard: 05/30/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		mg/l	mg/l	
00224	Chloride	16887-00-6	76.7	10.0	50
SM20 2540 C	**Wet Chemistry**		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	376	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09112196102A	04/23/2009 00:46	Ashley M Heckman	50
00212	Total Dissolved Solids	SM20 2540 C	1	09106021201A	04/16/2009 08:48	Susan A Engle	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5646823

Group No. 1140565
NM

TW-10 Grab Water Sample
Buckeye Vacuum

Collected: 04/13/2009 14:05 by SB

Account Number: 11842

Submitted: 04/15/2009 09:10
Reported: 04/29/2009 at 07:11
Discard: 05/30/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		mg/l	mg/l	
00224	Chloride	16887-00-6	148	20.0	100
SM20 2540 C	**Wet Chemistry**		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	532	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09112196102A	04/23/2009 01:03	Ashley M Heckman	100
00212	Total Dissolved Solids	SM20 2540 C	1	09106021201A	04/16/2009 08:48	Susan A Engle	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5646824

Group No. 1140565
NM

RW-2 Grab Water Sample
Buckeye Vacuum

Collected: 04/13/2009 14:37 by SB

Account Number: 11842

Submitted: 04/15/2009 09:10
Reported: 04/29/2009 at 07:11
Discard: 05/30/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		mg/l	mg/l	
00224	Chloride	16887-00-6	82.4	10.0	50
SM20 2540 C	**Wet Chemistry**		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	382	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09112196102A	04/23/2009 01:20	Ashley M Heckman	50
00212	Total Dissolved Solids	SM20 2540 C	1	09106021201A	04/16/2009 08:48	Susan A Engle	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5646825

Group No. 1140565
NM

TW-19 Grab Water Sample
Buckeye Vacuum

Collected: 04/13/2009 15:09 by SB

Account Number: 11842

Submitted: 04/15/2009 09:10
Reported: 04/29/2009 at 07:11
Discard: 05/30/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		mg/l	mg/l	
00224	Chloride	16887-00-6	27.8	2.0	10
SM20 2540 C	**Wet Chemistry**		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	278	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	2	09112196102A	04/24/2009 05:44	Ashley M Heckman	10
00212	Total Dissolved Solids	SM20 2540 C	1	09106021201A	04/16/2009 08:48	Susan A Engle	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5646826

Group No. 1140565
NM

RW-3 Grab Water Sample
Buckeye Vacuum

Collected: 04/13/2009 14:55 by SB

Account Number: 11842

Submitted: 04/15/2009 09:10
Reported: 04/29/2009 at 07:11
Discard: 05/30/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		**mg/l**	**mg/l**	
00224	Chloride	16887-00-6	1,250	100	500
SM20 2540 C	**Wet Chemistry**		**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	2,740	77.6	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09112196102A	04/23/2009 01:55	Ashley M Heckman	500
00212	Total Dissolved Solids	SM20 2540 C	1	09106021201A	04/16/2009 08:48	Susan A Engle	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5646827

Group No. 1140565
NM

TW-14 Grab Water Sample
Buckeye Vacuum

Collected: 04/14/2009 09:50 by SB

Account Number: 11842

Submitted: 04/15/2009 09:10
Reported: 04/29/2009 at 07:11
Discard: 05/30/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		**mg/l**	**mg/l**	
00224	Chloride	16887-00-6	192	20.0	100
SM20 2540 C	**Wet Chemistry**		**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	600	19.4	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09112196102A	04/23/2009 02:13	Ashley M Heckman	100
00212	Total Dissolved Solids	SM20 2540 C	1	09106021201A	04/16/2009 08:48	Susan A Engle	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5646828

Group No. 1140565
NM

TW-23 Grab Water Sample
Buckeye Vacuum

Collected: 04/14/2009 10:25 by SB

Account Number: 11842

Submitted: 04/15/2009 09:10
Reported: 04/29/2009 at 07:11
Discard: 05/30/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		mg/l	mg/l	
00224	Chloride	16887-00-6	53.7	4.0	20
SM20 2540 C	**Wet Chemistry**		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	456	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	2	09112196102A	04/24/2009 06:02	Ashley M Heckman	20
00212	Total Dissolved Solids	SM20 2540 C	1	09107021201A	04/17/2009 09:21	Susan E Hibner	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5646829

Group No. 1140565
NM

TW-15 Grab Water Sample
Buckeye Vacuum

Collected: 04/14/2009 10:56 by SB

Account Number: 11842

Submitted: 04/15/2009 09:10
Reported: 04/29/2009 at 07:11
Discard: 05/30/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		mg/l	mg/l	
00224	Chloride	16887-00-6	87.1	10.0	50
SM20 2540 C	**Wet Chemistry**		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	446	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09112196601B	04/22/2009 21:04	Ashley M Heckman	50
00212	Total Dissolved Solids	SM20 2540 C	1	09107021201A	04/17/2009 09:21	Susan E Hibner	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5646830

