# RESULTS OF DISSOLVED OXYGEN INJECTION PILOT-TEST
# CHESTER RIVER HOSPITAL CENTER
# 100 BROWN STREET
# CHESTERTOWN, MARYLAND

**SEPTEMBER 30, 2011**

Submitted To:

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**Oil Control Program**
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Prepared For:

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**W.O 2781**

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# 1.0 SUMMARY

On behalf of the Chester River Hospital Center (CRHC), Earth Data Incorporated (Earth Data) performed a pilot-test of a system which injects water super saturated with oxygen into a zone of petroleum contaminated ground water and soil under their facility in Chestertown, Maryland. The injection system was designed to increase the dissolved oxygen concentration in the ground water and soil to promote the growth of hydrocarbon degrading bacteria. The existing groundwater pump and treat system, which has been in operation at the CRHC since 1991, was designed to contain the dissolved and liquid phase product plumes on the hospital property and to remove the liquid product (fuel oil) floating on the water-table. While over 83,428 gallons of fuel oil have been removed from the subsurface at the site to date, only five gallons of fuel oil been recovered in the past 12 months. This effectively marks the end of the liquid product recovery phase of the remediation process. Despite removing virtually all of the recoverable liquid product from the subsurface, the pump and treat system remains in operation to contain the dissolved hydrocarbon plume and prevents the movement of contaminated ground water downgradient of the hospital property. The remaining petroleum fuel in the subsurface is no longer floating on the water-table but is adhered to the soil particles generally between the seasonal high and low water-table elevations under the site. This zone will continue to contribute to the dissolved phase contamination as the water-table fluctuates seasonally. To significantly reduce the amount of remaining fuel, a bioremediation method is recommended that addresses the petroleum adhered to the sediments under the site.

The proposed bioremediation system delivers oxygen to the subsurface by injecting water that is super-saturated with oxygen. The injection system should expedite the degradation of the remaining fuel in the subsurface soil and ground water and significantly reduce the concentrations of dissolved hydrocarbons once operation of the existing recovery system is discontinued.

The pilot-test was conducted to determine the area of influence of the injection system in order to ascertain the number of injection wells that would be required to bioremediate the most contaminated area of subsurface petroleum contamination. Results of the pilot-test indicated that the area of influence had a radius of at least 28 feet around the injection well. In addition, injection of the oxygenated water over a 5 month period appears to have reduced the concentration of dissolved petroleum hydrocarbons (TPH-DRO) in the groundwater significantly within the area of influence. Based on this data, it is estimated that the installation of approximately five additional injection wells should be sufficient to cover the area of subsurface petroleum contamination at the site.

# 2.0 BACKGROUND

## 2.1 Site Location and Description

Located at 100 Brown Street in Chestertown, Maryland, the Chester River Hospital Center (CRHC) occupies approximately 7.1 acres east of Washington Street (Rt. 213) (Figures 1 and 2). The property was originally developed as a local general hospital around 1935. Prior to 1935 the property appears to have been farmland.

The CRHC property is bordered on the east and south by residential properties. To the north and west are lands of Washington College. The hospital and surrounding residential area including Washington College is served by public water and sewer provided by the Town of Chestertown.

## 2.2 Local Geology and Hydrogeology

Surface water from the CRHC property eventually drains into the Chester River through the local storm water collection system. The Chester River is a tidal tributary of the Chesapeake Bay and enters the bay approximately 15 miles southwest of Chestertown.

Chestertown is located in south central Kent County on the Eastern Shore of Maryland. The Eastern Shore of Maryland is part of the Delmarva Peninsula, which is in of the Atlantic Coastal Plain physiographic province. The coastal plain is underlain by thick layers of unconsolidated sediments (sands, silts and clays), which dip and thicken towards the southeast.

The Pennsauken Formation, of Pleistocene or Pliocene age, comprises the surface sediments over much of the northern portion of the Delmarva Peninsula. In Kent County,

this formation consists of yellowish brown sands, silty sands and clayey sands to a depth of approximately 30 feet below ground surface. The total thickness of the Pennsauken Formation ranges from 0 to 50 feet in Kent County. It appears to be very thin or absent under the CRHC property.

The Paleocene age Aquia Formation, which underlies the Pennsauken Formation in the Chestertown area, typically consists of sands to a depth of approximately 120 feet below ground surface (Drummond, 1998). The Aquia Formation is underlain by sands, silts and clays of the Monmouth Formation (Cretaceous aged) to a depth of approximately 220 feet below ground surface. Cretaceous age silts, sands and clays of the Matawan Formation underlie the Monmouth Formation to a depth of approximately 280 feet. Beneath the Matawan Formation lie sands and clays of the Magothy Formation to a depth of approximately 310 feet. The Monmouth, Matawan and Magothy Formations comprise sediments of the Chesapeake Group. The Cretaceous-aged Potomac Formation underlies the Chesapeake Group. The Potomac Formation consists of several sand layers separated by relatively thick confining clay units. The Potomac Formation extends from a depth of approximately 350 feet to 1,500 feet below ground surface at Chestertown. At 1,500 feet, crystalline bedrock would be encountered.

## 2.3 Aquifers and Water-Supply Wells

The CRHC property is directly underlain by the outcrop of the Aquia Formation. It extends from ground surface to a depth of approximately 120 feet and is characterized by layers of sand and silty sand. Some of the sand units are semi-cemented with iron oxide. Under non-pumping conditions the water-table fluctuates seasonally between 30 ft and 55 ft below ground surface depending on location. Natural groundwater flow is to

the southwest towards the Town of Chestertown well field and the Chester River. The aquifer under the property is unconfined though individual sand layers may exhibit semi-confined characteristics.

For the past 20 years the product removal system at the CRHC has depressed the water-table around the recovery wells causing a localized "cone of influence" to extend under much of the hospital property. This cone of influence has caused liquid product to move into the recovery wells and has prevented hydrocarbons dissolved in the ground water from moving off-site.

The primary well field for the Town of Chestertown is located at the intersection of Kent Street and Byford Drive, approximately 1,750 feet southwest of the CRHC property. These municipal water supply wells are screened in the same unconfined Aquia aquifer which underlies the CRHC property. The Town also operates wells in the same well field that are screened in a deeper, confined aquifer.

The Town of Chestertown also operated their Well No. 2, which is located at the intersection of Campus Avenue and Philosopher's Terrace approximately 850 feet downgradient of the location of the release. Well No. 2 was taken out of service in 1991 shortly after the fuel oil release at the CRHC was reported. At that time it was concluded that the continued operation of the well would exacerbate recovery operations at the CRHC and might pull dissolved hydrocarbons into the well which would then require treatment or the well's abandonment. Because Well No. 2 had a high yield and excellent water quality it was not abandoned. The Town of Chestertown plans to put Well No. 2 back into service when the remediation at the CRHC is competed.

# 3.0 PILOT-TEST

## 3.1 Injection Well Installation

Initially, Earth Data proposed conducting the pilot-test for the gas infusion technology on one of the recently installed monitoring wells. However, in order to achieve the maximum effect of the infusion process, a separate injection well (IW-1) was drilled in December 2009. The 4-inch diameter injection well was constructed with a well screen set between 57.5 to 59 feet below ground surface. The gravel pack for the well consisted of a Morie-type no. 2 sand placed in the annular space from the bottom of the borehole to two feet above the top of the screen section. The well was then sealed with bentonite clay from the top of the gravel pack to within six inches of the ground surface. The completion report for injection well IW-1 can be found in Appendix A.

## 3.2 Gas-Infusion Generator

During the fourth quarter of 2010, a pilot-test was conducted to determine the effectiveness of stripping additional liquid phase hydrocarbons from the product adsorbed by the subsurface soils using carbonated water. The system, which uses a **gPRO®HP Gas inFusion Generator**, to inject water super-saturated with $CO_2$ into the ground water, was operated continuously between November 15 and December 30, 2010. The injection point consisted of the injection well (IW-1) described in Section 3.1, located between RW-4 and MW-22. The 2.5-foot screen interval in the injection well had been set approximately 15 feet below the water-table. An inflatable packer was installed in the well casing immediately above the screen interval to ensure that the carbonated water was forced out into the formation.

Using an injection rate of approximately 7 gallons per minute with an average $CO_2$ concentration of 1.63 grams per liter, approximately 6,300 lbs. of $CO_2$ were injected into the subsurface at the site. Gauging of the two adjacent recovery wells (RW-4 and MW-22) and two monitoring wells (MW-40 and MW-43) located closest to IW-1 during the pilot-test showed no increase in product accumulation and no increase in the rate of product recovery. In fact, free product thicknesses and recovery rates decreased throughout the reporting period despite an overall decrease in the water-table elevation at the site. The $CO_2$ injection system operation was terminated on December 30, 2010.

Based on the results of the $CO_2$ injection test, it was concluded that most of the recoverable fuel oil in the subsurface had been captured and removed by the existing system. The remaining product in the subsurface appears to consist primarily of fuel oil that is adhered to the soil and sediment particles. Studies at other sites indicate that this adsorbed product is best removed through various types of in-situ bioremediation. The pilot-test, which is the subject of this report, used the **PurGRO$_2$® iLS** gas transfer system to inject water super saturated with oxygen ($O_2$) into the ground water. Oxygenation of the subsurface should further degrade the remaining fuel in the soil and ground water, thus decreasing the concentration of dissolved hydrocarbons after shutting down the existing recovery (pump and treat) system. Analysis of indicator parameters in the ground water at the site indicates that dissolved oxygen is the limiting factor inhibiting microbial degradation of the remaining subsurface hydrocarbons. The injection of oxygen into the subsurface should create an environment where the hydrocarbon degrading bacteria can proliferate.

Injection well IW-1 was again used for this pilot-test. The oxygenated water was injected into the subsurface at an average rate of 8.2 gpm. Oxygen was infused into the injection stream at a rate of 1.3 lpm (STP). Using the formula below, the concentration of $O_2$ in the pressurized injection water was determined to be approximately 60 mg/l.

$$C_i = \frac{1300cc}{700\ g\text{-}cc\ (O_2)} \times \frac{1}{8.2\ gal} \times \frac{1}{3.785\ l/gal} \times \frac{1}{1{,}000\ g/l} \times 1{,}000{,}000$$

**$C_i$ = 59.8 mg/l (ppm)**

**$C_i$ = Concentration of $O_2$ in system effluent**

The $O_2$ injection system was operated from April 7 to June 17, 2011 and from August 2 to September 27, 2011. Injection System Operation Logs may be found in Appendix B. Specifications for the **PurGRO$_2$® iLS** gas transfer system may be found in Appendix C.

### 3.3 Aquifer Tests

Before initiation of the pilot-test, an aquifer test was performed on the new injection well (IW-1) and the two closest recovery wells (MW-22 and RW-4). The surrounding monitoring wells were used as observation wells. For each recovery well, an 8-hour pumping test was performed to determine the transmissivity (T) and the hydraulic conductivity (K) of the surrounding formation and the specific capacity of the well. For the injection well IW-1, a 4-hour test was conducted. After the pilot-test was completed, another round of aquifer tests was performed to document any changes in the transmissivity (T) of the formation in the vicinity of the wells. Decreases in hydraulic conductivity may be indicative of iron fouling (precipitation of dissolved iron) or the

increase in growth of iron-bacteria in the formation caused by the oxygenation of the aquifer. A significant decrease in the hydraulic conductivity of the aquifer may result in a decrease in the area of influence of the recovery system with a potential loss of containment of the dissolved hydrocarbon plume. Even though recovery of dissolved phase hydrocarbons by the pump and treat system has never been considered significant, maintaining the cone of depression around the recovery wells has prevented the dissolved product plume from moving offsite. Aquifer test data reports may be found in Appendix D.

### 3.4 Groundwater Sampling & Analysis - Indicator Parameters

In 2005, Earth Data collected groundwater samples from selected monitoring wells (MW-5, MW-9, MW-20 and MW-23) at the CRHC to assess the level of microbial activity in the subsurface. The groundwater samples were analyzed for dissolved oxygen (DO), dissolved methane, iron, nitrate, sulfate, phosphate and TPH-DRO. The results indicated the presence of an active population of aerobic bacteria in the portion of the formation that is contaminated. These aerobic bacteria use the petroleum hydrocarbons adhered to the soil and sediment particles as food. The study indicated that the primary limiting factor for the growth of the aerobic bacteria was the dissolved oxygen concentration in the groundwater. In December 2010, samples were collected from the same monitoring wells as in September 2005, plus MW-40. An analysis was again performed for the same indicator parameter analyses plus BTEX, naphthalene and TPH-DRO. In addition, monitoring wells MW-10 and MW-43 were sampled for total iron, BTEX, naphthalene and TPH-DRO along with those monitoring wells normally sampled as part of the quarterly monitoring program, e.g. MW-4, MW-11, MW-16, MW-19, MW-

33, MW-34, and MW-35. Samples were also collected from each of the recovery wells for total iron, BTEX, naphthalene and TPH-DRO analysis. Results of the December 2010 analysis show no significant concentration of dissolved BTEX or naphthalene in any of the wells tested. Dissolved TPH-DRO, however, was detected in all of the wells that did not show liquid product within the area of contamination. Total iron concentrations varied from 0.95 mg/l to 66.0 mg/l and did not appear to show a pattern relating to the level of hydrocarbon contamination. The results of the indicator parameter analysis showed that nitrate concentrations were lowest and methane and sulfate concentrations were highest in the area of highest petroleum hydrocarbon contamination. This data supports the conclusion of the earlier study that aerobic bacteria activity was being limited by dissolved oxygen concentrations and the growth of anaerobic bacteria.

On April 7, 2011, the $O^2$ injection system was activated using IW-1 as the injection point. On April 12, monitoring wells MW-5, MW-9, MW-40, MW-43, MW-20 and MW-23 and recovery wells RW-4 and MW-22 were sampled for the indicator parameters DO, dissolved methane (SM 6211B/EPA Method 8015), nitrate, sulfate, phosphate (EPA Method 300.0), TPH-DRO (EPA Method 8015M), pH, conductivity and hydrocarbon degrading bacteria (EPA Method 9215B-Modified). Prior to collecting the samples, each monitoring well was gauged with an oil/water interface probe to determine the depth to water and the presence of liquid phase petroleum hydrocarbons. The monitoring wells were then purged of three volumes of standing water. Samples were collected with a clean, disposable plastic bailer and placed in a laboratory supplied sample container. The samples from the recovery wells were collected at the inlet to the treatment system. No purging of the recovery wells was necessary due to the continuous

pumping from these wells. Field measurements were taken and recorded immediately upon retrieving the groundwater sample from the well. The groundwater samples were immediately set on ice in a laboratory supplied cooler and sent to the laboratory via courier.

Due to technical problems, the injection system was off from June 17 until August 2, 2011. On June 27, 2011 the same monitoring and recovery wells were sampled for the same indicator parameters plus total iron (EPA Method 200.8). On September 27, 2011 monitoring wells MW-5, MW-9, MW-40, MW-43, MW-20 and MW-23 and recovery wells RW-4, RW-5 and MW-22 were again sampled for the indicator parameters DO, BTEX, naphthalene (EPA Method 8260) TPH-DRO, pH, conductivity and hydrocarbon degrading bacteria. For each of the wells, DO, conductivity and pH were measured in the field with a YSI Model 556 multi-meter. In addition, dissolved oxygen, measured in both percent and mg/l, temperature (°C), pH, conductivity ($mS/cm^3$) and oxidation reduction potential (ORP) were measured in the field in monitoring wells MW-5, MW-9, MW-20, MW-23, MW-40, MW-43 and recovery wells RW-4, RW-5 and MW-22 on the following dates: January 31, 2011, April 12, 2011, May 31, 2011, June 13, 2011, June 27, 2011, August 26, 2011 and September 27, 2011. Table 1 summarizes the results of the indicator parameter analyses during the dissolved oxygen injection pilot-test. Table 2 shows the field measurements collected during the pilot-test. Figures 3 and 4 show the dissolved TPH-DRO concentrations in samples collected from the monitoring wells prior to (December 28, 2010) and after (September 27, 2011) conducting the pilot-test. Site maps showing indicator parameter values for the samples collected on December 28, 2010, April 12, 2011, June 27, 2011 and September 27, 2011 may be found in Figures 5,

6, 7 and 8, respectively. Well gauging reports may be found in Appendix E. Earth Data field reports for the site visits may be found in Appendix F. Laboratory analytical reports for the indicator parameter analysis may be found in Appendix G.

# 4.0 PILOT-TEST RESULTS

## 4.1 Aquifer Tests Results

In June 2009, 8-hour pumping tests were performed on recovery well RW-4 and MW-22. Analysis of the pumping test results using the Neuman method for unconfined aquifers showed a tranmissivity (T) values of 14,010 gpd/ft and 14,160 gpd/ft for MW-22 and RW-4, respectively. Shortly after it was constructed in December 2009, a 4-hour pumping test was conducted on injection well IW-1. Analysis of the pumping test data using the Neuman method for unconfined aquifers showed a tranmissivity (T) value of 2,052 gpd/ft for IW-1.

In October 2011, after the pilot-test for the injection system was completed, pumping tests were repeated in RW-4, MW-22 and IW-1 to document any changes in the tranmissivity (T) in the formation surrounding the wells. Analysis of the results of the 4-hr pumping test performed on RW-4 showed a transmissivity (T) value of 4,876 gpd/ft. The analysis of the pumping test data for MW-22 showed a transmissivity (T) value of 15,551 gpd/ft, using the Hantush-Jacob method when the Neuman method did not converge. Finally, analysis of the pumping test data collected for the injection well (IW-1) showed a transmissivity (T) value of 2,843 gpd/ft.

A comparison of the results of the pumping tests performed before and after the injection system pilot-test showed a decrease in the transmissivity (T) value in one well (RW-4) and similar values in two wells (MW-22 and IW-1).

## 4.2 Water Quality Results

As discussed in the previous section, selected monitoring wells and recovery wells were sampled for indicator parameters on December 28, 2010, prior to conducting the gas

infusion pilot-test. During the pilot-test, monitoring wells and recovery wells were sampled on April 12 and June 27, 2011. After the pilot-test, monitoring and recovery wells were sampled on September 27, 2011. Indicator parameters included the following analytes: total iron, nitrate, phosphate, sulfate, dissolved methane, dissolved oxygen, pH, conductivity, TPH-DRO and hydrocarbon degrading bacteria. Dissolved oxygen, pH and conductivity measurements were not made during the December 2010 site visit. Also, analyses for iron, nitrate, phosphate, sulfate and dissolved methane were not performed on the samples collected on September 27, 2011. In addition to those dates cited above, dissolved oxygen, pH and conductivity measurements were made on January 31, 2011, May 31, 2011, June 13, 2011 and August 26, 2011.

Analytical results show that the concentration of total iron in the groundwater at the CRHC was generally elevated but did not appear to correlate with the areas of contamination or the levels of dissolved oxygen. Iron can be used by some bacteria as an electron donor in anaerobic environments. Nitrate concentrations were generally higher in areas of low contamination and lower in areas of elevated contamination. Nitrate is used by bacteria to metabolize food (petroleum) in aerobic conditions and it can also be used by some anaerobic bacteria as an electron donor. Dissolved methane concentrations generally appeared to be highest in areas of highest petroleum contamination. Anaerobic bacteria, which also use petroleum as food but not as effectively as aerobic bacteria, produce methane as a by-product of their metabolic process. Sulfate and phosphate concentrations in the groundwater were generally very low or below detection limits throughout the site and did not appear to correlate with the level of contamination.

Dissolved oxygen levels measured in the groundwater appeared to be highest in areas upgradient (MW-5) and downgradient (MW-23) of the area of heaviest contamination and, as expected, in the immediate vicinity of the dissolved oxygen injection well. Figure 9 graphically depicts the levels of dissolved oxygen in wells MW-40, MW-43, MW-22 and RW-4 before and during the pilot-test. Values for DO measured in MW-9, located outside the area of influence of the injection, are shown for comparison. As expected, lower concentrations of dissolved oxygen were measured in areas of heaviest contamination (MW-9) suggesting that hydrocarbon degrading bacteria were using the oxygen to metabolize the petroleum. The pH and conductivity levels generally appeared highest in areas of highest contamination.

Hydrocarbon degrading bacteria counts were highest in areas of the heaviest petroleum contamination. Also of significance was the increase in the hydrocarbon degrading bacteria counts in the vicinity of the injection wells during the course of the pilot-test. Figure 10 shows the values for hydrocarbon degrading bacteria in monitoring wells MW-40 and MW-43 during the pilot-test. Values for samples collected from MW-9, which is located outside the area of influence of the injection system, are included for comparison purposes. Finally, TPH-DRO concentrations also appeared to decrease in the vicinity of the injection well during the pilot-test. Figure 11 shows the concentrations of TPH-DRO in samples collected from MW-40 before and during the pilot-test.

# 5.0 CONCLUSIONS AND RECOMMENDATIONS

Results of the pilot-test of the dissolved oxygen infusion system at the CRHC showed an increase in the dissolved oxygen levels in the groundwater at least 28 feet from the injection well (Figure 12). Injection of the water super-saturated with oxygen over a five month period appeared to show a decrease in both liquid phase and dissolved phase petroleum hydrocarbon levels. The hydrocarbon degrading bacteria count in the groundwater samples collected within the area of influence of the injection well also showed an increase during the pilot-test. Finally, pumping tests conducted before and after the pilot-test showed no significant decrease in the hydraulic conductivity values in the formation around the injection well. An explanation for the decrease in the apparent hydraulic conductivity in RW-4 has not been found.

Based on these results, Earth Data recommends expanding the dissolved oxygen infusion system to cover all of the areas on the property showing the highest concentrations of subsurface petroleum hydrocarbons. This can be achieved through the installation of 5 new injection wells at locations shown on Figure 13. The proposed injection wells are located between the existing recovery wells which will allow continued hydraulic control of the injection water and the dissolved hydrocarbon plume. It is estimated that a significant reduction in adsorbed hydrocarbons in the subsurface should be achieved within twelve months.

# 6.0 LIMITATIONS

The findings and conclusions presented in this report are the results of both fieldwork and data analysis by Earth Data Incorporated. Due to the limited scope of this study, Earth Data collected data from only a limited number of locations on the property. Therefore, there may be environmental or subsurface conditions on the property not disclosed by our investigation. This report has been prepared using generally accepted environmental and hydrogeologic practices for the exclusive use of the Chester River Hospital Center and their representatives. No other warranty, expressed or implied, is made.

# FIGURES

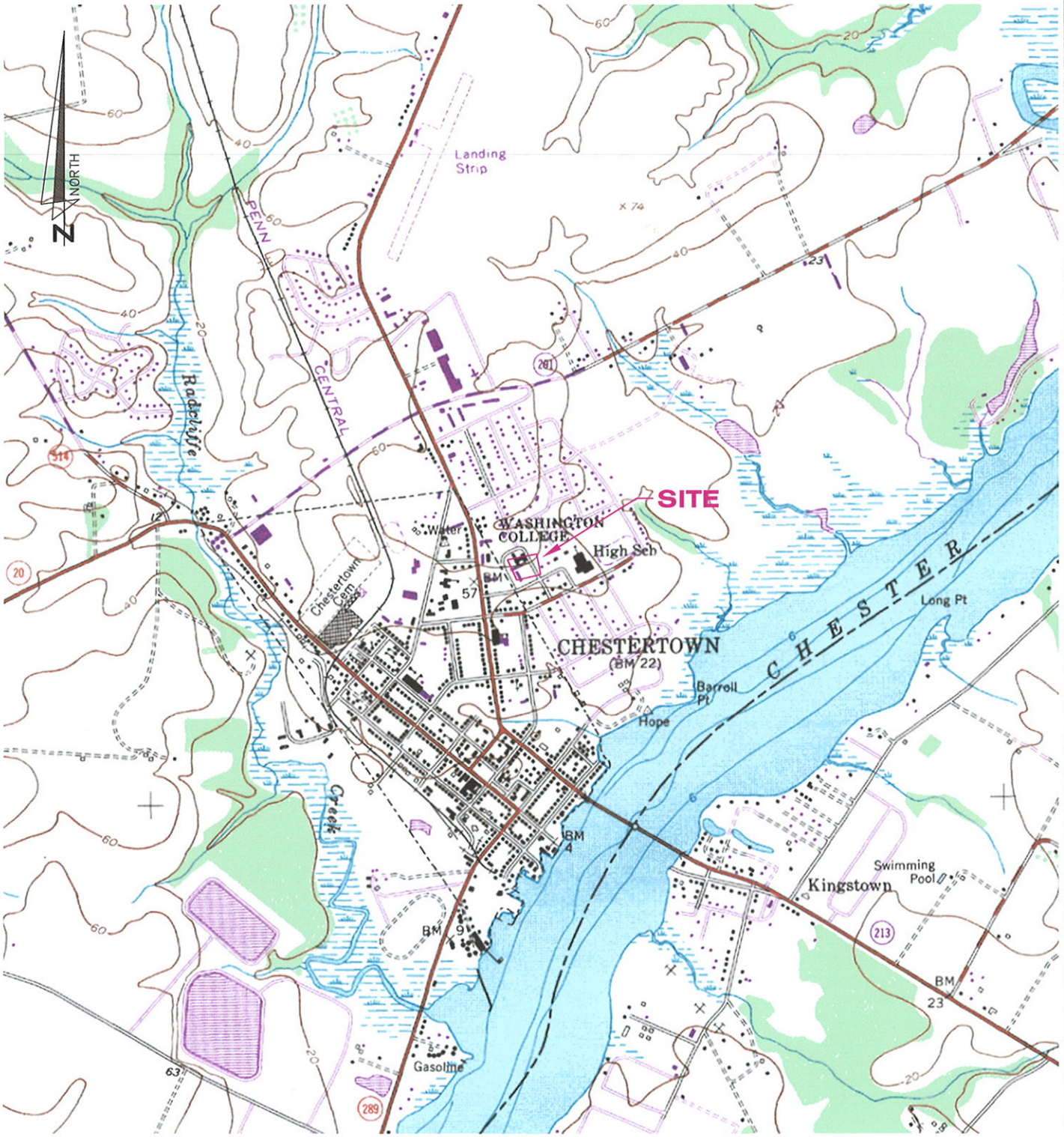


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**FIGURE 1**

LOCATION MAP
FOR
**CHESTER RIVER HOSPITAL CENTER**
CHESTERTOWN, MARYLAND

| | |
|---|---|
| PROJ. MGR.: | A.BULLEN |
| DATE: | 10/31/2011 |
| SCALE: | AS SHOWN |
| EDI #: | 2781 |
| DRAWN BY: | T.COCHRUN |

PORTION OF USGS 7.5 MINUTE QUADRANGLE FOR CHESTERTOWN, MARYLAND

Figure 1 – Portion of USGS Quadrangle for Chestertown showing the location of Chester River Hospital Center – Chestertown, Maryland.

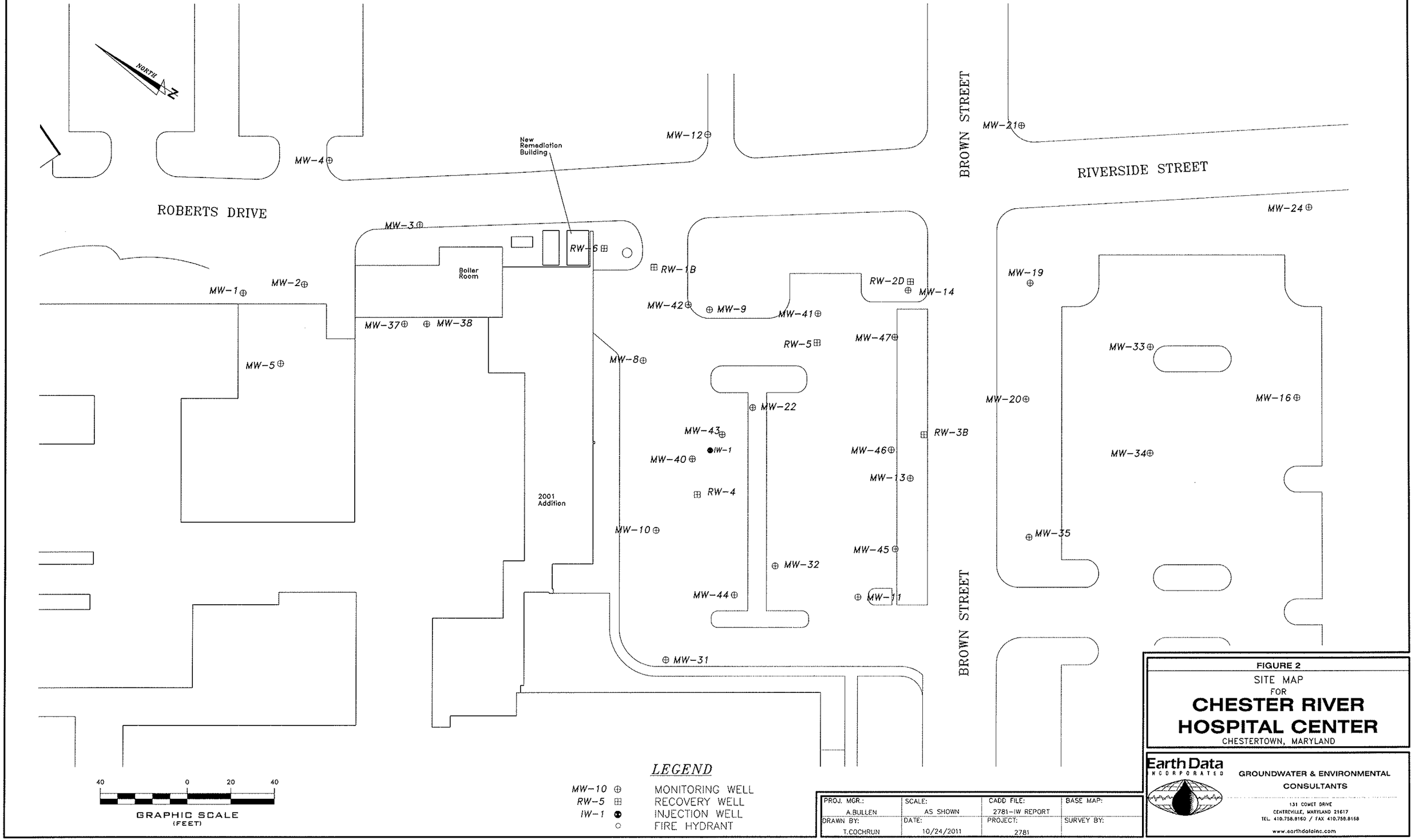


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Figure 2 – Site map showing the location of the monitoring wells and other pertinent features at the Chester River Hospital Center, Chestertown, Maryland.

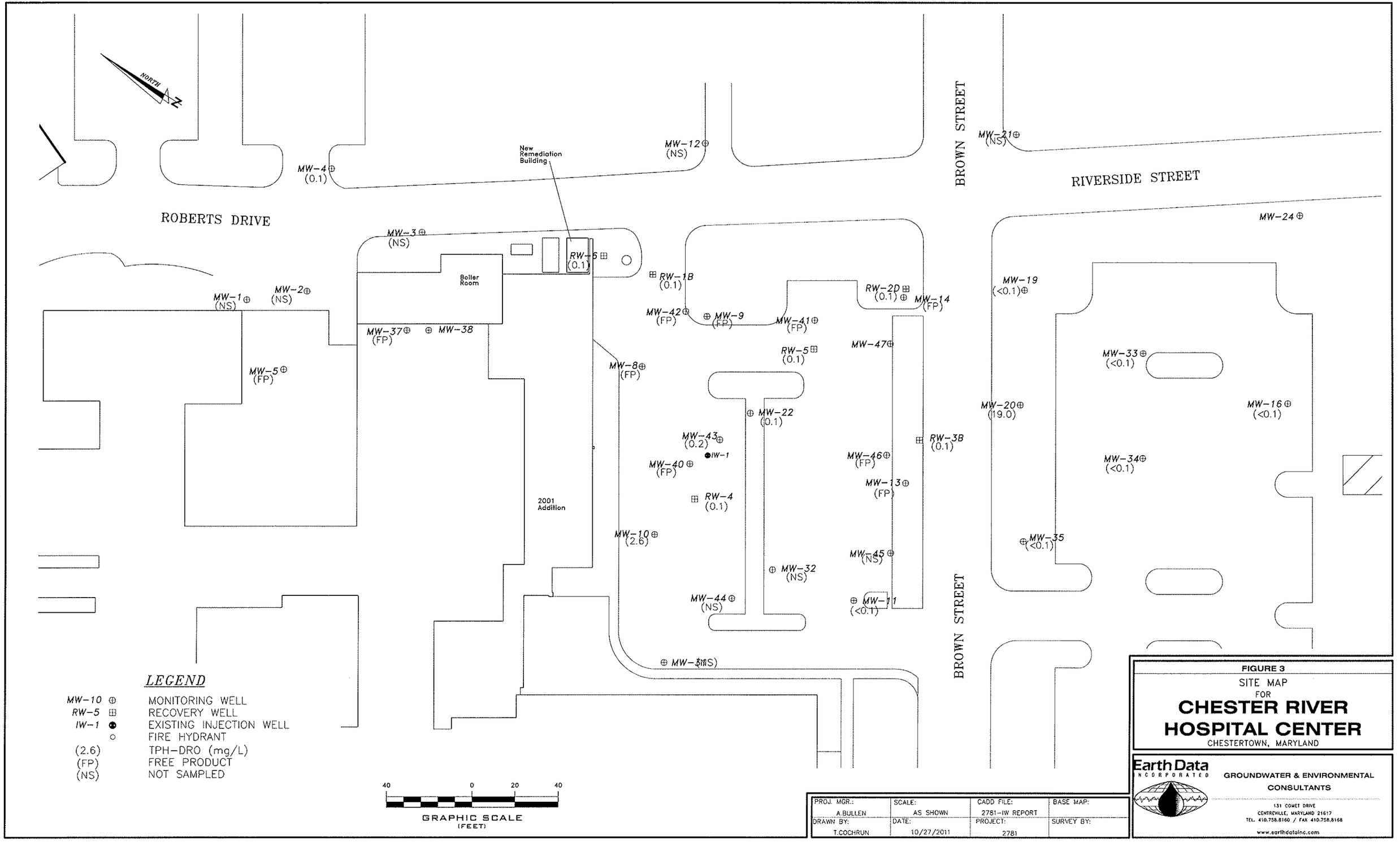


Figure 3 – Site map showing the TPH-DRO concentrations for the groundwater samples collected on December 28, 2010 at the Chester River Hospital Center, Chestertown, MAryland.

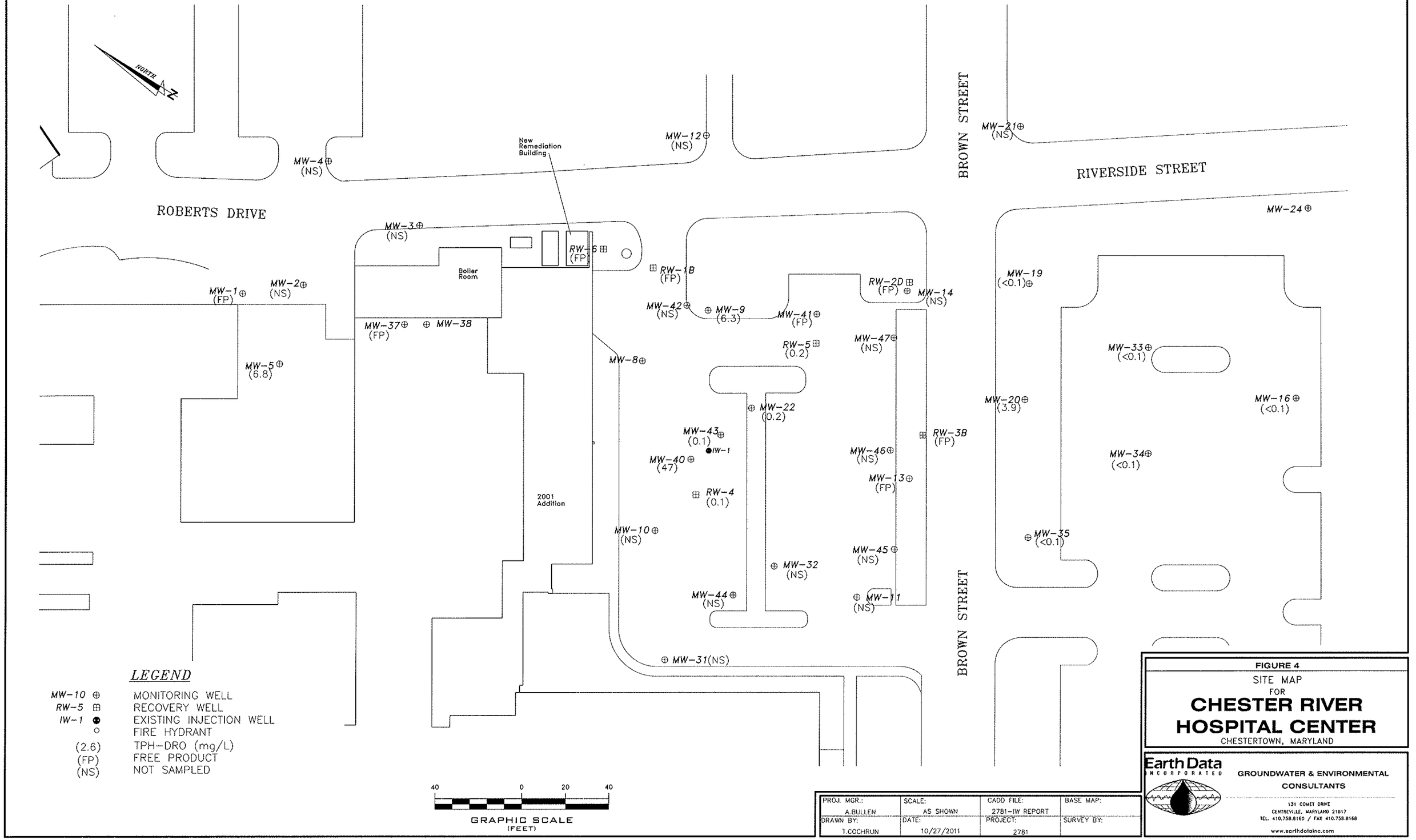


Figure 4 – Site map showing the TPH-DRO concentrations for the groundwater samples collected on September 27, 2011 at the Chester River Hospital Center, Chestertown, Maryland.