Group No. 1140565
NM

TW-17 Grab Water Sample
Buckeye Vacuum

Collected: 04/14/2009 11:29 by SB

Account Number: 11842

Submitted: 04/15/2009 09:10
Reported: 04/29/2009 at 07:11
Discard: 05/30/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		mg/l	mg/l	
00224	Chloride	16887-00-6	36.8	10.0	50
SM20 2540 C	**Wet Chemistry**		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	304	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09112196601B	04/22/2009 21:20	Ashley M Heckman	50
00212	Total Dissolved Solids	SM20 2540 C	1	09107021201A	04/17/2009 09:21	Susan E Hibner	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5646831

Group No. 1140565
NM

TW-11 Grab Water Sample
Buckeye Vacuum

Collected: 04/14/2009 13:29 by SB

Account Number: 11842

Submitted: 04/15/2009 09:10
Reported: 04/29/2009 at 07:11
Discard: 05/30/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		mg/l	mg/l	
00224	Chloride	16887-00-6	49.3	10.0	50
SM20 2540 C	**Wet Chemistry**		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	270	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09112196601B	04/22/2009 21:35	Ashley M Heckman	50
00212	Total Dissolved Solids	SM20 2540 C	1	09107021201A	04/17/2009 09:21	Susan E Hibner	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5646832

Group No. 1140565
NM

TW-13 Grab Water Sample
Buckeye Vacuum

Collected: 04/14/2009 14:09 by SB

Account Number: 11842

Submitted: 04/15/2009 09:10
Reported: 04/29/2009 at 07:11
Discard: 05/30/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		mg/l	mg/l	
00224	Chloride	16887-00-6	129	40.0	200
SM20 2540 C	**Wet Chemistry**		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	1,000	38.8	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09112196601B	04/22/2009 21:51	Ashley M Heckman	200
00212	Total Dissolved Solids	SM20 2540 C	1	09107021201A	04/17/2009 09:21	Susan E Hibner	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5646833

Group No. 1140565
NM

DUP #1 Grab Water Sample
Buckeye Vacuum

Collected: 04/14/2009 by SB

Account Number: 11842

Submitted: 04/15/2009 09:10
Reported: 04/29/2009 at 07:11
Discard: 05/30/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		mg/l	mg/l	
00224	Chloride	16887-00-6	95.2	20.0	100
SM20 2540 C	**Wet Chemistry**		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	450	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09112196601B	04/22/2009 22:06	Ashley M Heckman	100
00212	Total Dissolved Solids	SM20 2540 C	1	09107021201A	04/17/2009 09:21	Susan E Hibner	1

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Analysis Report

Quality Control Summary

Client Name: STANTEC International, Inc.
Reported: 04/29/09 at 07:11 AM

Group Number: 1140565

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 09112196102A	Sample number(s): 5646821-5646828							
Chloride	N.D.	0.20	mg/l	102		90-110		
Batch number: 09112196601B	Sample number(s): 5646829-5646833							
Chloride	N.D.	0.20	mg/l	100		90-110		
Batch number: 09106021201A	Sample number(s): 5646821-5646827							
Total Dissolved Solids	N.D.	9.7	mg/l	96		80-120		
Batch number: 09107021201A	Sample number(s): 5646828-5646833							
Total Dissolved Solids	N.D.	9.7	mg/l	96		80-120		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 09112196102A	Sample number(s): 5646821-5646828 UNSPK: P648966 BKG: P648966								
Chloride	97		90-110			210	200	5	20
Batch number: 09112196601B	Sample number(s): 5646829-5646833 UNSPK: P648941 BKG: P648941								
Chloride	89*		90-110			61.1	60.7	1	20
Batch number: 09106021201A	Sample number(s): 5646821-5646827 UNSPK: P646129 BKG: P646129								
Total Dissolved Solids	103	99	54-143	1	12	3,050	2,990	2	9
Batch number: 09107021201A	Sample number(s): 5646828-5646833 UNSPK: 5646832 BKG: 5646832								
Total Dissolved Solids	97	100	54-143	2	12	1,000	954	5	9

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Chevron Generic Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

010342

For Lancaster Laboratories use only
Acct. #: 11842 Sample #: 516168 21-33 SCR#: 51919
Group# 1140565