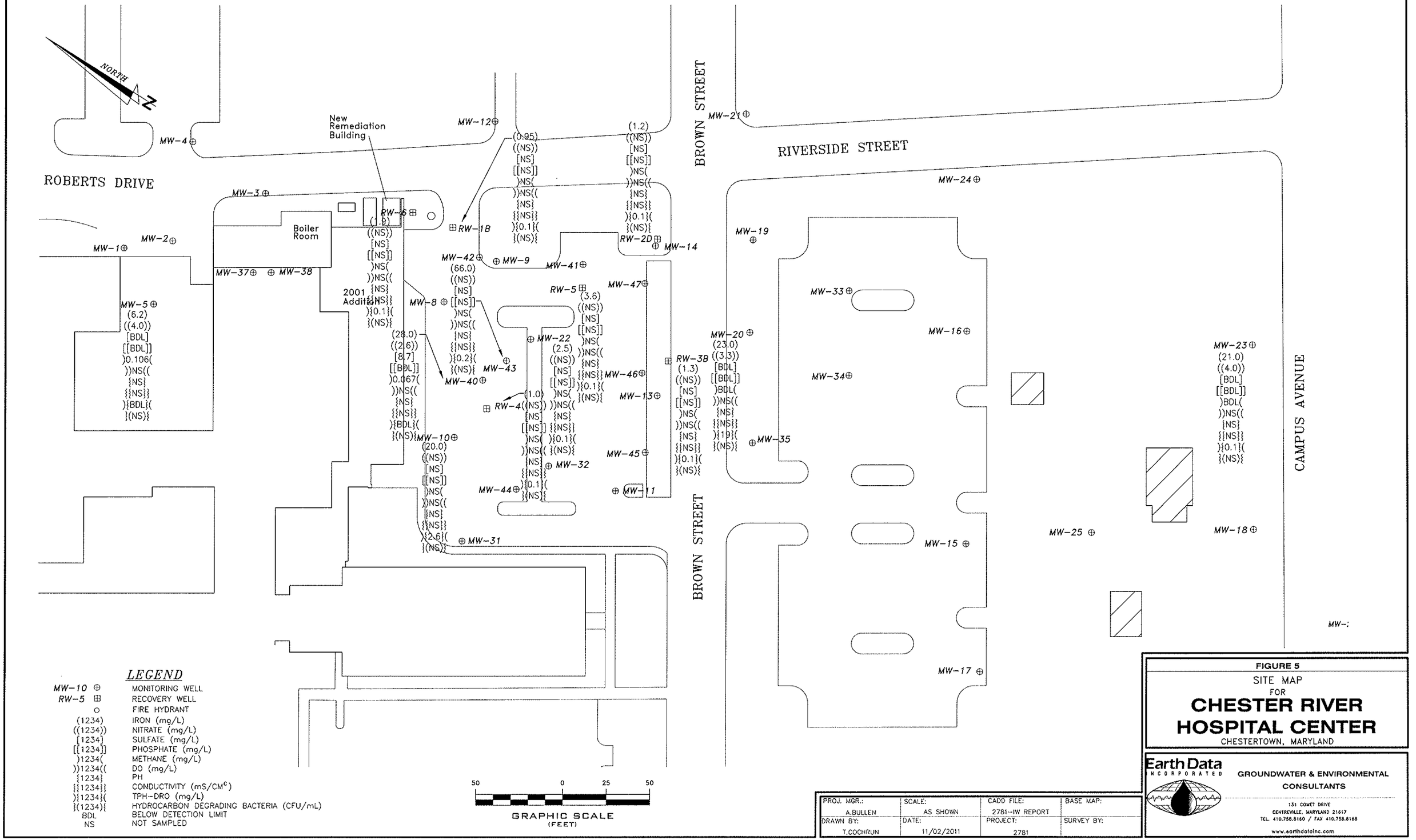


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Figure 5 – Indicator Parameter concentration map, December 28, 2010, Chester River Hospital Center, Chestertown, Maryland.

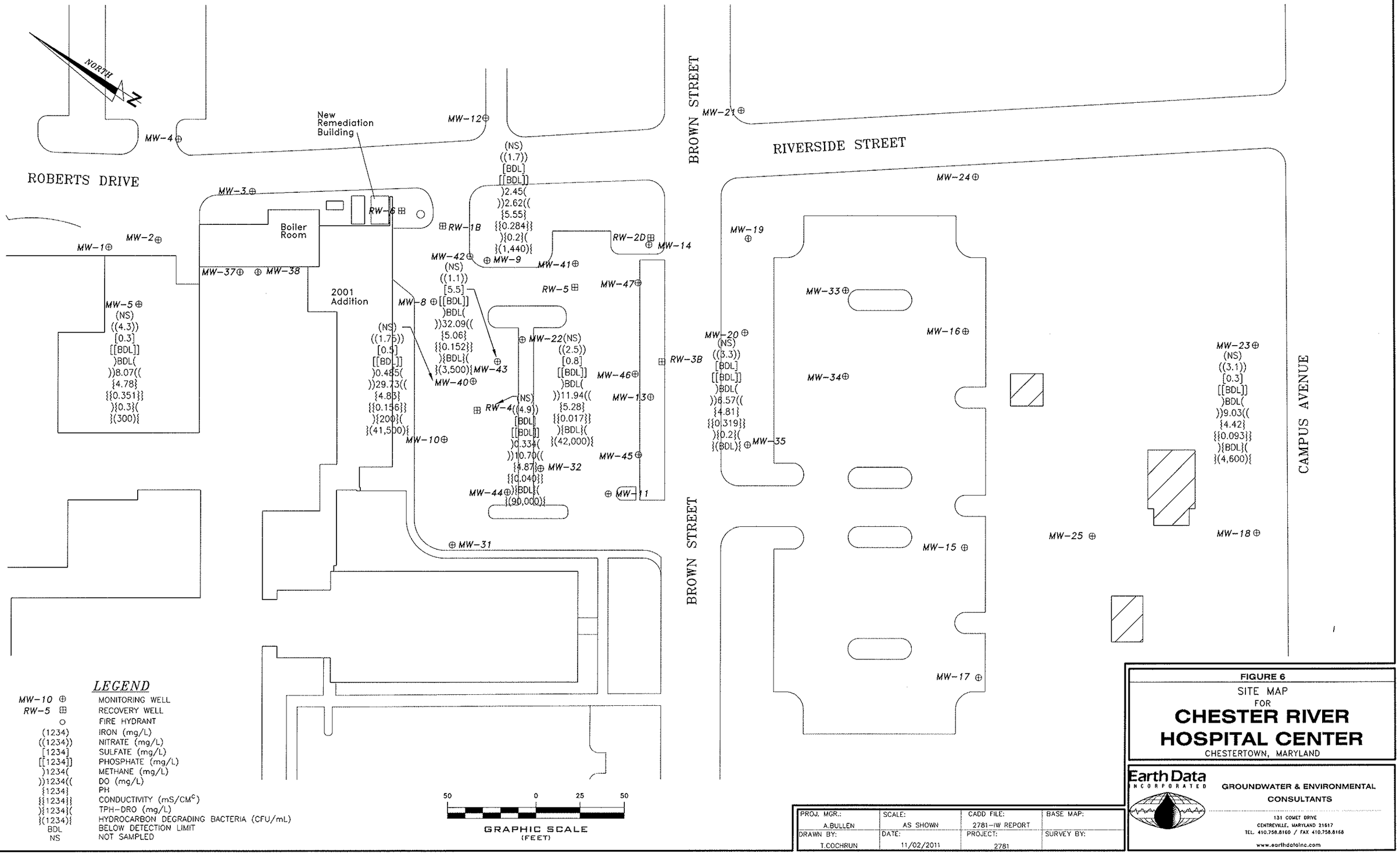


FIGURE 6

SITE MAP
FOR
**CHESTER RIVER HOSPITAL CENTER**
CHESTERTOWN, MARYLAND

| PROJ. MGR.: | SCALE: | CADD FILE: | BASE MAP: |
|---|---|---|---|
| A.BULLEN | AS SHOWN | 2781-IW REPORT | |
| DRAWN BY: | DATE: | PROJECT: | SURVEY BY: |
| T.COCHRUN | 11/02/2011 | 2781 | |

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Figure 6 – Indicator Parameter concentration map, April 12, 2011, Chester River Hospital Center, Chestertown, Maryland.

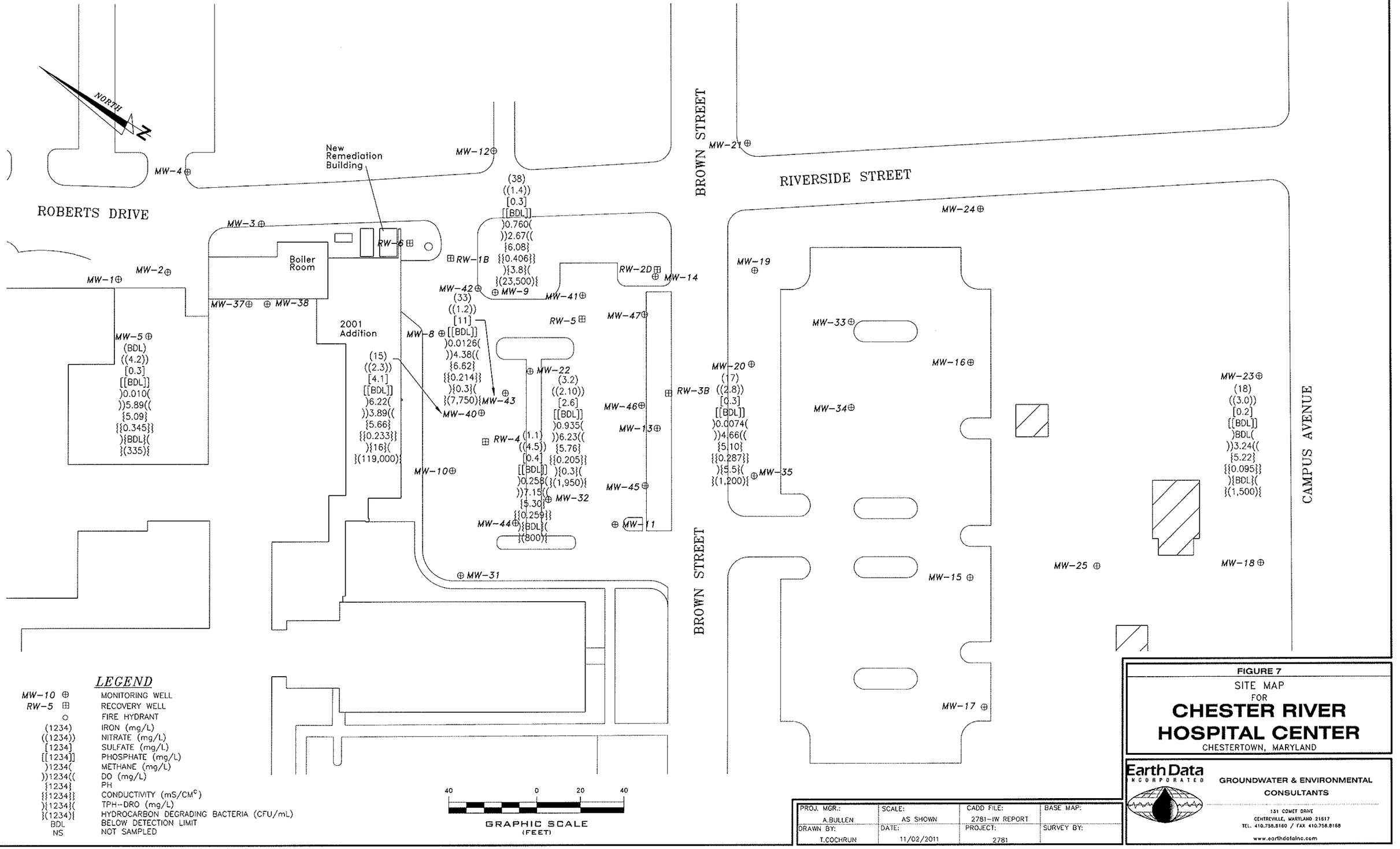


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Figure 7 – Indicator Parameter concentration map, June 27, 2011, Chester River Hospital Center, Chestertown, Maryland.

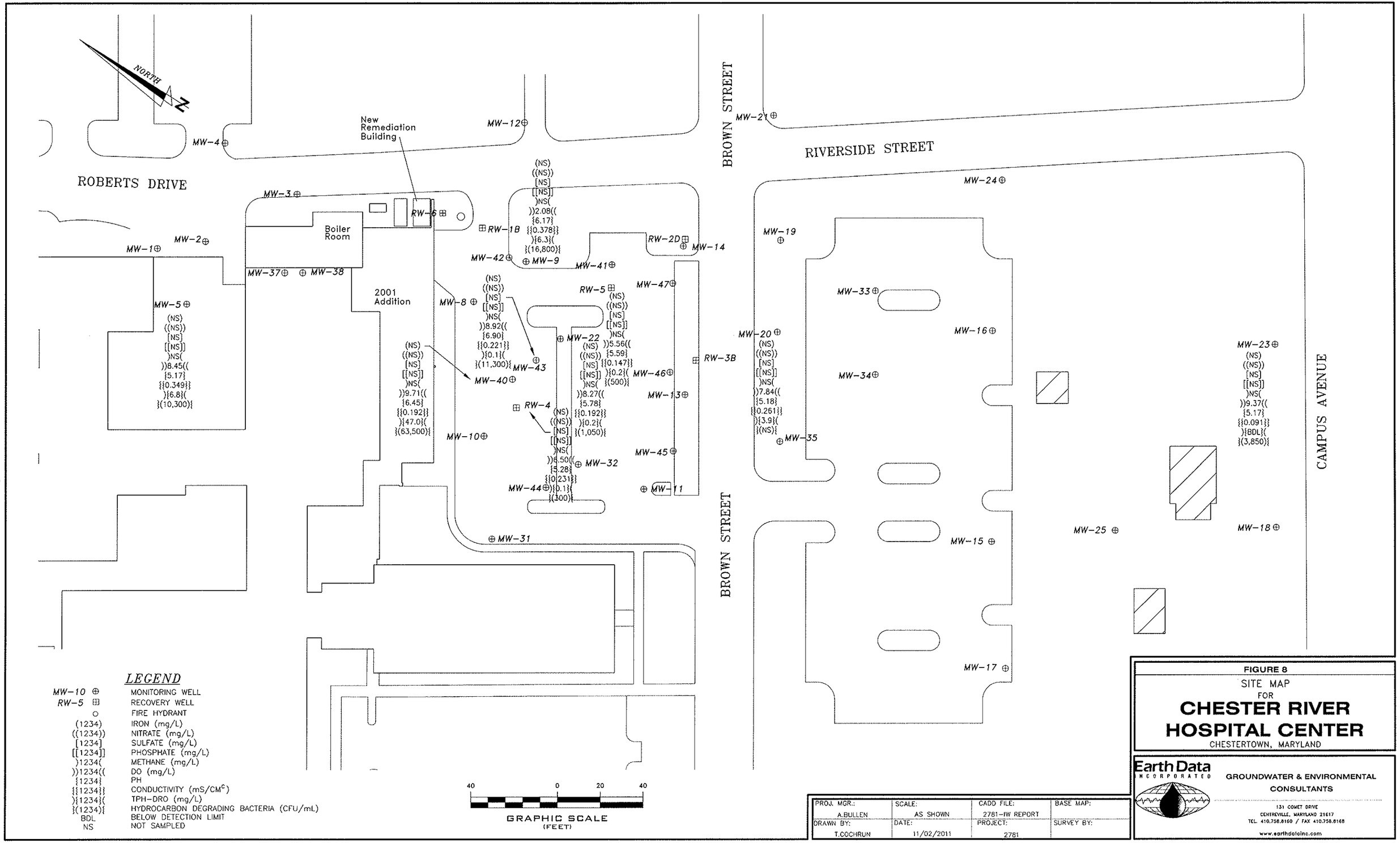


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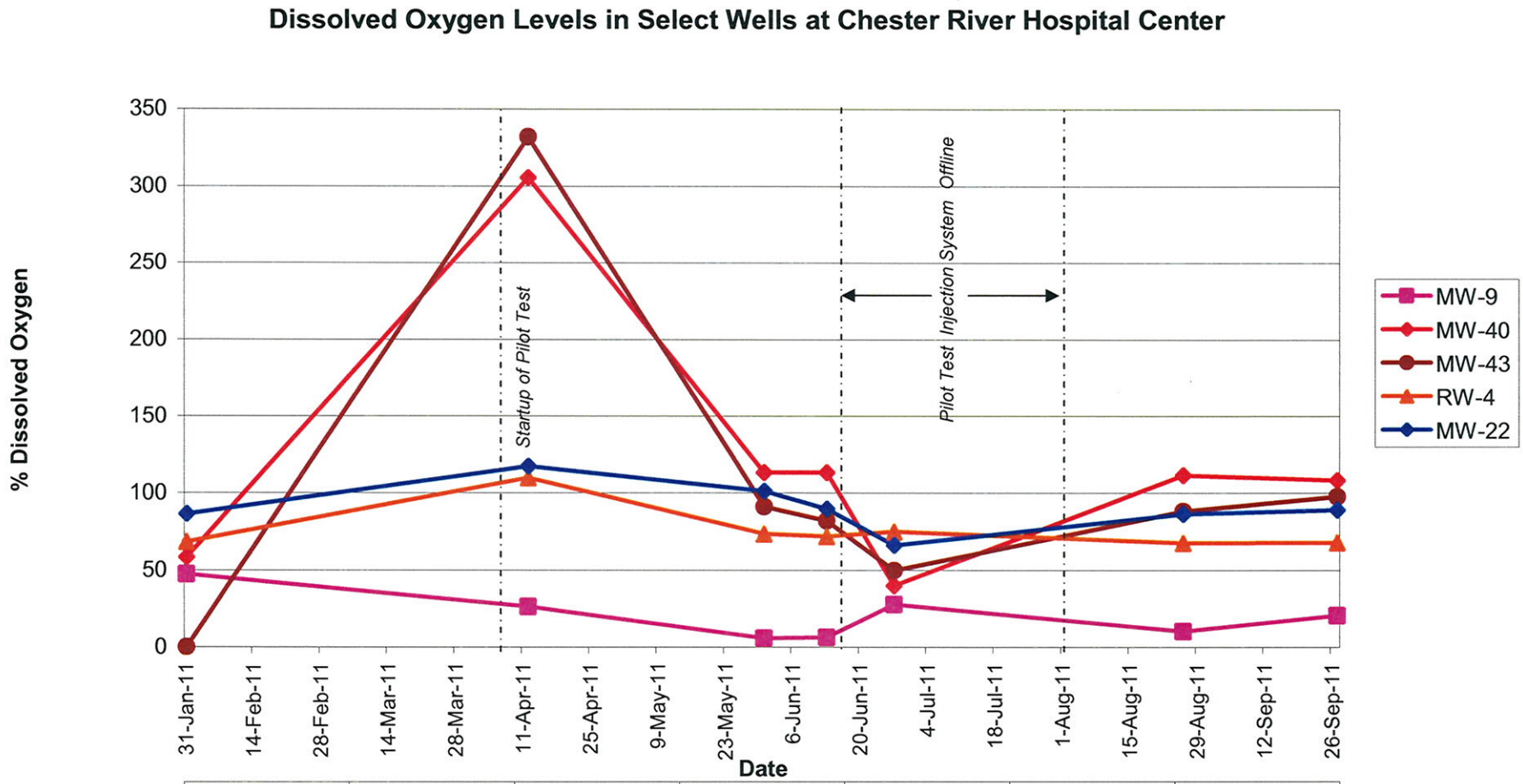
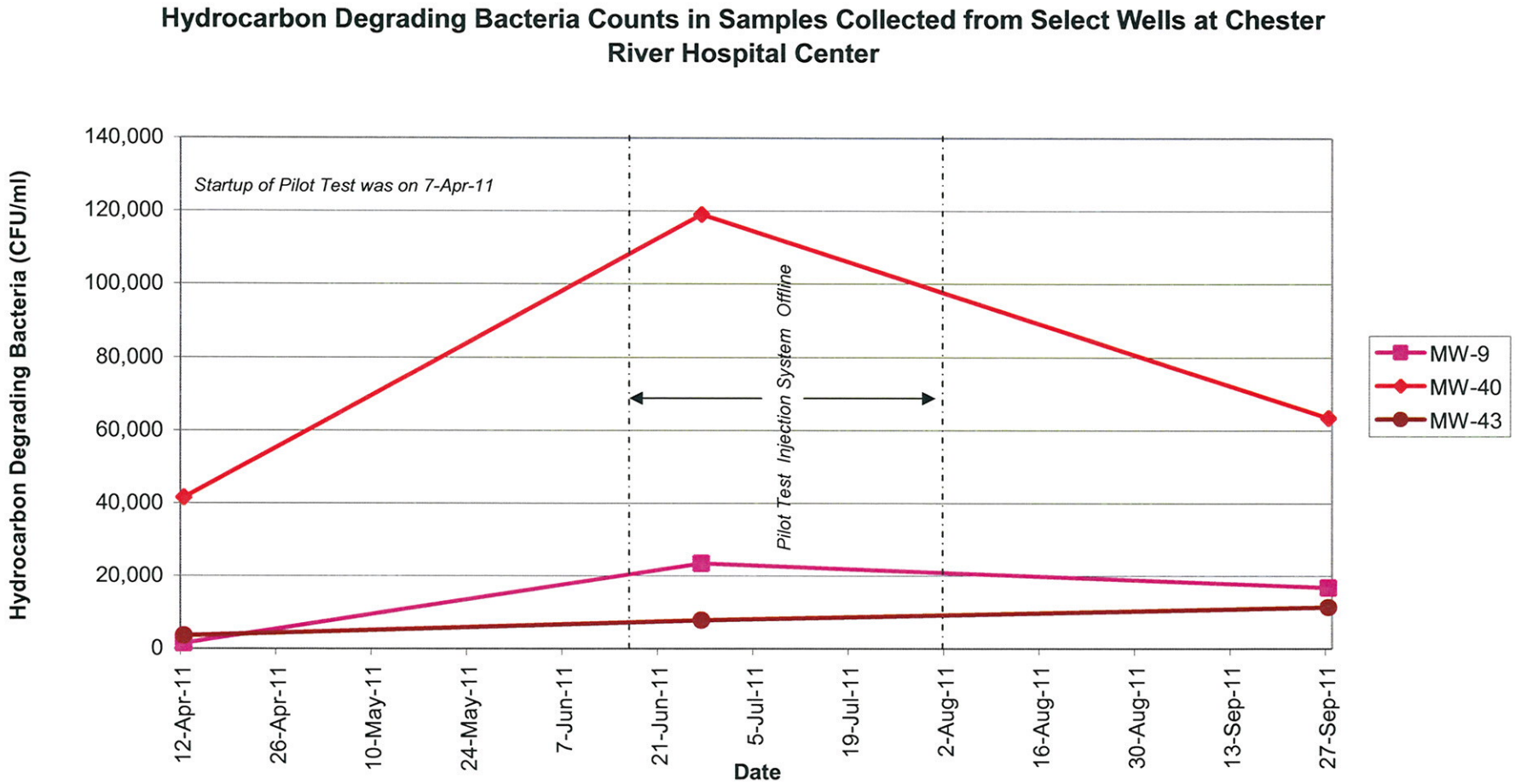
Figure 8 – Indicator Parameter concentration map, September 27, 2011, Chester River Hospital Center, Chestertown, Maryland.