Facility #: Buckeye Vacuum Field - 21220114
Site Address: Buckeye, New Mexico
Chevron PM: M. Hudson Lead Consultant: B. Goldsby
Consultant/Office: Stantec - Houston
Consultant Prj. Mgr.: B. Goldsby
Consultant Phone #: 713-937-7975 Fax #: 713-983-8328
Sampler: SB, JA
Service Order #: ☐ Non SAR:

Matrix: ☐ Potable ☑ NPDES; Soil ☐ Water ☑ Oil ☐ Air ☐

Analyses Requested / **Preservation Codes**

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds
8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Oil	Air	Total Number of Containers	BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates	TPH G	TPH D ☐ Extended Rng. ☐ Silica Gel Cleanup	Lead Total ☐ Diss. ☐ Method	VPH/EPH	NWTPH H HCID ☐ quantification	TDS	Cl- (300.0)
TW-20	4-13-09	1300	✓			✓			1									✓	✓
TW-9	4-13-09	1332	✓			✓			1									✓	✓
TW-10	4-13-09	1405	✓			✓			1									✓	✓
RW-2	4-13-09	1437	✓			✓			1									✓	✓
TW-19	4-13-09	1509	✓			✓			1									✓	✓
RW-3	4-13-09	1455	✓			✓			1									✓	✓
TW-14	4-14-09	0950	✓			✓			1									✓	✓
TW-23	4-14-09	1025	✓			✓			1									✓	✓
TW-15	4-14-09	1056	✓			✓			1									✓	✓
TW-17	4-14-09	1129	✓			✓			1									✓	✓
TW-11	4-14-09	1329	✓			✓			1									✓	✓
TW-13	4-14-09	1409	✓			✓			1									✓	✓
DUP #1	4-14-09	—	✓			✓			1									✓	✓

Comments / Remarks

All times are Central Time Zone

Turnaround Time Requested (TAT) (please circle)
STD. TAT | 72 hour | 48 hour | 24 hour | 4 day | 5 day

Data Package Options (please circle if required)
QC Summary | Type I - Full
Type VI (Raw Data) | Disk / EDD
WIP (RWQCB) | Standard Format
Disk | _____ Other.

	Date	Time		Date	Time
Relinquished by:	12-12-07	0838	Received by:		
Relinquished by:	4/14/09	1740	Received by:		
Relinquished by:			Received by:		
Relinquished by Commercial Carrier: UPS FedEx Other			Received by:	4/15/09	0910

Temperature Upon Receipt 1.6 C°
Custody Seals Intact? Yes No

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Stantec

THIRD QUARTER 2009

Lancaster Laboratories

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

July 16, 2009

SAMPLE GROUP

The sample group for this submittal is 1152270. Samples arrived at the laboratory on Tuesday, July 07, 2009. The PO# for this group is 89CH.49529.08 and the release number is BUCKEYE-SA.

Client Description	Lancaster Labs Number
TW-9 Grab Water Sample	5717013
TW-15 Grab Water Sample	5717014
TW-23 Grab Water Sample	5717015

METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	STANTEC International, Inc.	Attn: Steve Bell
ELECTRONIC COPY TO	STANTEC International, Inc.	Attn: Matt Carlson

Lancaster Laboratories

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Analysis Report

Questions? Contact your Client Services Representative
Wendy A Kozma at (717) 656-2300

Respectfully Submitted,

Robert Heisey

Robert Heisey
Senior Specialist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5717013

Group No. 1152270
NM

TW-9 Grab Water Sample
Buckeye Vacuum

Collected: 07/06/2009 11:53 by SB

Account Number: 11842

Submitted: 07/07/2009 09:10
Reported: 07/16/2009 at 14:57
Discard: 08/16/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		mg/l	mg/l	
00224	Chloride	16887-00-6	75.4	10.0	50
SM20 2540 C	**Wet Chemistry**		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	417	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09196196601B	07/16/2009 07:21	Ashley M Adams	50
00212	Total Dissolved Solids	SM20 2540 C	1	09190021201A	07/09/2009 08:21	Susan A Engle	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5717014

Group No. 1152270
NM

TW-15 Grab Water Sample
Buckeye Vacuum

Collected: 07/06/2009 13:43 by SB

Account Number: 11842

Submitted: 07/07/2009 09:10
Reported: 07/16/2009 at 14:57
Discard: 08/16/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		mg/l	mg/l	
00224	Chloride	16887-00-6	66.5	10.0	50
SM20 2540 C	**Wet Chemistry**		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	432	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09196196601B	07/16/2009 07:37	Ashley M Adams	50
00212	Total Dissolved Solids	SM20 2540 C	1	09190021201A	07/09/2009 08:21	Susan A Engle	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5717015

Group No. 1152270
NM

TW-23 Grab Water Sample
Buckeye Vacuum

Collected: 07/06/2009 14:22 by SB

Account Number: 11842

Submitted: 07/07/2009 09:10
Reported: 07/16/2009 at 14:57
Discard: 08/16/2009

STANTEC International, Inc.
10235 West Little York Road
Houston TX 77040

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
EPA 300.0	**Wet Chemistry**		**mg/l**	**mg/l**	
00224	Chloride	16887-00-6	48.2	10.0	50
SM20 2540 C	**Wet Chemistry**		**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	445	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09196196601B	07/16/2009 07:53	Ashley M Adams	50
00212	Total Dissolved Solids	SM20 2540 C	1	09190021201A	07/09/2009 08:21	Susan A Engle	1

Lancaster Laboratories

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Analysis Report

Quality Control Summary

Client Name: STANTEC International, Inc. Group Number: 1152270
Reported: 07/16/09 at 02:57 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 09196196601B	Sample number(s): 5717013-5717015							
Chloride	N.D.	0.20	mg/l	98		90-110		
Batch number: 09190021201A	Sample number(s): 5717013-5717015							
Total Dissolved Solids	N.D.	9.7	mg/l	95		80-120		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 09196196601B	Sample number(s): 5717013-5717015 UNSPK: P717584 BKG: P717584								
Chloride	94		90-110			41.5	42.0	1	20
Batch number: 09190021201A	Sample number(s): 5717013-5717015 UNSPK: P718103 BKG: P718103								
Total Dissolved Solids	92	95	54-143	1	12	2,340	2,280	3	9

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Analysis Request/Environmental Services Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only
Acct. # 11842 Group# 1152270 Sample # 5717013-15

COC # 216993

Please print. Instructions on reverse side correspond with circled numbers.

For Lab Use Only
FSC:
SCR#: 77854

(1)
Client: Chevron (Stantec) Acct. #:
Project Name/#: Buckeye Vorwerk Field PWSID #:
Project Manager: Seth Maker P.O.#:
Sampler: SB, JD Quote #:
Name of state where samples were collected:

(5) Analyses Requested — Preservation Codes

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

(6) Temperature of samples upon receipt (if requested)

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4)		TDS	Cl- (300.0)							Remarks
TW-9	7/6/09	1153	✓		✓	1	✓	✓							
TW-15	7/6/09	1343	✓		✓	1	✓	✓							
TW-23	7/6/09	1422	✓		✓	1	✓	✓							

(7) **Turnaround Time Requested** (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax (E-mail)
Phone #: 517-349-9499 Cell #: 517-490-7967
E-mail address: Seth.maker@Stantec.com

(8) **Data Package Options** (please circle if required)
Type I (validation/NJ Reg) TX TRRP-13
Type II (Tier II) MA MCP CT RCP
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)

SDG Complete? Yes No
Site-specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal COC Required? Yes / No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	6/29/09	9:45			
[signature]	7/6/09	1715			
			Jessica Agosto	7-7-09	0910

Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 (717) 656-2300 Fax: (717) 656-6766
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

2102.03

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Stantec

FOURTH QUARTER 2009

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300. Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

Stantec
2321 Club Meridian Drive
Suite E
Okemos MI 48864

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

October 14, 2009

Project: Buckeye Vacuum

Samples arrived at the laboratory on Friday, October 02, 2009. The PO# for this group is 89CH.49529.08 and the release number is BUCKEYE-SA. The group number for this submittal is 1164552.

Client Sample Description	Lancaster Labs (LLI) #
TW-19 Grab Water Sample	5794493
TW-17 Grab Water Sample	5794494
TW-20 Grab Water Sample	5794495
TW-11 Grab Water Sample	5794496
TW-23 Grab Water Sample	5794497
RW-3 Grab Water Sample	5794498

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	STANTEC International, Inc.	Attn: Steve Bell
ELECTRONIC COPY TO	Stantec	Attn: Matt Carlson

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Questions? Contact your Client Services Representative
Wendy A Kozma at (717) 656-2300

Respectfully Submitted,

Robert Heisey

Robert Heisey
Senior Specialist

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Sample Description: TW-19 Grab Water Sample
Buckeye Vacuum

LLI Sample # WW 5794493
LLI Group # 1164552
NM

Project Name: Buckeye Vacuum

Collected: 10/01/2009 09:58 by JL

Account Number: 11842

Submitted: 10/02/2009 09:15
Reported: 10/14/2009 at 15:46
Discard: 11/14/2009

Stantec
2321 Club Meridian Drive
Suite E
Okemos MI 48864

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
Wet Chemistry	**EPA 300.0**		mg/l	mg/l	
00224	Chloride	16887-00-6	29.5	1.0	5
	SM20 2540 C		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	296	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09285196101B	10/13/2009 17:20	Ashley M Adams	5
00212	Total Dissolved Solids	SM20 2540 C	1	09278021201A	10/05/2009 10:06	Susan E Hibner	1