| | 31-Jan-11 | 12-Apr-11 | 31-May-11 | 13-Jun-11 | 27-Jun-11 | 26-Aug-11 | 27-Sep-11 |
|---|---|---|---|---|---|---|---|
| MW-9 | 47.3 | 26.5 | 5.9 | 6.5 | 27.8 | 10.4 | 20.8 |
| MW-40 | 58.5 | 305.7 | 113.2 | 113.1 | 40.1 | 111.3 | 108.2 |
| MW-43 | 0 | 332.2 | 91.1 | 82.1 | 49.8 | 88.1 | 97.6 |
| RW-4 | 68.4 | 109.7 | 73.7 | 72.0 | 75.0 | 67.8 | 68.1 |
| MW-22 | 86.4 | 117.2 | 101.1 | 89.7 | 66.4 | 86.3 | 89.1 |

Figure 9. Graph showing dissolved oxygen levels in wells located near the injection well before and during the pilot-test, Chester River Hospital Center, Chestertown, Maryland




| | 12-Apr-11 | 27-Jun-11 | 27-Sep-11 |
|---|---|---|---|
| MW-9 | 1,440 | 23,500 | 16,800 |
| MW-40 | 41,500 | 119,000 | 63,500 |
| MW-43 | 3,500 | 7,750 | 11,300 |

Figure 10. Graph showing hydrocarbon degrading bacteria counts in wells located near the injection well before and during the pilot-test, Chester River Hospital Center, Chestertown, Maryland

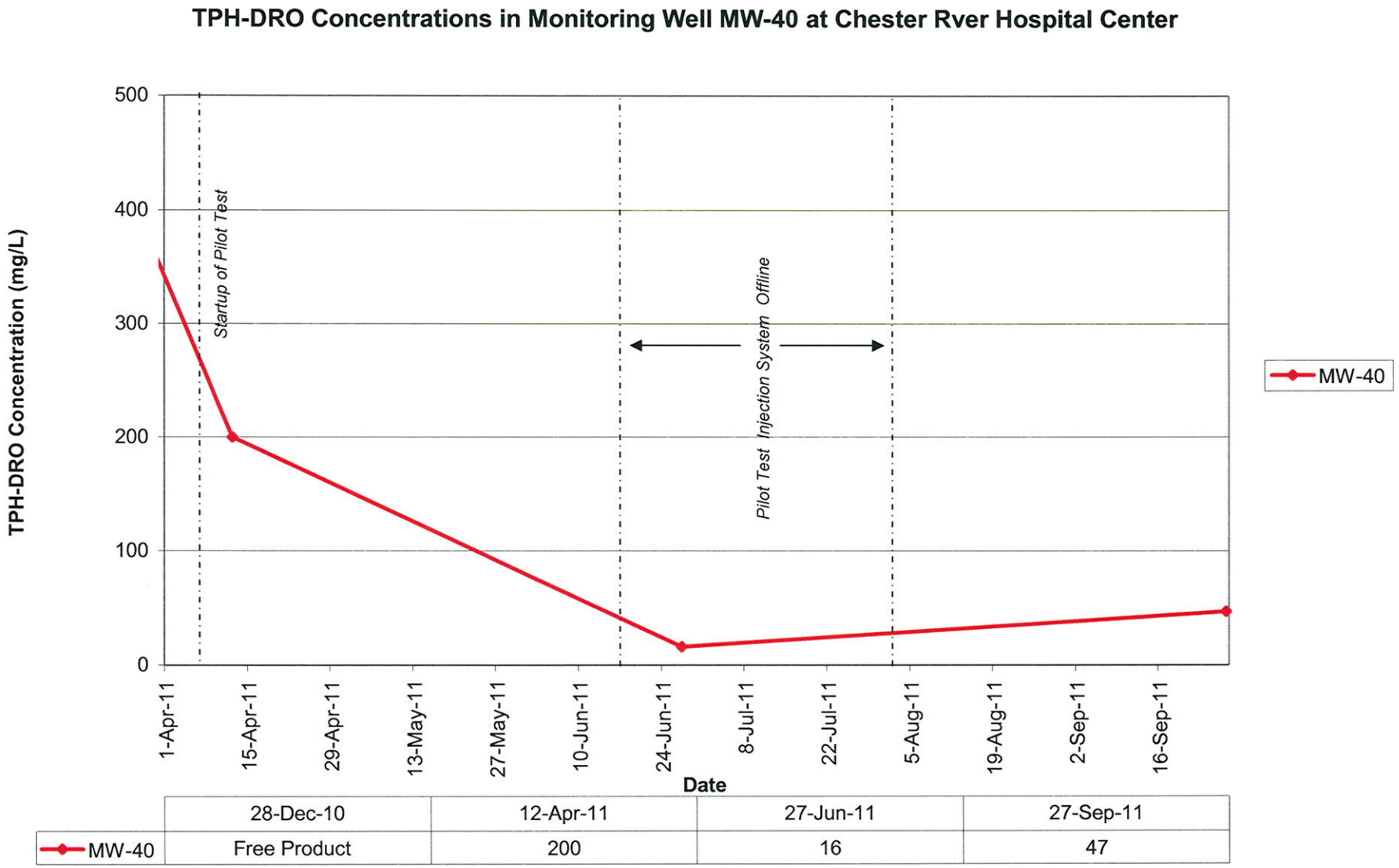



Figure 11. Graph showing TPH-DRO concentrations in samples collected from MW-40 located near the injection well before and during the pilot-test, Chester River Hospital Center, Chestertown, Maryland

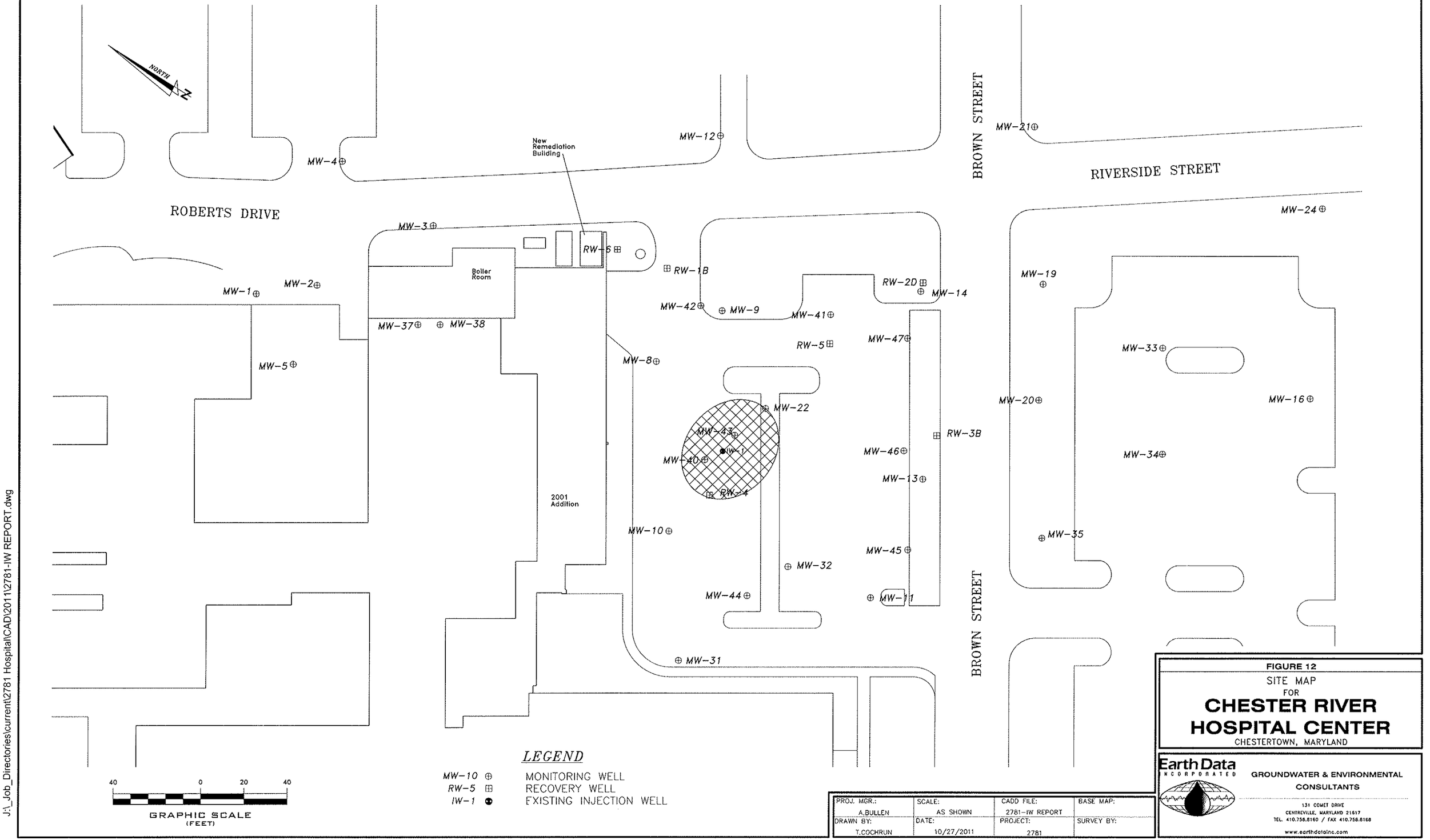



Figure 12 – Site Map showing the area of influence around the Injection Well during the pilot-test at Chester River Hospital Center, Chestertown, Maryland.

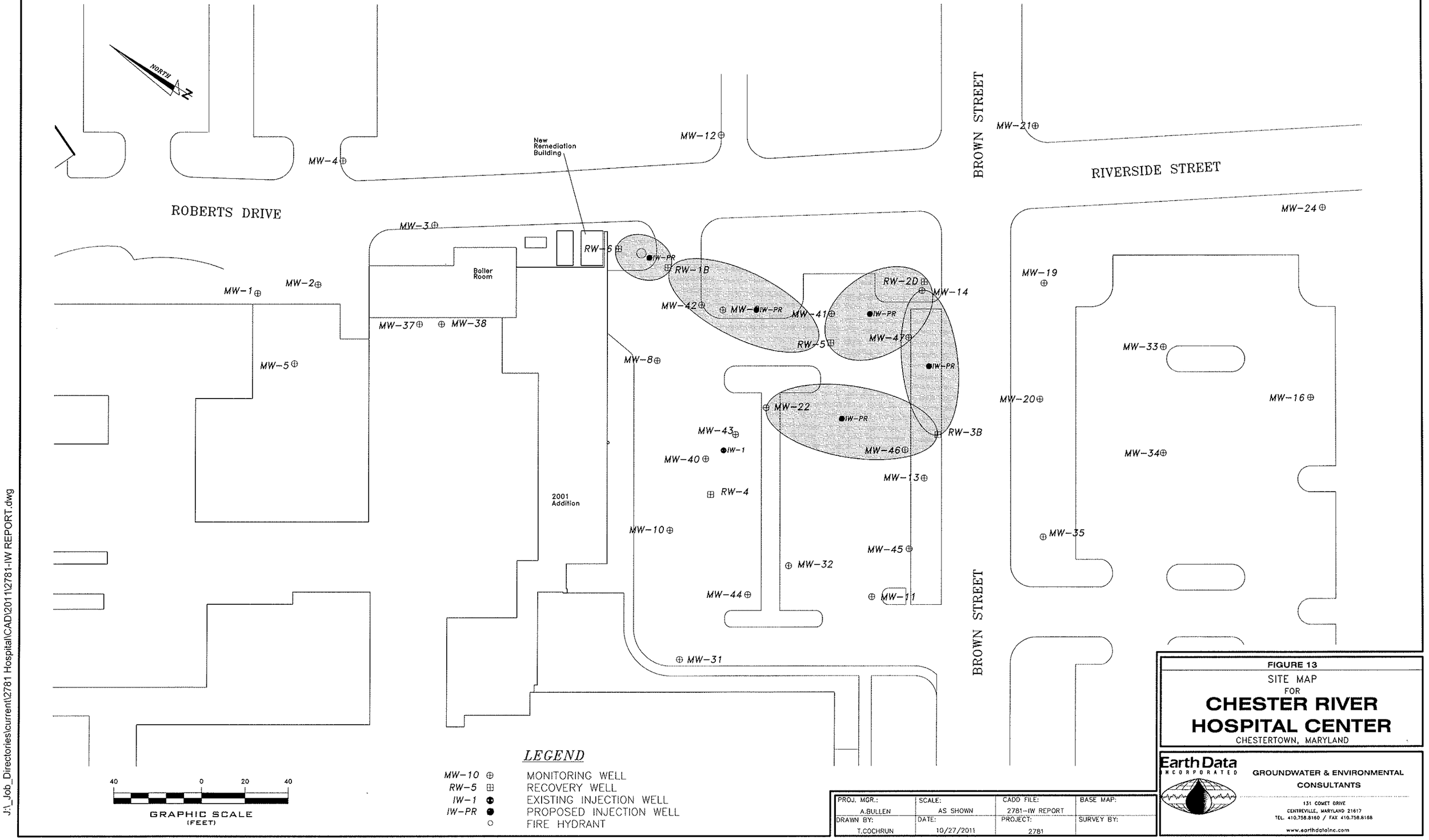



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Figure 13 – Site Map showing the proposed Injection Well locations with projected areas of influence at Chester River Hospital Center, Chestertown, Maryland.

# TABLES

| | MW-5 | | | | | |
|---|---|---|---|---|---|---|
| | 29-Sep-05 | 28-Dec-10 | 31-Jan-11 | 12-Apr-11 | 27-Jun-11 | 27-Sep-11 |
| Iron (mg/L) | 0.34 | 6.2 | NA | NA | <0.1 | NA |
| Nitrate (mg/L) | 3.4 | 4.0 | NA | 4.3 | 4.2 | NA |
| Sulfate (mg/L) | <1.0 | <1.0 | NA | 0.3 | 0.3 | NA |
| Phosphate (mg/L) | 0.06 | <1.0 | NA | <1.0 | <1.0 | NA |
| Methane (mg/L) | 0.052 | 0.106 | NA | <0.0053 | 0.0097 | NA |
| DO (mg/L) | 4.00 | NA | 7.32 | 8.07 | 5.89 | 8.45 |
| pH | NA | NA | 5.01 | 4.78 | 5.09 | 5.17 |
| Conductivity (mS/cm[c]) | NA | NA | 0.306 | 0.351 | 0.345 | 0.349 |
| TPH-DRO (mg/L) | NA | FP | NA | 0.3 | <0.1 | 6.8 |
| Hydrocarbon Degrading Bacteria (CFU/mL) | NA | NA | NA | 300 | 335 | 10,300 |

| | MW-9 | | | | | |
|---|---|---|---|---|---|---|
| | 29-Sep-05 | 14-Jan-11 | 31-Jan-11 | 12-Apr-11 | 27-Jun-11 | 27-Sep-11 |
| Iron (mg/L) | 13 | 20 | NA | NA | 38 | NA |
| Nitrate (mg/L) | 2.5 | 3.0 | NA | 1.7 | 1.4 | NA |
| Sulfate (mg/L) | <1.0 | 0.4 | NA | <0.2 | 0.3 | NA |
| Phosphate (mg/L) | 0.48 | <1.0 | NA | <1.0 | <1.0 | NA |
| Methane (mg/L) | 0.94 | 1.77 | NA | 2.45 | 0.760 | NA |
| DO (mg/L) | 1.00 | NA | 4.76 | 2.62 | 2.67 | 2.08 |
| pH | NA | NA | 6.22 | 5.55 | 6.08 | 6.17 |
| Conductivity (mS/cm[c]) | NA | NA | 0.554 | 0.284 | 0.406 | 0.378 |
| TPH-DRO (mg/L) | NA | 31 | NA | 0.2 | 3.8 | 6.3 |
| Hydrocarbon Degrading Bacteria (CFU/mL) | NA | NA | NA | 1,440 | 23,500 | 16,800 |

| | MW-40 | | | | | |
|---|---|---|---|---|---|---|
| | 29-Sep-05 | 28-Dec-10 | 31-Jan-11 | 12-Apr-11 | 27-Jun-11 | 27-Sep-11 |
| Iron (mg/L) | NA | 28 | NA | NA | 15 | NA |
| Nitrate (mg/L) | NA | 2.6 | NA | 1.70 | 2.30 | NA |
| Sulfate (mg/L) | NA | 8.7 | NA | 0.5 | 4.1 | NA |
| Phosphate (mg/L) | NA | <1.0 | NA | <1.0 | <1.0 | NA |
| Methane (mg/L) | NA | 0.068 | NA | 0.485 | 6.22 | NA |
| DO (mg/L) | NA | NA | 5.89 | 29.73 | 3.89 | 9.71 |
| pH | NA | NA | 4.83 | 4.83 | 5.66 | 6.45 |
| Conductivity (mS/cm[c]) | NA | NA | 0.221 | 0.156 | 0.233 | 0.192 |
| TPH-DRO (mg/L) | NA | FP | NA | 200 | 16 | 47 |
| Hydrocarbon Degrading Bacteria (CFU/mL) | NA | NA | NA | 41,500 | 119,000 | 63,500 |