Lancaster Laboratories

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Analysis Report

Sample Description: TW-17 Grab Water Sample
Buckeye Vacuum

LLI Sample # WW 5794494
LLI Group # 1164552
NM

Project Name: Buckeye Vacuum

Collected: 10/01/2009 10:39 by JL

Account Number: 11842

Submitted: 10/02/2009 09:15
Reported: 10/14/2009 at 15:46
Discard: 11/14/2009

Stantec
2321 Club Meridian Drive
Suite E
Okemos MI 48864

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00224	Chloride	16887-00-6	30.0	1.0	5
	SM20 2540 C		**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	314	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09285196101B	10/13/2009 18:32	Ashley M Adams	5
00212	Total Dissolved Solids	SM20 2540 C	1	09278021201A	10/05/2009 10:06	Susan E Hibner	1

Lancaster Laboratories
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Analysis Report

Sample Description: TW-20 Grab Water Sample
Buckeye Vacuum

LLI Sample # WW 5794495
LLI Group # 1164552
NM

Project Name: Buckeye Vacuum

Collected: 10/01/2009 11:26 by JL

Account Number: 11842

Submitted: 10/02/2009 09:15
Reported: 10/14/2009 at 15:46
Discard: 11/14/2009

Stantec
2321 Club Meridian Drive
Suite E
Okemos MI 48864

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00224	Chloride	16887-00-6	40.5	2.0	10
	SM20 2540 C		**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	345	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09285196101B	10/13/2009 18:46	Ashley M Adams	10
00212	Total Dissolved Solids	SM20 2540 C	1	09278021201A	10/05/2009 10:06	Susan E Hibner	1

Lancaster Laboratories

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Analysis Report

Sample Description: TW-11 Grab Water Sample
Buckeye Vacuum

LLI Sample # WW 5794496
LLI Group # 1164552
NM

Project Name: Buckeye Vacuum

Collected: 10/01/2009 12:07 by JL

Account Number: 11842

Submitted: 10/02/2009 09:15
Reported: 10/14/2009 at 15:46
Discard: 11/14/2009

Stantec
2321 Club Meridian Drive
Suite E
Okemos MI 48864

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
Wet Chemistry	**EPA 300.0**		mg/l	mg/l	
00224	Chloride	16887-00-6	44.3	2.0	10
	SM20 2540 C		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	289	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09285196101B	10/13/2009 19:01	Ashley M Adams	10
00212	Total Dissolved Solids	SM20 2540 C	1	09278021201A	10/05/2009 10:06	Susan E Hibner	1

Lancaster Laboratories

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Analysis Report

Sample Description: TW-23 Grab Water Sample
Buckeye Vacuum

LLI Sample # WW 5794497
LLI Group # 1164552
NM

Project Name: Buckeye Vacuum

Collected: 10/01/2009 12:33 by JL

Account Number: 11842

Submitted: 10/02/2009 09:15
Reported: 10/14/2009 at 15:46
Discard: 11/14/2009

Stantec
2321 Club Meridian Drive
Suite E
Okemos MI 48864

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
Wet Chemistry		**EPA 300.0**		**mg/l**	**mg/l**	
00224	Chloride		16887-00-6	42.3	2.0	10
		SM20 2540 C		**mg/l**	**mg/l**	
00212	Total Dissolved Solids		n.a.	462	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09285196101B	10/13/2009 19:15	Ashley M Adams	10
00212	Total Dissolved Solids	SM20 2540 C	1	09278021201A	10/05/2009 10:06	Susan E Hibner	1

Lancaster Laboratories

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Analysis Report

Sample Description: RW-3 Grab Water Sample
Buckeye Vacuum

LLI Sample # WW 5794498
LLI Group # 1164552
NM

Project Name: Buckeye Vacuum

Collected: 10/01/2009 12:24 by JL

Account Number: 11842

Submitted: 10/02/2009 09:15
Reported: 10/14/2009 at 15:46
Discard: 11/14/2009

Stantec
2321 Club Meridian Drive
Suite E
Okemos MI 48864

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
Wet Chemistry		**EPA 300.0**		mg/l	mg/l	
00224	Chloride		16887-00-6	1,320	100	500
		SM20 2540 C		mg/l	mg/l	
00212	Total Dissolved Solids		n.a.	2,850	77.6	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09285196101B	10/13/2009 01:47	Ashley M Adams	500
00212	Total Dissolved Solids	SM20 2540 C	1	09278021201A	10/05/2009 10:06	Susan E Hibner	1

Lancaster Laboratories

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Analysis Report

Quality Control Summary

Client Name: Stantec Group Number: 1164552
Reported: 10/14/09 at 03:46 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 09285196101B	Sample number(s): 5794493-5794498							
Chloride	N.D.	0.20	mg/l	96		90-110		
Batch number: 09278021201A	Sample number(s): 5794493-5794498							
Total Dissolved Solids	N.D.	9.7	mg/l	98		80-120		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 09285196101B	Sample number(s): 5794493-5794498 UNSPK: 5794493 BKG: 5794493								
Chloride	87*		90-110			29.5	28.6	3	20
Batch number: 09278021201A	Sample number(s): 5794493-5794498 UNSPK: 5794498 BKG: 5794498								
Total Dissolved Solids	97	98	54-143	0	12	2,850	2,840	1	9

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Chevron Generic Analysis Request/Chain of Custody

013220

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. #: 11842 Sample #: 5794493-98 SCR#:

GrpA1164552

Facility #: Buckeye Vacuum / 21220114Y
Site Address: 3, F, New Mexico
Chevron PM: Matt Hudson Lead Consultant: Matt Carlson
Consultant/Office: Stantec
Consultant Prj. Mgr.: Seth Meher
Consultant Phone #: 432-685-0627 Fax #:
Sampler: J. Longwell
Service Order #: ☐ Non SAR:

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Matrix: Water	Matrix: Oil ☐ Air ☐	Total Number of Containers	Analyses Requested / Preservation Codes: BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates ___	TPH G ___	TPH D ☐ Extended Rng. ☐ Silica Gel Cleanup	Lead Total ☐ Diss. ☐ Method ___	VPH/EPH	NWTPH H HCID ☐ quantification	TDS / Cl (300.0)
TW-19	10/1/09	0958	X			X		1									1
TW-17	10/1/09	1039	X			X		1									1
TW-20	10/1/09	1126	X			X		1									1
TW-11	10/1/09	1207	X			X		1									1
TW-23	10/1/09	1233	X			X		1									1
RW-3	10/1/09	1224	X			X		1									1

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds

8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ___ oxy's on highest hit
☐ Run ___ oxy's on all hits

Comments / Remarks

Turnaround Time Requested (TAT) (please circle)
STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk ___ Other.

	Date	Time		Date	Time
Relinquished by:	10/1/09	1615	Received by:		
Relinquished by:			Received by:		
Relinquished by:			Received by:		
Relinquished by Commercial Carrier: UPS FedEx Other			Received by: Mary Beth Reed	10/2/09	0915

Temperature Upon Receipt 1.60 C°
Custody Seals Intact? Yes No

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

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B	Analyte was also detected in the blank	**E**	Estimated due to interference
C	Pesticide result confirmed by GC/MS	**M**	Duplicate injection precision not met
D	Compound quatitated on a diluted sample	**N**	Spike amount not within control limits
E	Concentration exceeds the calibration range of the instrument	**S**	Method of standard additions (MSA) used for calculation
J	Estimated value	**U**	Compound was not detected
N	Presumptive evidence of a compound (TICs only)	**W**	Post digestion spike out of control limits
P	Concentration difference between primary and confirmation columns >25%	*****	Duplicate analysis not within control limits
U	Compound was not detected	**+**	Correlation coefficient for MSA <0.995
X,Y,Z	Defined in case narrative		

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

Stantec
2321 Club Meridian Drive
Suite E
Okemos MI 48864

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

October 14, 2009

Project: Buckeye Vacuum

Samples arrived at the laboratory on Friday, October 02, 2009. The PO# for this group is 89CH.49529.08 and the release number is BUCKEYE-SA. The group number for this submittal is 1164553.

Client Sample Description	Lancaster Labs (LLI) #
TW-9 Grab Water Sample	5794499
RW-2 Grab Water Sample	5794500
TW-15 Grab Water Sample	5794501
TW-13 Grab Water Sample	5794502
TW-10 Grab Water Sample	5794503
TW-14 Grab Water Sample	5794504
Dup #100 Grab Water Sample	5794505

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	STANTEC International, Inc.	Attn: Steve Bell
ELECTRONIC COPY TO	Stantec	Attn: Matt Carlson

Lancaster Laboratories

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Analysis Report

Questions? Contact your Client Services Representative
Wendy A Kozma at (717) 656-2300