| | MW-43 | | | | | |
|---|---|---|---|---|---|---|
| | 29-Sep-05 | 28-Dec-11 | 31-Jan-11 | 12-Apr-11 | 27-Jun-11 | 27-Sep-11 |
| Iron (mg/L) | NA | 66 | NA | NA | 33 | NA |
| Nitrate (mg/L) | NA | NA | NA | 1.1 | 1.2 | NA |
| Sulfate (mg/L) | NA | NA | NA | 5.5 | 11 | NA |
| Phosphate (mg/L) | NA | NA | NA | <1.0 | <1.0 | NA |
| Methane (mg/L) | NA | NA | NA | <0.0061 | 0.0126 | NA |
| DO (mg/L) | NA | NA | NA | 32.09 | 4.38 | 8.92 |
| pH | NA | NA | NA | 5.06 | 6.62 | 6.90 |
| Conductivity (mS/cm[c]) | NA | NA | NA | 0.152 | 0.214 | 0.221 |
| TPH-DRO (mg/L) | NA | 0.2 | NA | <0.1 | 0.3 | 0.1 |
| Hydrocarbon Degrading Bacteria (CFU/mL) | NA | NA | NA | 3,500 | 7,750 | 11,100 |

| | MW-20 | | | | | |
|---|---|---|---|---|---|---|
| | 29-Sep-05 | 28-Dec-10 | 31-Jan-11 | 12-Apr-11 | 27-Jun-11 | 27-Sep-11 |
| Iron (mg/L) | 1.8 | 23 | NA | NA | 17 | NA |
| Nitrate (mg/L) | 4.8 | 3.3 | NA | 3.3 | 2.8 | NA |
| Sulfate (mg/L) | <1.0 | <1.0 | NA | <0.2 | 0.3 | NA |
| Phosphate (mg/L) | 0.13 | <1.0 | NA | <1.0 | <1.0 | NA |
| Methane (mg/L) | 0.188 | <0.0071 | NA | <0.0062 | 0.0074 | NA |
| DO (mg/L) | 3.00 | NA | 4.12 | 6.57 | 4.66 | 7.84 |
| pH | NA | NA | 4.97 | 4.81 | 5.10 | 5.18 |
| Conductivity (mS/cm) | NA | NA | 0.318 | 0.319 | 0.287 | 0.261 |
| TPH-DRO (mg/L) | NA | 19 | NA | 0.2 | 5.5 | 3.9 |
| Hydrocarbon Degrading Bacteria (CFU/mL) | NA | NA | NA | <100 | 1,200 | NA |

| | MW-23 | | | | | |
|---|---|---|---|---|---|---|
| | 29-Sep-05 | 28-Dec-10 | 31-Jan-11 | 12-Apr-11 | 27-Jun-11 | 27-Sep-11 |
| Iron (mg/L) | 0.28 | 21 | NA | NA | 18 | NA |
| Nitrate (mg/L) | 2.0 | 4.0 | NA | 3.1 | 3.0 | NA |
| Sulfate (mg/L) | 3.5 | <1.0 | NA | 0.3 | 0.2 | NA |
| Phosphate (mg/L) | <0.5 | <1.0 | NA | <1.0 | <1.0 | NA |
| Methane (mg/L) | <0.006 | <0.0065 | NA | <0.0061 | <0.0061 | NA |
| DO (mg/L) | 7.00 | NA | 8.04 | 9.03 | 3.24 | 9.37 |
| pH | NA | NA | 4.82 | 4.42 | 5.22 | 5.17 |
| Conductivity (mS/cm) | NA | NA | 0.092 | 0.093 | 0.095 | 0.091 |
| TPH-DRO (mg/L) | NA | 0.1 | NA | <0.1 | <0.1 | <0.1 |
| Hydrocarbon Degrading Bacteria (CFU/mL) | NA | NA | NA | 4,600 | 1,500 | 3,850 |

FP - Film of Free Product
NA = Parameter not analyzed

Table 1. Summary of indicator parameter concentrations, Chester River Hospital Center, Chestertown, Maryland

| | RW-1B | | RW-2D | | RW-3B | |
|---|---|---|---|---|---|---|
| | 28-Dec-10 | 31-Jan-11 | 28-Dec-10 | 31-Jan-11 | 28-Dec-10 | 31-Jan-11 |
| Iron (mg/L) | 0.95 | NA | 1.2 | NA | 1.3 | NA |
| Nitrate (mg/L) | NA | NA | NA | NA | NA | NA |
| Sulfate (mg/L) | NA | NA | NA | NA | NA | NA |
| Phosphate (mg/L) | NA | NA | NA | NA | NA | NA |
| Methane (mg/L) | NA | NA | NA | NA | NA | NA |
| DO (mg/L) | NA | 7.57 | NA | 7.73 | NA | 8.69 |
| pH | NA | 5.01 | NA | 5.04 | NA | 5.03 |
| Conductivity (mS/cm$^c$) | NA | 0.116 | NA | 0.180 | NA | 0.163 |
| TPH-DRO (mg/L) | 0.1 | NA | 0.1 | NA | 0.1 | NA |
| Hydrocarbon Degrading Bacteria (CFU/mL) | NA | NA | NA | NA | NA | NA |

| | RW-4 | | | | | RW-5 | | |
|---|---|---|---|---|---|---|---|---|
| | 28-Dec-10 | 31-Jan-11 | 12-Apr-11 | 27-Jun-11 | 27-Sep-11 | 28-Dec-10 | 31-Jan-11 | 27-Sep-11 |
| Iron (mg/L) | 1 | NA | NA | 1.1 | NA | 3.6 | NA | NA |
| Nitrate (mg/L) | NA | NA | 4.9 | 4.50 | NA | NA | NA | NA |
| Sulfate (mg/L) | NA | NA | <0.2 | 0.4 | NA | NA | NA | NA |
| Phosphate (mg/L) | NA | NA | <1.0 | <1.0 | NA | NA | NA | NA |
| Methane (mg/L) | NA | NA | 0.334 | 0.258 | NA | NA | NA | NA |
| DO (mg/L) | NA | 6.76 | 10.70 | 7.15 | 6.50 | NA | 6.62 | 5.56 |
| pH | NA | 4.93 | 4.87 | 5.30 | 5.28 | NA | 5.17 | 5.59 |
| Conductivity (mS/cm$^c$) | NA | 0.266 | 0.040 | 0.259 | 0.231 | NA | 0.096 | 0.147 |
| TPH-DRO (mg/L) | 0.1 | NA | <0.1 | <0.1 | 0.1 | 0.1 | NA | 0.2 |
| Hydrocarbon Degrading Bacteria (CFU/mL) | NA | NA | 90,000 | 800 | 300 | NA | NA | 500 |

| | RW-6 | | MW-22 | | | | |
|---|---|---|---|---|---|---|---|
| | 28-Dec-10 | 31-Jan-11 | 28-Dec-10 | 31-Jan-11 | 12-Apr-11 | 27-Jun-11 | 27-Sep-11 |
| Iron (mg/L) | 1.9 | NA | 2.5 | NA | NA | 3.2 | NA |
| Nitrate (mg/L) | NA | NA | NA | NA | 2.5 | 2.10 | NA |
| Sulfate (mg/L) | NA | NA | NA | NA | 0.8 | 2.6 | NA |
| Phosphate (mg/L) | NA | NA | NA | NA | <1.0 | <1.0 | NA |
| Methane (mg/L) | NA | NA | NA | NA | <0.0058 | 0.935 | NA |
| DO (mg/L) | NA | 8.60 | NA | 8.53 | 11.94 | 6.23 | 8.27 |
| pH | NA | 5.17 | NA | 5.23 | 5.28 | 5.76 | 5.78 |
| Conductivity (mS/cm) | NA | 0.165 | NA | 0.170 | 0.017 | 0.205 | 0.192 |
| TPH-DRO (mg/L) | 0.1 | NA | 0.1 | NA | <0.1 | 0.3 | 0.2 |
| Hydrocarbon Degrading Bacteria (CFU/mL) | NA | NA | NA | NA | 42,000 | 1,950 | 1,050 |

FP - Film of Free Product
NA = Parameter not analyzed

Table 1. Summary of indicator parameter concentrations, Chester River Hospital Center, Chestertown, Maryland

**WELL MW-5**

| Date | Dissolved Oxygen (%) | Dissolved Oxygen (mg/L) | Temperature (°C) | pH | Conductivity (mS/cm$^c$) | ORP |
|---|---|---|---|---|---|---|
| 31-Jan-11 | 72.8 | 7.32 | 15.08 | 5.01 | 0.306 | 191.1 |
| 12-Apr-11 | 82.1 | 8.07 | 16.08 | 4.78 | 0.351 | 204.9 |
| 31-May-11 | 84.0 | ----- | 16.15 | 5.19 | 0.374 | 161.9 |
| 13-Jun-11 | 97.0 | 9.42 | 16.22 | 5.06 | 0.370 | 329.2 |
| 27-Jun-11 | 60.8 | 5.89 | 16.92 | 5.09 | 0.345 | 215.5 |
| 26-Aug-11 | 45.9 | 4.52 | 16.04 | 5.58 | 0.142 | 166.7 |
| 27-Sep-11 | 86.8 | 8.45 | 16.61 | 5.17 | 0.349 | 199.3 |

**WELL MW-9**

| Date | Dissolved Oxygen (%) | Dissolved Oxygen (mg/L) | Temperature (°C) | pH | Conductivity (mS/cm$^c$) | ORP |
|---|---|---|---|---|---|---|
| 31-Jan-11 | 47.3 | 4.76 | 14.99 | 6.22 | 0.554 | -26.1 |
| 12-Apr-11 | 26.5 | 2.62 | 16.39 | 5.55 | 0.284 | -29.6 |
| 31-May-11 | 5.9 | ----- | 16.95 | 5.70 | 0.281 | 101.1 |
| 13-Jun-11 | 6.5 | 0.63 | 16.78 | 5.96 | 0.360 | 71.1 |
| 27-Jun-11 | 27.8 | 2.67 | 17.16 | 6.08 | 0.406 | -39.5 |
| 26-Aug-11 | 10.4 | 1.06 | 16.81 | 5.85 | 0.307 | 88.2 |
| 27-Sep-11 | 20.8 | 2.08 | 16.33 | 6.17 | 0.378 | -21.1 |

**WELL MW-20**

| Date | Dissolved Oxygen (%) | Dissolved Oxygen (mg/L) | Temperature (°C) | pH | Conductivity (mS/cm$^c$) | ORP |
|---|---|---|---|---|---|---|
| 31-Jan-11 | 40.5 | 4.12 | 14.72 | 4.97 | 0.318 | 230.1 |
| 12-Apr-11 | 68.0 | 6.57 | 16.49 | 4.81 | 0.319 | 198.5 |
| 31-May-11 | 61.8 | ----- | 16.55 | 4.99 | 0.291 | 237.0 |
| 13-Jun-11 | 53.3 | 5.2 | 16.47 | 5.06 | 0.320 | 230.6 |
| 27-Jun-11 | 47.2 | 4.66 | 16.37 | 5.10 | 0.287 | 185.6 |
| 26-Aug-11 | 20.9 | 2.09 | 16.71 | 5.04 | 0.332 | 259.8 |
| 27-Sep-11 | 80.2 | 7.84 | 16.44 | 5.18 | 0.261 | 203.4 |

**WELL MW-23**

| Date | Dissolved Oxygen (%) | Dissolved Oxygen (mg/L) | Temperature (°C) | pH | Conductivity (mS/cm$^c$) | ORP |
|---|---|---|---|---|---|---|
| 31-Jan-11 | 78.7 | 8.04 | 14.36 | 4.82 | 0.092 | 308.9 |
| 12-Apr-11 | 91.1 | 9.03 | 15.94 | 4.42 | 0.093 | 164.1 |
| 31-May-11 | 101.6 | ----- | 16.16 | 5.12 | 0.093 | 248.6 |
| 13-Jun-11 | 99.7 | 9.83 | 15.80 | 5.13 | 0.092 | 265.8 |
| 27-Jun-11 | 32.3 | 3.24 | 15.73 | 5.22 | 0.095 | 198.2 |
| 26-Aug-11 | 95.7 | 9.44 | 15.95 | 4.95 | 0.094 | 284.9 |
| 27-Sep-11 | 94.8 | 9.37 | 15.96 | 5.17 | 0.091 | 223.6 |

**WELL MW-40**

| Date | Dissolved Oxygen (%) | Dissolved Oxygen (mg/L) | Temperature (°C) | pH | Conductivity (mS/cm$^c$) | ORP |
|---|---|---|---|---|---|---|
| 31-Jan-11 | 58.5 | 5.89 | 15.03 | 4.83 | 0.221 | 289.1 |
| 12-Apr-11 | 305.7 | 29.73 | 16.62 | 4.83 | 0.156 | 271.3 |
| 31-May-11 | 113.2 | ----- | 22.40 | 6.04 | 0.170 | 411.3 |
| 13-Jun-11 | 113.1 | 9.88 | 22.07 | 6.12 | 0.170 | 475.1 |
| 27-Jun-11 | 40.1 | 3.89 | 16.86 | 5.66 | 0.233 | 121.7 |
| 26-Aug-11 | 111.3 | 9.59 | 22.62 | 6.15 | 0.165 | 596.8 |
| 27-Sep-11 | 108.2 | 9.71 | 20.68 | 6.45 | 0.192 | 642.5 |

TABLE 2 - Water Quality Field Measurements Collected from Select Wells at Chester River Hospital Center, Chestertown, Maryland

**WELL MW-43**

| Date | Dissolved Oxygen (%) | Dissolved Oxygen (mg/L) | Temperature (°C) | pH | Conductivity (mS/cm$^{c}$) | ORP |
|---|---|---|---|---|---|---|
| 31-Jan-11 | ----- | ----- | ----- | ----- | ----- | ----- |
| 12-Apr-11 | 332.2 | 32.09 | 17.05 | 5.06 | 0.152 | 244.0 |
| 31-May-11 | 91.1 | ----- | 23.16 | 6.04 | 0.204 | 235.3 |
| 13-Jun-11 | 82.1 | 7.12 | 27.70 | 6.67 | 0.206 | 267.9 |
| 27-Jun-11 | 49.8 | 4.38 | 21.71 | 6.62 | 0.214 | 96.6 |
| 26-Aug-11 | 88.1 | 7.67 | 27.65 | 6.63 | 0.205 | ----- |
| 27-Sep-11 | 97.6 | 8.92 | 20.74 | 6.90 | 0.221 | 59.5 |

**WELL RW-4**

| Date | Dissolved Oxygen (%) | Dissolved Oxygen (mg/L) | Temperature (°C) | pH | Conductivity (mS/cm$^{c}$) | ORP |
|---|---|---|---|---|---|---|
| 31-Jan-11 | 68.4 | 6.76 | 16.16 | 4.93 | 0.266 | 215.6 |
| 12-Apr-11 | 109.7 | 10.70 | 16.83 | 4.87 | 0.040 | 192.4 |
| 31-May-11 | 73.7 | ----- | 17.36 | 5.35 | 0.246 | 193.8 |
| 13-Jun-11 | 72.0 | 6.89 | 17.61 | 5.33 | 0.253 | 181.3 |
| 27-Jun-11 | 75.0 | 7.15 | 17.28 | 5.30 | 0.259 | 184.6 |
| 26-Aug-11 | 67.8 | 6.42 | 17.93 | 5.30 | 0.062 | 199.9 |
| 27-Sep-11 | 68.1 | 6.50 | 17.58 | 5.28 | 0.231 | 178.9 |

**WELL RW-5**

| Date | Dissolved Oxygen (%) | Dissolved Oxygen (mg/L) | Temperature (°C) | pH | Conductivity (mS/cm$^{c}$) | ORP |
|---|---|---|---|---|---|---|
| 31-Jan-11 | 65.5 | 6.62 | 15.11 | 5.17 | 0.096 | 180.5 |
| 12-Apr-11 | ----- | ----- | ----- | ----- | ----- | ----- |
| 31-May-11 | 65.5 | ----- | 15.87 | 5.66 | 0.137 | 148.2 |
| 13-Jun-11 | 49.6 | 4.90 | 15.86 | 5.61 | 0.150 | 148.1 |
| 27-Jun-11 | ----- | ----- | ----- | ----- | ----- | ----- |
| 26-Aug-11 | 47.3 | 4.96 | 15.91 | 5.45 | 0.091 | 156.3 |
| 27-Sep-11 | 56.2 | 5.56 | 15.87 | 5.59 | 0.147 | 137.8 |

**WELL MW-22**

| Date | Dissolved Oxygen (%) | Dissolved Oxygen (mg/L) | Temperature (°C) | pH | Conductivity (mS/cm$^{c}$) | ORP |
|---|---|---|---|---|---|---|
| 31-Jan-11 | 86.4 | 8.53 | 15.52 | 5.23 | 0.170 | 166.7 |
| 12-Apr-11 | 117.2 | 11.94 | 16.17 | 5.28 | 0.017 | 140.2 |
| 31-May-11 | 101.1 | ----- | 17.99 | 5.84 | 0.193 | 129.6 |
| 13-Jun-11 | 89.7 | 8.37 | 18.80 | 5.68 | 0.189 | 128.6 |
| 27-Jun-11 | 66.4 | 6.23 | 18.15 | 5.76 | 0.205 | 120.3 |
| 26-Aug-11 | 86.3 | 7.95 | 19.28 | 5.75 | 0.187 | 145.9 |
| 27-Sep-11 | 89.1 | 8.27 | 19.03 | 5.78 | 0.192 | 121.9 |

TABLE 2 - Water Quality Field Measurements Collected from Select Wells at Chester River Hospital Center, Chestertown, Maryland

# APPENDIX A

## Injection Well Completion Report

**DRILLER: REMOVE COPY AND RETAIN FOR YOUR RECORDS. RETURN COUNTY COPY TO COUNTY ENVIRONMENTAL AGENCY. SUBMIT COPY TO OWNER. RETURN ALL OTHER PARTS TO DEPARTMENT OF ENVIRONMENT, 2500 BROENING HIGHWAY, BALTIMORE, MARYLAND 21224.**

C 1 | 6730 — SEQUENCE NO. (MDE USE ONLY) — (1 2 3 6 THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

# STATE OF MARYLAND
## WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM DD YY (8–13)

DATE WELL COMPLETED: MM 12 DD 17 YY 09 (15–20)

Depth of Well: 61 (TO NEAREST FOOT) (22–26)

PERMIT NO. FROM "PERMIT TO DRILL WELL": KE-95-0752 (28–37)

OWNER: Chester River Hospital Center (last name / first name)
STREET OR RFD: 100 Brown Street TOWN: Chester town
SUBDIVISION: SECTION: LOT:

## WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

| DESCRIPTION (Use additional sheets if needed) | FEET FROM | FEET TO | check if water bearing |
|---|---|---|---|
| Asphalt crush & run | 0 | .5' | |
| Tan fine clay sand, some fine gravel | .5' | 10' | |
| | 10' | 50' | wet 40' |
| Red-Brown clayey sand and Iron stone same fine to med gravel | | | |
| | 50' | 61' | |
| Green fine sand with silt | | | |

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes (Y) no (N)

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MWD 339
Turkey Moorehead
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)
LIC. NO.: MWD 088
Robert Bar

## GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes (Y) no (N) (44)
TYPE OF GROUTING MATERIAL (Circle one)
CEMENT (C M) BENTONITE CLAY (B C) (45–46)
NO. OF BAGS 36 NO. OF POUNDS 1500
GALLONS OF WATER 180 gallons
DEPTH OF GROUT SEAL (to nearest foot) from 54 (48–52 TOP) ft. to 5 (54–58 BOTTOM) ft.
(enter 0 if from surface)

## CASING RECORD
casing types insert appropriate code below
(S T) STEEL (C O) CONCRETE (P L) PLASTIC (O T) OTHER

| MAIN CASING TYPE | Nominal diameter top (main) casing (nearest inch)! | Total depth of main casing (nearest foot). |
|---|---|---|
| PL (60–61) | 4 (63–64) | 56' (66–70) |

EACH CASING — OTHER CASING (if used)

| | diameter inch | depth (feet) from | to |
|---|---|---|---|
| ~~PL~~ | ~~5"~~ | | |
| PL | 4 | 56.5 | 61 |

## SCREEN RECORD
screen type or open hole — insert appropriate code below
(S T) STEEL (B R) BRASS (H O) OPEN HOLE (P L) PLASTIC (O T) OTHER

C 2 — DEPTH (nearest ft.)