Respectfully Submitted,

Robert Heisey

Robert Heisey
Senior Specialist

Lancaster Laboratories

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Analysis Report

Sample Description: TW-9 Grab Water Sample
Buckeye Vacuum

LLI Sample # WW 5794499
LLI Group # 1164553
NM

Project Name: Buckeye Vacuum

Collected: 10/01/2009 09:51 by SB

Account Number: 11842

Submitted: 10/02/2009 09:15
Reported: 10/14/2009 at 15:48
Discard: 11/14/2009

Stantec
2321 Club Meridian Drive
Suite E
Okemos MI 48864

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
Wet Chemistry		**EPA 300.0**		**mg/l**	**mg/l**	
00224	Chloride		16887-00-6	75.4	20.0	100
		SM20 2540 C		**mg/l**	**mg/l**	
00212	Total Dissolved Solids		n.a.	356	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09285196101B	10/13/2009 02:01	Ashley M Adams	100
00212	Total Dissolved Solids	SM20 2540 C	1	09278021201A	10/05/2009 10:06	Susan E Hibner	1

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Analysis Report

Sample Description: RW-2 Grab Water Sample
Buckeye Vacuum

LLI Sample # WW 5794500
LLI Group # 1164553
NM

Project Name: Buckeye Vacuum

Collected: 10/01/2009 10:34 by SB

Account Number: 11842

Submitted: 10/02/2009 09:15
Reported: 10/14/2009 at 15:48
Discard: 11/14/2009

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CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
Wet Chemistry	**EPA 300.0**		**mg/l**	**mg/l**	
00224	Chloride	16887-00-6	240	40.0	200
	SM20 2540 C		**mg/l**	**mg/l**	
00212	Total Dissolved Solids	n.a.	691	19.4	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09285196101B	10/13/2009 02:15	Ashley M Adams	200
00212	Total Dissolved Solids	SM20 2540 C	1	09278021201A	10/05/2009 10:06	Susan E Hibner	1

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Analysis Report

Sample Description: TW-15 Grab Water Sample
Buckeye Vacuum

LLI Sample # WW 5794501
LLI Group # 1164553
NM

Project Name: Buckeye Vacuum

Collected: 10/01/2009 11:10 by SB

Account Number: 11842

Submitted: 10/02/2009 09:15
Reported: 10/14/2009 at 15:48
Discard: 11/14/2009

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CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
Wet Chemistry	**EPA 300.0**		mg/l	mg/l	
00224	Chloride	16887-00-6	59.6	2.0	10
	SM20 2540 C		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	389	9.7	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09285196101B	10/13/2009 19:30	Ashley M Adams	10
00212	Total Dissolved Solids	SM20 2540 C	1	09278021201A	10/05/2009 10:06	Susan E Hibner	1

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Analysis Report

Sample Description: TW-13 Grab Water Sample
Buckeye Vacuum

LLI Sample # WW 5794502
LLI Group # 1164553
NM

Project Name: Buckeye Vacuum

Collected: 10/01/2009 11:48 by SB

Account Number: 11842

Submitted: 10/02/2009 09:15
Reported: 10/14/2009 at 15:48
Discard: 11/14/2009

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CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
Wet Chemistry	**EPA 300.0**		mg/l	mg/l	
00224	Chloride	16887-00-6	48.5	2.0	10
	SM20 2540 C		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	709	19.4	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09285196101B	10/14/2009 06:16	Ashley M Adams	10
00212	Total Dissolved Solids	SM20 2540 C	1	09278021201A	10/05/2009 10:06	Susan E Hibner	1

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Analysis Report

Sample Description: TW-10 Grab Water Sample
Buckeye Vacuum

LLI Sample # WW 5794503
LLI Group # 1164553
NM

Project Name: Buckeye Vacuum

Collected: 10/01/2009 12:23 by SB

Account Number: 11842

Submitted: 10/02/2009 09:15
Reported: 10/14/2009 at 15:48
Discard: 11/14/2009

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CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
Wet Chemistry	**EPA 300.0**		mg/l	mg/l	
00224	Chloride	16887-00-6	158	40.0	200
	SM20 2540 C		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	622	19.4	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09285196102A	10/13/2009 03:27	Ashley M Adams	200
00212	Total Dissolved Solids	SM20 2540 C	1	09279021201A	10/06/2009 09:08	Hannah M Royer	1

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Analysis Report

Sample Description: TW-14 Grab Water Sample
Buckeye Vacuum

LLI Sample # WW 5794504
LLI Group # 1164553
NM

Project Name: Buckeye Vacuum

Collected: 10/01/2009 12:56 by SB

Account Number: 11842

Submitted: 10/02/2009 09:15
Reported: 10/14/2009 at 15:48
Discard: 11/14/2009

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CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
Wet Chemistry	**EPA 300.0**		mg/l	mg/l	
00224	Chloride	16887-00-6	154	40.0	200
	SM20 2540 C		mg/l	mg/l	
00212	Total Dissolved Solids	n.a.	727	19.4	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09285196102A	10/13/2009 04:39	Ashley M Adams	200
00212	Total Dissolved Solids	SM20 2540 C	1	09279021201A	10/06/2009 09:08	Hannah M Royer	1