EACH SCREEN

| | | | | |
|---|---|---|---|---|
| 1 (8–9) | PL | 56 (11–15) | 56.5 (17–21) | |
| 2 (23–24) | | (26–30) | (32–36) | |
| 3 (38–39) | | (41–45) | (47–51) | |

SLOT SIZE 1 010 2 3

DIAMETER OF SCREEN 4 (NEAREST INCH) (56–58)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

| from | to |
|---|---|
| 61 | 54 |

(68)

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W.O. (70–72)

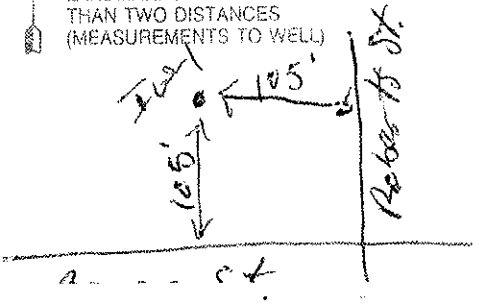
C 3

## PUMPING TEST
HOURS PUMPED (nearest hour): 4 (8–9)
PUMPING RATE (gal. per min.): 6 (11–15)
METHOD USED TO MEASURE PUMPING RATE: 5 gal bucket
WATER LEVEL (distance from land surface)
BEFORE PUMPING: 40 (17–20) ft.
WHEN PUMPING: 46 (22–25) ft.

TYPE OF PUMP USED (for test) (27)
- A air
- P piston
- T turbine
- C centrifugal
- R rotary
- O other (describe below)
- J jet
- S submersible

## PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES (NO)
IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29: N/A (29)
CAPACITY: GALLONS PER MINUTE (to nearest gallon): N/A (31–35)
PUMP HORSE POWER: N/A (37–41)
PUMP COLUMN LENGTH (nearest ft.): N/A (43–47)
CASING HEIGHT (circle appropriate box and enter casing height)
(+) above (49) / (–) below (49) LAND SURFACE
.5 (nearest foot) (50–51)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



# APPENDIX B

## Injection System Operation Logs

## Dissolved Oxygen Injection Data

Chester River Hospital Center
Chestertown, Maryland

| DATE | ON/OFF | TIME | WATER* TOTALIZER (gal) | INJECTION RATE (lpm) | PRESSURE ON UNIT (psi) | PRESSURE AT WELL (psi) | MW-40 | | MW-43 | | RW-4 | | MW-22 | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | DTP | DTW | DTP | DTW | DTP | DTW | DTP | DTW | |
| 1-Apr-11 | OFF | --- | --- | --- | --- | --- | --- | --- | --- | --- | sheen | 41.46 | sheen | 41.30 | |
| 7-Apr-11 | ON | 12:45 PM | 0 | 1.3 | 10 | 40 | --- | --- | --- | --- | --- | --- | --- | --- | initial startup |
| 8-Apr-11 | ON | 10:45 AM | 7089 | 0.5 | 10 | 40 | --- | --- | --- | --- | sheen | 41.29 | film | 41.89 | adjusted injection rate back to 1.3 lpm |
| | OFF | 1:00 PM | 1083 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | timer shut off system - adjusted timer and restarted |
| 11-Apr-11 | ON | 2:00 PM | 6386 | 0.2 | 8 | 40 | --- | --- | --- | --- | --- | --- | --- | --- | adjusted injection rate back to 1.3 lpm |
| 12-Apr-11 | ON | 8:50 AM | 7551 | 1.3 | 9 | 40 | sheen | 39.49 | sheen | 38.76 | --- | --- | film | 41.80 | collected DO readings |
| 13-Apr-11 | OFF | 9:15 AM | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | repaired gas hose fitting and changed out $O_2$ tank; restarted at 11:15 am |
| 15-Apr-11 | ON | 4:00 PM | 6392 | 1.4 | 10 | 40 | --- | --- | --- | --- | --- | --- | --- | --- | changed out $O_2$ tank |
| 18-Apr-11 | ON | 1:30 PM | 6022 | 1 | 9 | 40 | --- | --- | --- | --- | --- | --- | 41.60 | 41.62 | |
| 19-Apr-11 | OFF | 1:45 PM | 4051 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | $O_2$ tank empty; switched to partial tank (400 psi) and restarted |
| | ON | 1:50 PM | 0 | 1.0 | 15 | 40 | --- | --- | --- | --- | --- | --- | --- | --- | adjusted injection rate back to 1.3 lpm |
| 22-Apr-11 | OFF | 10:43 AM | 1230 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | $O_2$ tank empty; switched to full tank and restarted |
| | ON | 12:00 PM | 0 | 1.4 | 18 | 40 | --- | --- | --- | --- | sheen | 41.01 | 41.30 | 41.31 | |
| 25-Apr-11 | OFF | 12:45 PM | 6104 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | $O_2$ tank empty; switched to full tank and restarted |
| | ON | 12:55 PM | 0 | 1.2 | 10 | 40 | --- | --- | | --- | --- | --- | --- | --- | |
| 26-Apr-11 | ON | 11:10 AM | 942.5 | 1.3 | 10 | 40 | --- | --- | --- | --- | --- | --- | --- | --- | changed out $O_2$ tank |
| 29-Apr-11 | ON | 3:00 PM | 4175 | 0.6 | 14 | 40 | sheen | 38.77 | sheen | 38.08 | 41.20 | 41.21 | 40.80 | 40.90 | adjusted injection rate back to 1.3 lpm; changed out $O_2$ tank |
| 2-May-11 | ON | 9:45 AM | 468.4 | 1.3 | 16 | --- | --- | --- | --- | --- | --- | --- | --- | --- | switched to partial $O_2$ tank |
| 5-May-11 | OFF | 11:00 AM | 931.4 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | $O_2$ tank empty; switched to full tank and restarted |
| | ON | 11:30 AM | 0 | 1.0 | --- | --- | --- | --- | --- | --- | --- | --- | 41.34 | 41.35 | adjusted injection rate back to 1.3 lpm |
| 9-May-11 | OFF | 10:45 AM | 5530 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | $O_2$ tank empty; switched to full tank and restarted |
| | ON | 10:55 AM | 0 | 1.0 | 10 | --- | --- | --- | --- | --- | --- | --- | 41.29 | 41.55 | adjusted injection rate back to 1.3 lpm |
| 13-May-11 | OFF | 2:15 PM | 8782 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | $O_2$ tank empty - none available |
| 17-May-11 | ON | 12:30 PM | 0 | 1 | 13 | --- | --- | --- | --- | --- | --- | --- | --- | --- | changed out $O_2$ tank and restarted; adjusted injection rate to 1.3 lpm |
| 20-May-11 | ON | 9:30 AM | 3887 | 1 | 17 | 40 | --- | --- | --- | --- | --- | --- | --- | --- | changed out $O_2$ tank; adjusted injection rate to 1.3 lpm |
| 23-May-11 | OFF | 12:50 PM | 7161 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | $O_2$ tank empty - none available |
| 24-May-11 | ON | | 56 | 1.3 | 15 | --- | --- | --- | --- | --- | --- | --- | --- | --- | changed out $O_2$ tank and restarted |
| 27-May-11 | ON | 1:30 PM | | 1.3 | 15 | --- | --- | --- | --- | --- | --- | --- | --- | --- | changed out $O_2$ tank |
| 31-May-11 | ON | | 5701 | 1.3 | 15 | | --- | 38.25 | --- | 37.59 | 41.86 | 41.87 | 41.16 | 41.20 | changed out $O_2$ tank; collected DO readings |
| 3-Jun-11 | OFF | 10:30 AM | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 41.78 | 41.81 | |
| 6-Jun-11 | ON | 2:00 PM | 3859 | 1.3 | 15 | --- | --- | --- | --- | --- | --- | --- | --- | --- | changed out $O_2$ tank and restarted |
| 10-Jun-11 | OFF | 11:25 AM | 0 | --- | 12 | --- | --- | --- | --- | --- | --- | --- | --- | --- | system had been shut off; switched to full $O_2$ tank and restarted |
| 13-Jun-11 | ON | 8:30 AM | 3438 | 0.7 | 15 | --- | --- | --- | --- | --- | --- | --- | --- | --- | adjusted injection rate back to 1.3 lpm; collected DO readings |
| 15-Jun-11 | OFF | 8:15 AM | 9934 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | $O_2$ tank empty; switched to full tank and restarted |
| | ON | 8:30 AM | 0 | 1.1 | 15 | 40 | --- | --- | --- | --- | film | 42.68 | 41.57 | 41.72 | adjusted injection rate back to 1.3 lpm |
| 17-Jun-11 | ON | 10:20 AM | 3285 | 1.3 | 14 | 0 | --- | --- | --- | --- | --- | --- | --- | --- | packer broke - shut down system |
| 20-Jun-11 | OFF | 12:00 PM | --- | --- | --- | --- | --- | --- | --- | --- | sheen | 42.00 | 42.06 | 42.30 | collected DO readings |
| 23-Jun-11 | OFF | 12:00 PM | --- | --- | --- | --- | --- | 40.01 | --- | 39.99 | --- | 43.37 | 42.48 | 42.69 | |
| 27-Jun-11 | OFF | 10:05 AM | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | collected DO readings |
| 1-Jul-11 | OFF | 12:25 PM | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | water treatment system down (wet well pump) |
| 5-Jul-11 | OFF | 11:30 AM | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | replaced wet well pump and restarted water treatment system |
| 8-Jul-11 | OFF | 8:35 AM | --- | --- | --- | --- | --- | --- | --- | --- | 42.60 | 42.61 | 41.87 | 41.95 | |
| 12-Jul-11 | OFF | 1:30 PM | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | reinstalled packer but it broke again |
| 15-Jul-11 | OFF | 11:40 AM | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 42.00 | 42.01 | |
| 22-Jul-11 | OFF | 9:05 AM | --- | --- | --- | --- | --- | --- | --- | --- | 43.80 | 43.83 | 42.88 | 42.96 | |
| 26-Jul-11 | OFF | 11:15 AM | --- | --- | --- | --- | film | 40.21 | --- | 40.17 | film | 43.48 | 43.20 | 43.31 | |
| 2-Aug-11 | ON | 2:00 PM | 0 | 1.3 | 12 | 40 | --- | --- | --- | --- | --- | --- | --- | --- | installed new packer in IW-1 and restarted system |
| 5-Aug-11 | ON | 10:05 AM | 2442 | 1.3 | 13 | 40 | --- | --- | --- | --- | 42.70 | 42.72 | 42.60 | 42.80 | changed out $O_2$ tank |
| 8-Aug-11 | ON | 2:40 PM | 6210 | 1.3 | 10 | 40 | --- | --- | --- | --- | --- | --- | --- | --- | changed out $O_2$ tank |
| 12-Aug-11 | OFF | 11:05 AM | 3148 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | $O_2$ tank empty; switched to full tank and restarted |

* Water Totalizer reset to 0 each visit

## Dissolved Oxygen Injection Data

Chester River Hospital Center
Chestertown, Maryland

| DATE | ON/OFF | TIME | WATER* TOTALIZER (gal) | INJECTION RATE (lpm) | PRESSURE ON UNIT (psi) | PRESSURE AT WELL (psi) | MW-40 | | MW-43 | | RW-4 | | MW-22 | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | DTP | DTW | DTP | DTW | DTP | DTW | DTP | DTW | |
| | ON | 11:10 AM | 0 | 1.3 | 13 | --- | --- | --- | --- | --- | --- | --- | 42.68 | 42.69 | |
| 16-Aug-11 | OFF | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | $O_2$ tank empty - none available |
| 18-Aug-11 | ON | 1:30 PM | 5975 | 1.3 | 11 | --- | --- | --- | --- | --- | --- | --- | --- | --- | changed out $O_2$ tank and restarted |
| 19-Aug-11 | ON | 10:20 AM | 556.8 | 1.3 | 13 | 40 | --- | --- | --- | --- | --- | --- | --- | --- | |
| 22-Aug-11 | ON | 2:30 PM | 426.4 | 1.3 | 13 | 40 | --- | --- | --- | --- | --- | 42.65 | 42.11 | 42.23 | |
| 26-Aug-11 | ON | 12:00 PM | 554.5 | 1.3 | 13 | 40 | --- | 39.42 | --- | 38.39 | 42.37 | 42.38 | 41.98 | 42.20 | changed out $O_2$ tank; collected DO readings |
| 29-Aug-11 | ON | 3:00 PM | 531.5 | 1.3 | 13 | 40 | --- | --- | --- | --- | --- | --- | --- | --- | changed out $O_2$ tank |
| 2-Sep-11 | ON | 10:45 AM | 2388 | 1.3 | 10 | --- | --- | --- | --- | --- | --- | --- | --- | --- | changed out $O_2$ tank |
| 6-Sep-11 | OFF | 1:00 PM | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | $O_2$ tank empty - none available |
| 9-Sep-11 | ON | 9:55 AM | 3208 | 1.3 | 13 | 40 | --- | --- | --- | --- | --- | --- | --- | --- | changed out $O_2$ tank and restarted |
| 12-Sep-11 | ON | 8:50 AM | 4503 | 1.3 | 12 | --- | --- | --- | --- | --- | --- | --- | 42.92 | 42.93 | changed out $O_2$ tank |
| 16-Sep-11 | ON | 10:00 AM | 3700 | 1.3 | 13 | 40 | --- | --- | --- | --- | 43.22 | 43.23 | 42.83 | 42.90 | changed out $O_2$ tank |
| 19-Sep-11 | ON | 1:30 PM | 7061 | 1.3 | 13 | --- | --- | --- | --- | --- | --- | --- | --- | --- | changed out $O_2$ tank |
| 23-Sep-11 | ON | 10:30 AM | 3138 | 1.3 | 11 | 40 | --- | --- | --- | --- | --- | --- | --- | --- | changed out $O_2$ tank |
| 26-Sep-11 | OFF | 2:05 PM | 6420 | 1.3 | 10 | 40 | --- | --- | --- | --- | --- | --- | --- | --- | $O_2$ tank empty; switched to full tank and restarted |
| 27-Sep-11 | ON | 9:45 AM | 9727 | 1.3 | 12 | 40 | film | 39.79 | 39.18 | 39.19 | 42.75 | 42.77 | 42.20 | 42.31 | collected DO readings |

TOTAL GALLONS PUMPED: 164047.5

* Water Totalizer reset to 0 each visit

# APPENDIX C

## Injection System Specifications

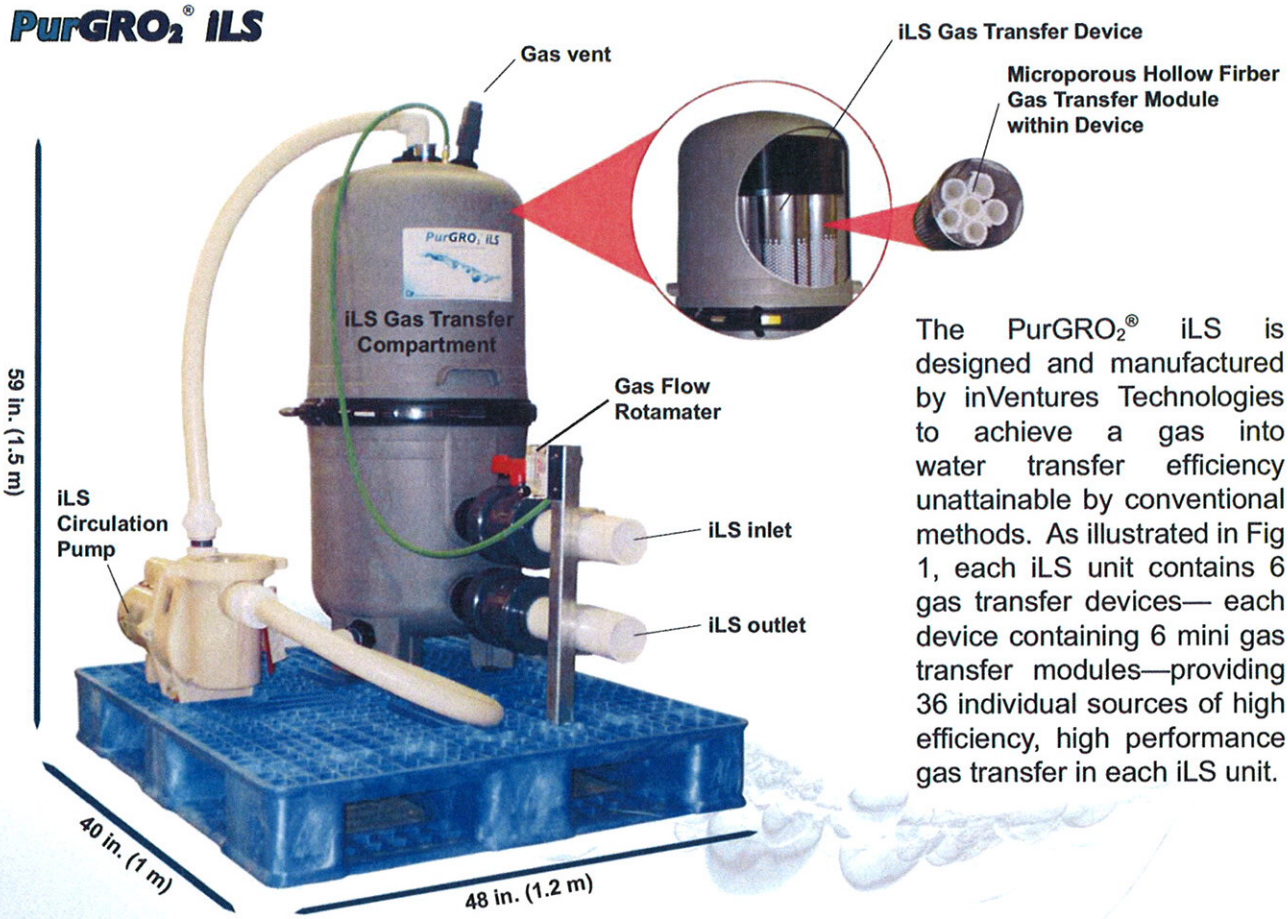
# PurGRO$_2$® iLS Controlled Atmosphere

The PurGRO$_2$® iLS gas transfer system is unique in its ability to create and maintain stable "controlled atmospheres" in water. This patented system and technology deliver significant added value to multiple markets.