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Analysis Report

Sample Description: Dup #100 Grab Water Sample
Buckeye Vacuum

LLI Sample # WW 5794505
LLI Group # 1164553
NM

Project Name: Buckeye Vacuum

Collected: 10/01/2009 by SB

Account Number: 11842

Submitted: 10/02/2009 09:15
Reported: 10/14/2009 at 15:48
Discard: 11/14/2009

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CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit	Dilution Factor
Wet Chemistry		**EPA 300.0**		**mg/l**	**mg/l**	
00224	Chloride		16887-00-6	163	40.0	200
		SM20 2540 C		**mg/l**	**mg/l**	
00212	Total Dissolved Solids		n.a.	714	19.4	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00224	Chloride	EPA 300.0	1	09285196102A	10/13/2009 04:53	Ashley M Adams	200
00212	Total Dissolved Solids	SM20 2540 C	1	09279021201A	10/06/2009 09:08	Hannah M Royer	1

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Analysis Report

Quality Control Summary

Client Name: Stantec Group Number: 1164553
Reported: 10/14/09 at 03:48 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 09285196101B	Sample number(s): 5794499-5794502							
Chloride	N.D.	0.20	mg/l	96		90-110		
Batch number: 09285196102A	Sample number(s): 5794503-5794505							
Chloride	N.D.	0.20	mg/l	101		90-110		
Batch number: 09278021201A	Sample number(s): 5794499-5794502							
Total Dissolved Solids	N.D.	9.7	mg/l	98		80-120		
Batch number: 09279021201A	Sample number(s): 5794503-5794505							
Total Dissolved Solids	N.D.	9.7	mg/l	103		80-120		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 09285196101B	Sample number(s): 5794499-5794502 UNSPK: P794493 BKG: P794493								
Chloride	87*		90-110			29.5	28.6	3	20
Batch number: 09285196102A	Sample number(s): 5794503-5794505 UNSPK: 5794503 BKG: 5794503								
Chloride	98		90-110			158	172	8 (1)	20
Batch number: 09278021201A	Sample number(s): 5794499-5794502 UNSPK: P794498 BKG: P794498								
Total Dissolved Solids	97	98	54-143	0	12	2,850	2,840	1	9
Batch number: 09279021201A	Sample number(s): 5794503-5794505 UNSPK: P795166 BKG: P795166								
Total Dissolved Solids	113	110	54-143	2	12	467	447	4	9

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Chevron Generic Analysis Request/Chain of Custody

010315

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For Lancaster Laboratories use only
Acct. #: 11842 Sample #: 5794499-505 SCR#:

Grp # 1164553

Facility #: Buckeye Vacuum Field - 21220144
Site Address: Buckeye, Lea County, New Mexico
Chevron PM: M. Hudson Lead Consultant: M Carlson
Consultant/Office: Stanley - Lansing, MI
Consultant Prj. Mgr.: Matt Carlson
Consultant Phone #: 517-349-9499 Fax #: 517-202-0236
Sampler: SB
Service Order #: ☐ Non SAR:

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Matrix: Water (☐ Potable ☑ NPDES)	Matrix: Oil ☐ Air ☐	Total Number of Containers	BTEX + MTBE 8021 ☐ 8260 ☐ Naphth ☐	8260 full scan	Oxygenates ___	TPH G ___	TPH D ___ ☐ Extended Rng. ☐ Silica Gel Cleanup	Lead Total ☐ Diss. ☐ Method ___	VPH/EPH	NWTPH H HCID ☐ quantification	Cl- (300.0)	FOS
TW-9	10/1/09	0951	✓			✓		1									✓	✓
RW-2	10/1/09	1034	✓			✓		1									✓	✓
TW-15	10/1/09	1110	✓			✓		1									✓	✓
TW-13	10/1/09	1148	✓			✓		1									✓	✓
TW-10	10/1/09	1223	✓			✓		1									✓	✓
TW-14	10/1/09	1256	✓			✓		1									✓	✓
Dup #100	10/1/09	—	✓			✓		1									✓	✓

Analyses Requested

Preservation Codes

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds
8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

Comments / Remarks

All times are Central Time Zone

Turnaround Time Requested (TAT) (please circle)
STD. TAT 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I - Full
Type VI (Raw Data) Disk / EDD
WIP (RWQCB) Standard Format
Disk _____ Other.

Relinquished by:	Date	Time	Received by:	Date	Time
Stan Sell	10/1/09	1615			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS FedEx Other			Received by: Mary Beth Keed	10/2/09	0915
Temperature Upon Receipt 1.6 C°			Custody Seals Intact? Yes No		

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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