In aquaculture, where oxygen is the source gas, PurGRO$_2$® iLS creates and maintains an atmosphere in fresh and salt water of stable dissolved oxygen, at normal total gas pressures. Unlike more conventional forms of oxygenation, PurGRO$_2$® is temperature independent, and actually delivers more oxygen with higher water temperatures.

As oxygen is transferred to the water flowing through the iLS, nitrogen and other noxious gases are simultaneously removed and vented from the process. This provides more "room" for dissolved oxygen without raising the total gas pressure. Fish appear to more readily absorb PurGRO$_2$® dissolved oxygen as it passes over their gills without competing nitorgen build up. PurGRO$_2$® iLS achieves both oxygenation and nitrogen removal in one unit.

The resulting "controlled atmosphere" has been demonstrated to result in healthier, stress-free fish, higher food conversion, less waste production, less aggressive but more prolonged feeding, increased growth, less disease with less mortalities, and most importantly, significant value.




The PurGRO$_2$® iLS is designed and manufactured by inVentures Technologies to achieve a gas into water transfer efficiency unattainable by conventional methods. As illustrated in Fig 1, each iLS unit contains 6 gas transfer devices— each device containing 6 mini gas transfer modules—providing 36 individual sources of high efficiency, high performance gas transfer in each iLS unit.

**Fig 1: PurGRO$_2$® iLS Transfer Illustration**

PurGRO$_2$® iLS gas transfer devices use a specially formulated microporous hollow fibre (MHF) to achieve up to 7,000 m2 of gas transfer surface area per 1 m$^3$ of fibre— 50 to 100 times the gas transfer ability of conventional packed towers, much higher when compared to ceramic diffusers—all without bubbles, all stable at atmospheric pressure, and all through rugged, small, in-line units.

Each iLS unit incorporates a small 240 V recirculation pump that maintains a constant flow of water across the gas transfer fibre, thus increasing transfer efficiency. This is the only power requirement as the iLS is installed in-line with process piping. The iLS will operate at the available line pressure from ~5 to ~20 psi with flows up to 200 GPM (800 LPM). Optimum PurGRO$_2$® operating range is 15 to 20 psi. The pressure drop across the iLS unit is minimal so the volume of water passing through to the receiving tanks will not be significantly affected. The higher the pressure and flow rate, the higher the oxygen transfer, as long as line pressure does not exced 20 psi.

The source of oxygen can be from compressed cylinders or an oxygen generator at a pressure to the iLS of 5 to 10 psi above the maximum expected process operating pressure. The iLS comes with a gas flow rotameter to control and monitor oxygen feed to the iLS unit. A built-in controller equalizes the gas pressure and distribution to each of the internal gas transfer devices.

Gas removed from the water by the iLS, including dissolved nitrogen, is discharged through a vent in the unit. Some carry over of removed gas is discharged in the water stream in the form of large bubbles that discharge to the surface.

## PurGRO$_2$® iLS Performance Chart

| | Example 1 | | | | | Example 2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| iLS head | 6ft (2m), 2.6 psi | | | Well Water | iLS head | 15ft (3m), 6.5 psi | | | Well Water |
| Temperature | 10° C | | N2 Inlet | 110 | Temperature | 15° C | | N2 Inlet | 110 |
| O2 Inlet | 8 % sat. | | O2 Usage | 8 LPM | O2 Inlet | 100 % sat. | | O2 Usage | 8 LPM |
| Unit Throughput LPM | kg/day oxygen dissolved | kg/day nitrogen removed | iLS vessel % oxygen reading | iLS vessell % nitrogen reading | Unit Throughput LPM | kg/day oxygen dissolved | kg/day nitrogen removed | iLS vessel % oxygen reading | iLS vessell % nitrogen reading |
| 800 | 7.81 | 2.79 | 68.83 | 96.86 | 800 | 8.604 | 2.735 | 174.06 | 95.88 |
| 600 | 7.54 | 2.68 | 86.27 | 93.19 | 600 | 8.263 | 2.625 | 194.84 | 91.92 |
| 400 | 7.04 | 2.48 | 117.65 | 86.65 | 400 | 7.652 | 2.431 | 231.73 | 84.89 |
| 200 | 5.82 | 1.95 | 189.19 | 66.58 | 200 | 6.241 | 1.986 | 314.90 | 68.96 |
| 100 | 4.35 | 1.47 | 278.93 | 49.59 | 100 | 4.538 | 1.451 | 412.49 | 50.06 |
| 50 | 2.88 | 0.98 | 367.04 | 32.71 | 50 | 2.924 | 0.940 | 502.72 | 32.29 |

**Fig 2: PurGRO$_2$® iLS Performance Chart**

Fig. 2 illustrates the performance of a single iLS unit when fed water from two different sources with different operating parameters as indicated. The choice of head pressure at which the iLS is operated is controlled by the operator. The iLS creates higher oxygen output with higher pressure—however the iLS will not deliver water at a pressure higher than the feed water.

The resulting atmosphere is easily controlled to meet changing process demands by "dialing-in" one or more iLS system parameters.

## PurGRO$_2$® iLS Performance Sensitivities

| iLS Sensitivities | | | | |
|---|---|---|---|---|
| Performance Characteristics | Kg/day $O_2$ dissolved 0-12 | Kg/day $N_2O$ romoved 0-2 | iLS % oxygen output | iLS % Nitrogen removal |
| Increassing Variable | Performance Change | | | |
| Temperature | ↑ | ↑ | ↑ | ↓ |
| Gas Flow Rate | ↑ | ↑ | ↑ | ↓ |
| Inlet Oxygen Concentration | ↓ | ↑ | ↑ | ↓ |
| Salt Content | ↓ | ↓ | — | — |
| Water Throughput | ↑ | ↑ | ↓ | ↑ |
| Water Pressure | ↑ | ↓ | ↑ | ↑ |

This iLS sensitivity chart illustrates the overall response of an iLS to changes in process operating conditions. Adjustment of these controllable parameters allows the creation of optimal conditions in the process tanks, ponds or cages.

The length and direction of arrows indicates increase (up) or decrease (down) and magnitude of effect by arrow length.

**Fig 3: PurGRO$_2$® iLS Performance Sensitivities**

## PurGRO$_2$® iLS Specifications

### *iLS recirculation pump requirements*

| | |
|---|---|
| Pentair Model # | WFE-6 |
| Part # | 011514 |
| Voltage | 208-240v 1 phase |
| Max Current | 9.6-8.8 amps |
| HP | 1.5 hp |
| O/L protection | Thermal |

### *Water Plumbing size requirements*

| | |
|---|---|
| Inlet | 3 in. (75 mm) PVC sch. 80 female socket |
| Outlet | 3 in. (75 mm) PVC sch. 80 female socket |

### *Regulated oxygen gas supply ($O_2$)*

| | |
|---|---|
| $O_2$ Supply hose size | 0.25 in. (6 mm) ID. Goodyear (or equivalent ) grade "R" |
| Pressure rating | 200 psig |
| Connection type | 9/16-18 r/h oxygen type "B" male. |
| $O_2$ regulator setting | Operational range 20-50 psi |
| $O_2$ flow rotameter setting | Operational range 6-10 LPM. |

### *iLS Vessel*

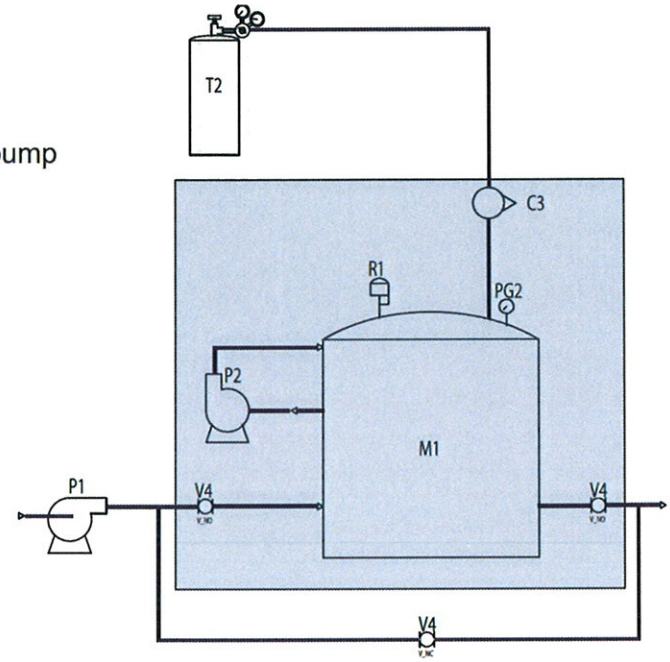
| | |
|---|---|
| operating pressure<br>*(max container rated pressure=50 psig)* | 0-20 psig, 15-20 psig optimum |
| Max Design water flow rate | 200 US gpm, 800 LPM |

### *Physical size*

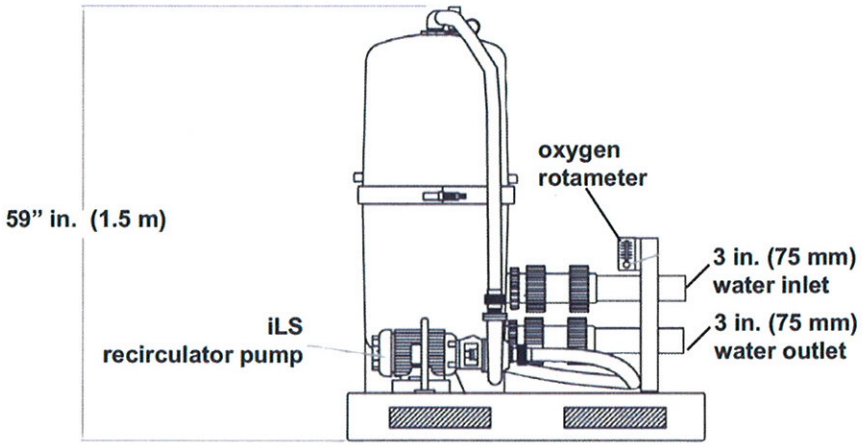
| | |
|---|---|
| Height | 59 in (1.5 m) |
| width | 40 in (1 m) |
| depth | 48 in (1.2 m) |
| weight | 150lbs (68 kg.) |

## PurGRO$_2$® ILS Specifications

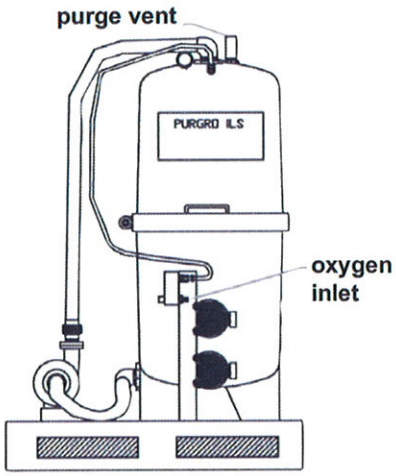
T2. gas cylinder
P1. pump 1 - system water supply pump
p2. pump 2 - iLS recirculator pump
PG1. pressure guage-0-30 psig
C3. rotameter w/valve
V4. ball valve 3 in. (75 mm)
M1. iLS vessel
R1. air vent valve



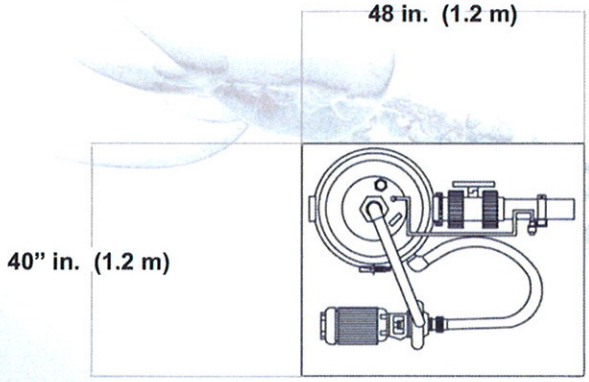

Unit includes everything in shaded area




front view




right end view




plan view


**Sales and Service**

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Canada
Phone: 506-462-9080
email: inquiries@inventures.ca

# Specifications for PURGRO iLS system

1. **iLS recirculation pump requirements**

| | |
|---|---|
| a. Pentair Model # | WFE-6 |
| b. Part # | 011514 |
| c. Voltage | 208-240v 1 phase |
| d. Max Current | 9.6-8.8 amps |
| e. HP | 1.5 hp |
| f. O/L protection | Thermal |

2. **iLS Vessel**

| | |
|---|---|
| a. operating pressure | 0-20 psig (max container rated pressure=50 psig) |
| b. Max Design water flow rate | 200 usgpm |

3. **Water Plumbing size requirements**

| | |
|---|---|
| a. Inlet | 3" PVC sch. 80 female |
| b. Outlet | 3" PVC sch. 80 for outlet |

4. **Regulated oxygen Gas supply (O2)**

| | |
|---|---|
| a. O2 Supply hose size | ¼" ID. Goodyear (or equivalent ) grade "R" |
| b. Pressure rating | 200 psig |
| c. Connection type | 9/16-18 r/h oxygen type "B" male. |
| d. O2 regulator setting | Operational range 20-50 psi |
| e. O2 flow rotameter setting | Operational range 6-10 lpm. |

5. **Physical size**

| | |
|---|---|
| a. Height | 59" |
| b. width | 40" |
| c. depth | 48" |
| d. weight | 150lbs |

# APPENDIX D

## Aquifer Test Data

PUMPING TEST
ADMINISTRATIVE DATA

Project Chester River Hospital / Cleaton  Pumping Well MW 22

W.O. 2781

Type of Test: Constant Rate

Purpose of the test: well & Aquifer Characteristics

PUMPING EQUIPMENT

| Type: Submersible | Make: Grundfos | Model: 95507-5 | H.P.: 1 |
|---|---|---|---|
| Intake Depth: 52 ft. | Lift pipe diameter: 3/4 in. | Power Source: Hospital | |
| Maximum pump capacity: gpm at a pumping level of: ft. | | | |

PRE-EXISTING CONDITIONS

Weather prior to the test: 60°F RAIN  During the test: 80° F RAIN

Natural water level fluctuations: NORMAL

Effects from other wells: Constant Pumping From: RW-1B, RW-2D, RW-3B, RW-5

TEST SEQUENCE

| | Time | Date | Time | Date | Duration |
|---|---|---|---|---|---|
| Drawdown from: | 0800 | 6/18/09 | to: 1600 | 6/18/09 | mins. 8 hrs. |
| Recovery from: | 1600 | 6/18/09 | to: 0250 | 6/19/09 | 50 mins. 10 hrs. |

Test supervised by: EDI  Contractor: EDI

Personnel on test: JPS/TL

TIME

Method of measurement: STOP WATCH

Clock time of: 0800 = ET of: 0.0

DISCHARGE

Rates: 20.5 gpm

How measured: DIGITAL TOTALIZER

WATER LEVEL MEASUREMENTS

| | Level (ft) | Time |
|---|---|---|
| Pre-test SWL | 39.21 | 0800 |
| Maximum PWL | 44.83 | 1600 |
| Drawdown | 5.62 | 1600 |
| Nature of recovery: | | |

MEASURING POINT

Description:

G.S. to M.P.:

Elevation of M.P.:

Specific capacity: 3.65 gpm/ft after 8 hours at a rate of 20.5 gpm

WATER QUALITY

Field tests:

Laboratories:

Analysis requested:

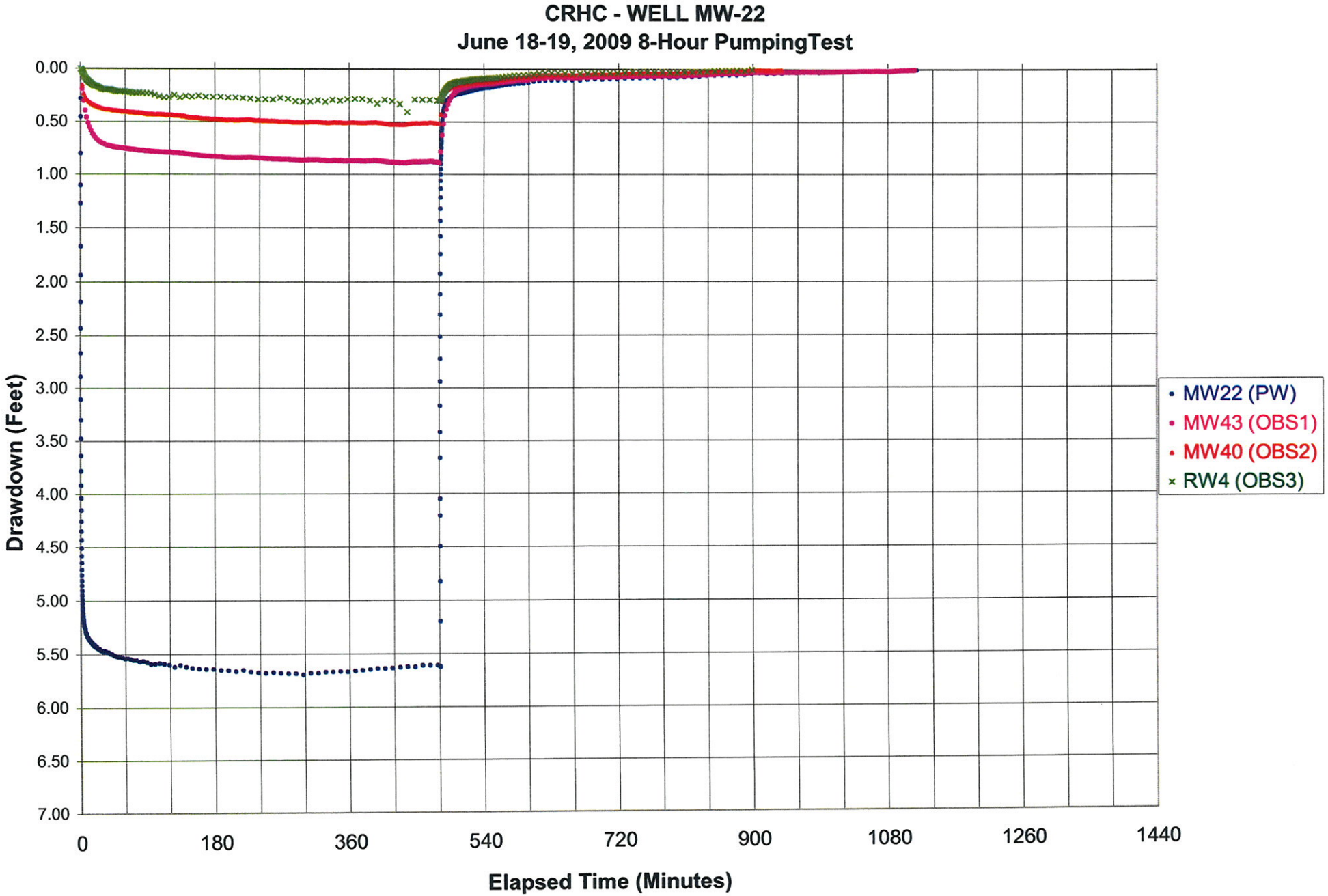
Well disenfection (method): Date:

OTHER DATA

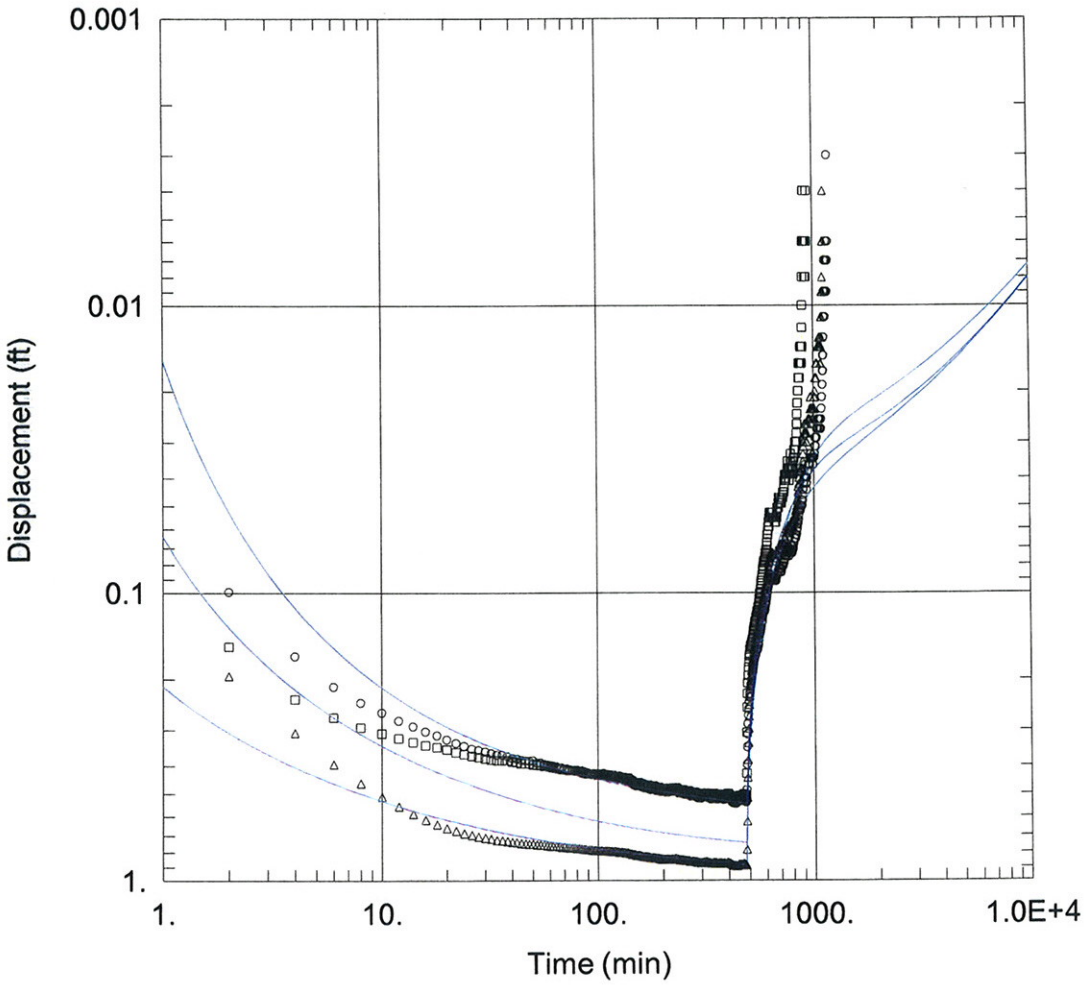
Observation wells: RW-4, MW-40, MW-43, MW-8, MW-10

Other data collected: MW-9 - Periodic Hand Measurements

Remarks:




Time-drawdown recovery graph for well MW-22 pumping test.




Data Set: J:\...\MW22 TEST.aqt
Date: 12/07/09 Time: 10:32:37

## PROJECT INFORMATION

Client: CRHC
Project: 4066
Location: Chestertown, MD
Test Well: MW-22
Test Date: 06/17/2009

## AQUIFER DATA

Saturated Thickness: 15. ft

## WELL DATA

Pumping Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| MW-22 | 6564.4611 | 6517.6472 |

Observation Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| □ MW-40 | 6536.6938 | 6494.0586 |
| △ MW-43 | 6550.396 | 6505.245 |
| ○ MW-8 | 6514.289 | 6539.322 |

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 1.401E+4 gal/day/ft
Sy = 0.0543
S = 0.002636
Kz/Kr = 0.000678

PUMPING TEST
ADMINISTRATIVE DATA

Project Chester River Hospital Center  Pumping Well RW-4

W.O. 2781

Type of Test: Constant Rate

Purpose of the test: Well & Aquifer Characteristics

**PUMPING EQUIPMENT**

| Type | Make | Model | H.P. |
|---|---|---|---|
| Submersible | Grundfos | 16S05-5 | 0.5 |

| Intake Depth | Lift pipe diameter | Power Source |
|---|---|---|
| 50 ft. | 1 in. | Hospital |

Maximum pump capacity: 16 gpm at a pumping level of: ft.

**PRE-EXISTING CONDITIONS**

Weather prior to the test: 60° F dry  During the test: 80°F RAIN

Natural water level fluctuations: NORMAL

Effects from other wells: CONSTANT Pumping from: RW-1B, RW-2A, RW-3B, RW-5,

**TEST SEQUENCE**

| | Time | Date | Time | Date | Duration |
|---|---|---|---|---|---|
| Drawdown from: | 0830 | 6/17/09 | to: 1630 | 6/17/09 | mins. 8 hrs. |
| Recovery from: | 1630 | 6/17/09 | to: 2040 | 6/17/09 | 10 mins. 4 hrs. |

Test supervised by: EDI  Contractor: EDI

Personnel on test: JPS/TL

**TIME**

Method of measurement: STOP WATCH

Clock time of: 0830 = ET of: 0.0

**DISCHARGE**

Rates: 11.2 gpm

How measured: Digital Totalizer

**WATER LEVEL MEASUREMENTS**

| | Level (ft) | Time |
|---|---|---|
| Pre-test SWL | 38.25 | 0830 |
| Maximum PWL | 43.67 | 1630 |
| Drawdown | 5.42 | 1630 |

Nature of recovery:

**MEASURING POINT**

Description: TOC

G.S. to M.P.:

Elevation of M.P.:

Specific capacity: 2.07 gpm/ft after 8.0 hours at a rate of 11.2 gpm

**WATER QUALITY**

Field tests: N/A

Laboratories:

Analysis requested:

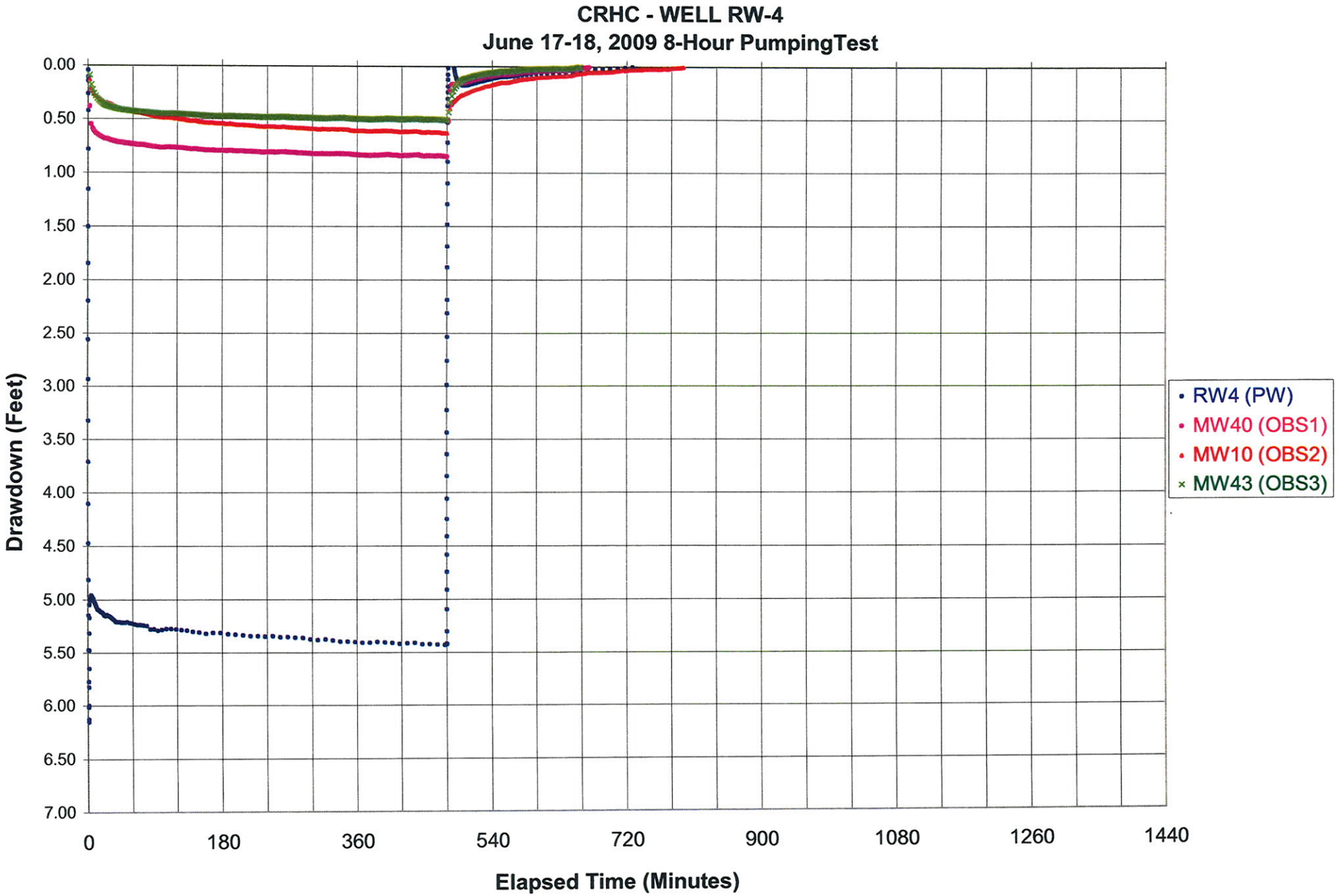
Well disenfection (method): Date:

**OTHER DATA**

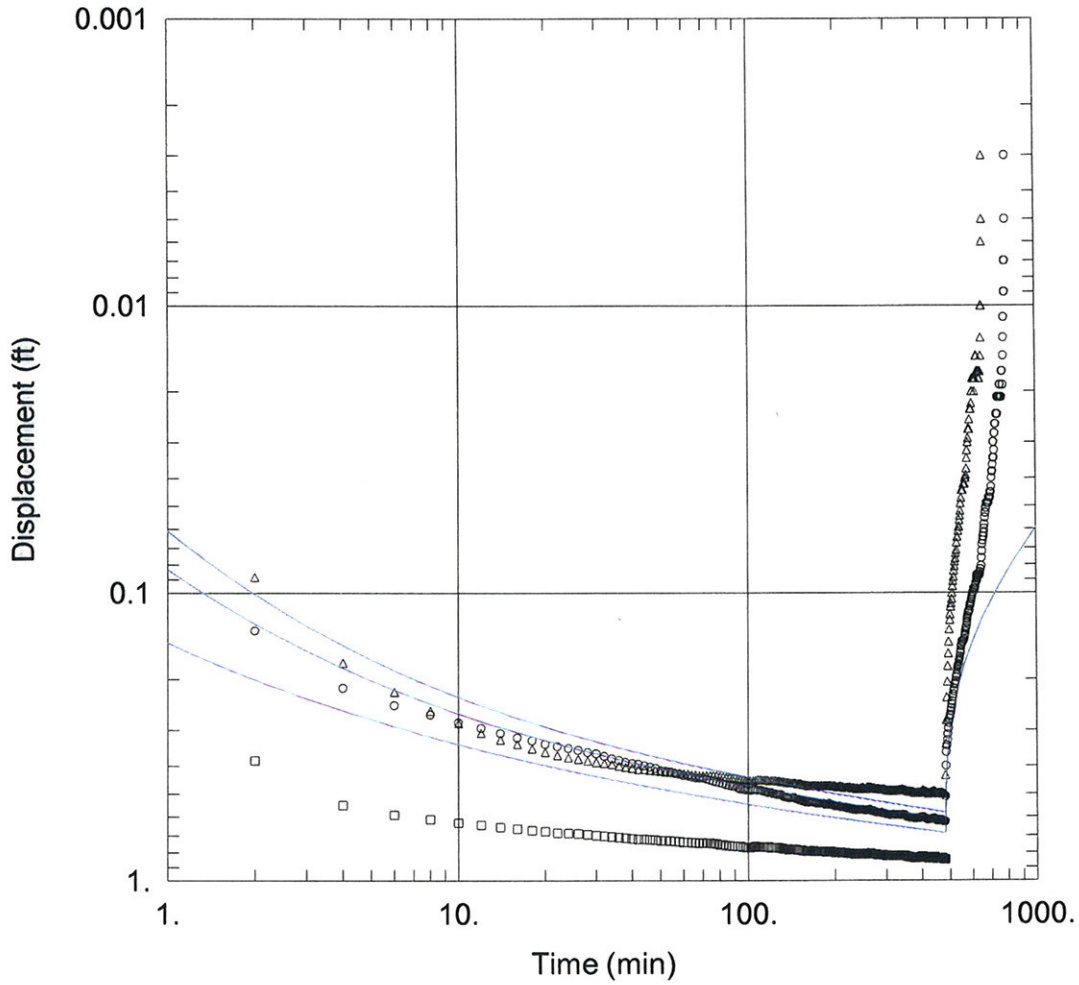
Observation wells: MW-22, MW-40, MW-43, MW-8, MW-10

Other data collected: MW-9 - Periodic Hand Measurements

Remarks:




Time-drawdown recovery graph For RW-4 pumping test.




Data Set: J:\...\RW4 TEST.aqt
Date: 12/07/09 Time: 10:32:43

## PROJECT INFORMATION

Client: CRHC
Project: 2781
Location: Chestertown, MD
Test Well: RW4
Test Date: 06/17/2009

## AQUIFER DATA

Saturated Thickness: 15. ft

## WELL DATA

Pumping Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| RW-4 | 6539.0794 | 6477.4599 |

Observation Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| □ MW-40 | 6536.6938 | 6494.0586 |
| △ MW-43 | 6550.396 | 6505.245 |
| ○ MW-10 | 6520.296 | 6461.1134 |

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 1.416E+4 gal/day/ft
S = 0.001621
Sy = 0.001039
Kz/Kr = 0.04801

PUMPING TEST
ADMINISTRATIVE DATA

Project Chester River Hospital Center  Pumping Well IW-1 (Injection)

W.O. 2781

Type of Test: 4-hour Drawdown Test

Purpose of the test: Determine Aquifer + Well Characteristics

**PUMPING EQUIPMENT**

| Type: SUBMERSIBLE | Make: GRundfos | Model: | H.P.: 1/2 |
|---|---|---|---|
| Intake Depth: ft. | Lift pipe diameter: in. | Power Source: GENERATOR | |
| Maximum pump capacity: 10 gpm | at a pumping level of: 60 ft. | | |

**PRE-EXISTING CONDITIONS**

Weather prior to the test:  During the test:

Natural water level fluctuations: Nearby Recovery Wells OFF

Effects from other wells: Some Recovery wells on.

**TEST SEQUENCE**

| | Time | Date | Time | Date | Duration |
|---|---|---|---|---|---|
| Drawdown from: | 12:00pm | 12/18/09 | to: 4:00pm | 12/18/09 | mins. 4 hrs. |
| Recovery from: | 4:00pm | 12/18/09 | to: 4:20pm | 12/18/09 | 20 mins. hrs. |

Test supervised by: EDI  Contractor:

Personnel on test: TL/RB/CM/JK/TL/JPS

**TIME**

Method of measurement: STOP WATCH

Clock time of: 12:00pm = ET of: 0.0

**DISCHARGE**

Rates: 5.6gpm/6.3gpm/6.7gpm

How measured:

**WATER LEVEL MEASUREMENTS**

| | Level (ft) | Time |
|---|---|---|
| Pre-test SWL | 40.63 | 0.0 |
| Maximum PWL | 45.03 | 240.0 |
| Drawdown | 4.40 | |

Nature of recovery:

**MEASURING POINT**

Description: Top of PVC pipe

G.S. to M.P.: 0.55 ft ags

Elevation of M.P.:

Specific capacity: 1.52 gpm/ft after 4 hours at a rate of 6.7 gpm

**WATER QUALITY**

Field tests:

Laboratories:

Analysis requested:

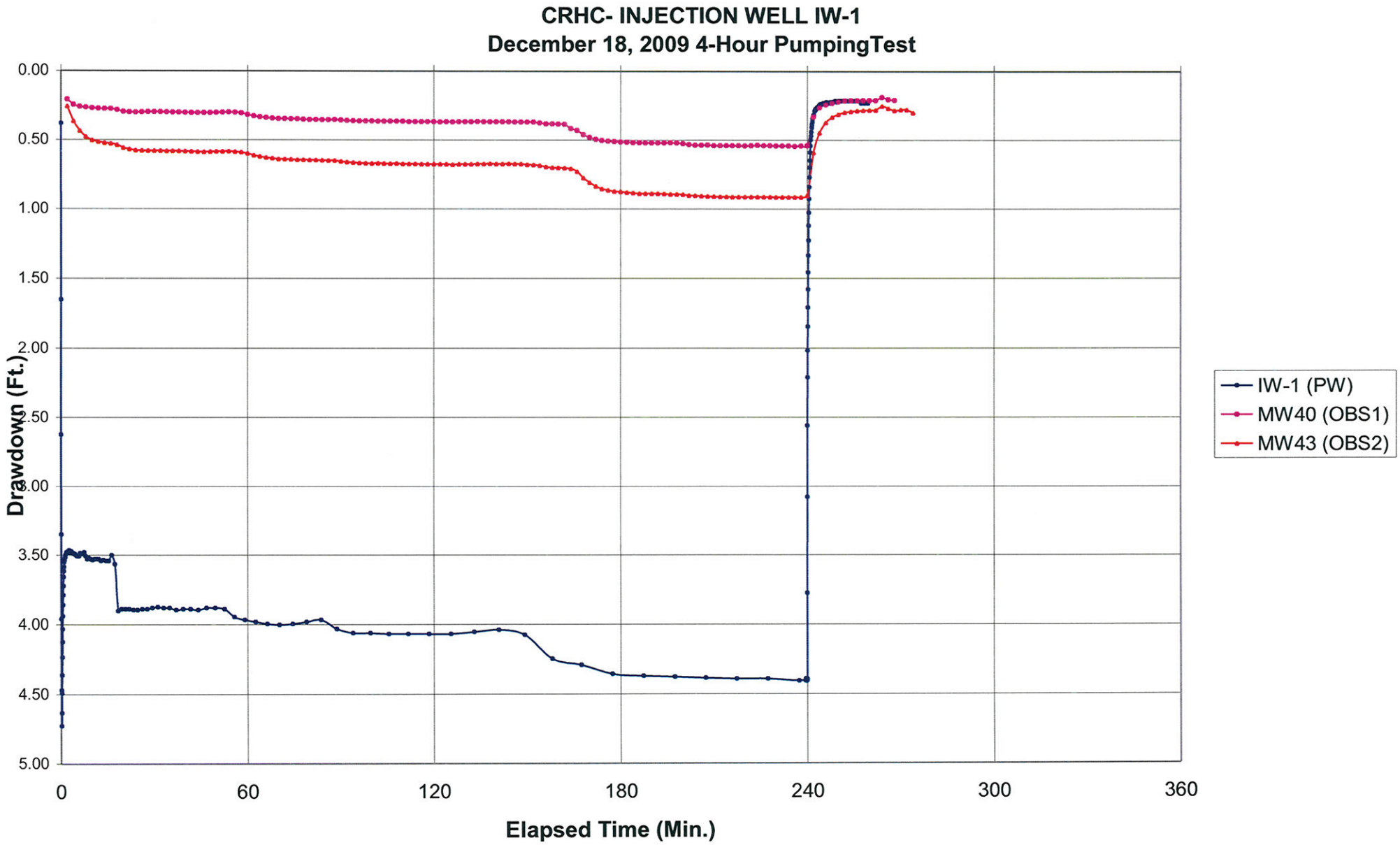
Well disenfection (method):  Date:

**OTHER DATA**

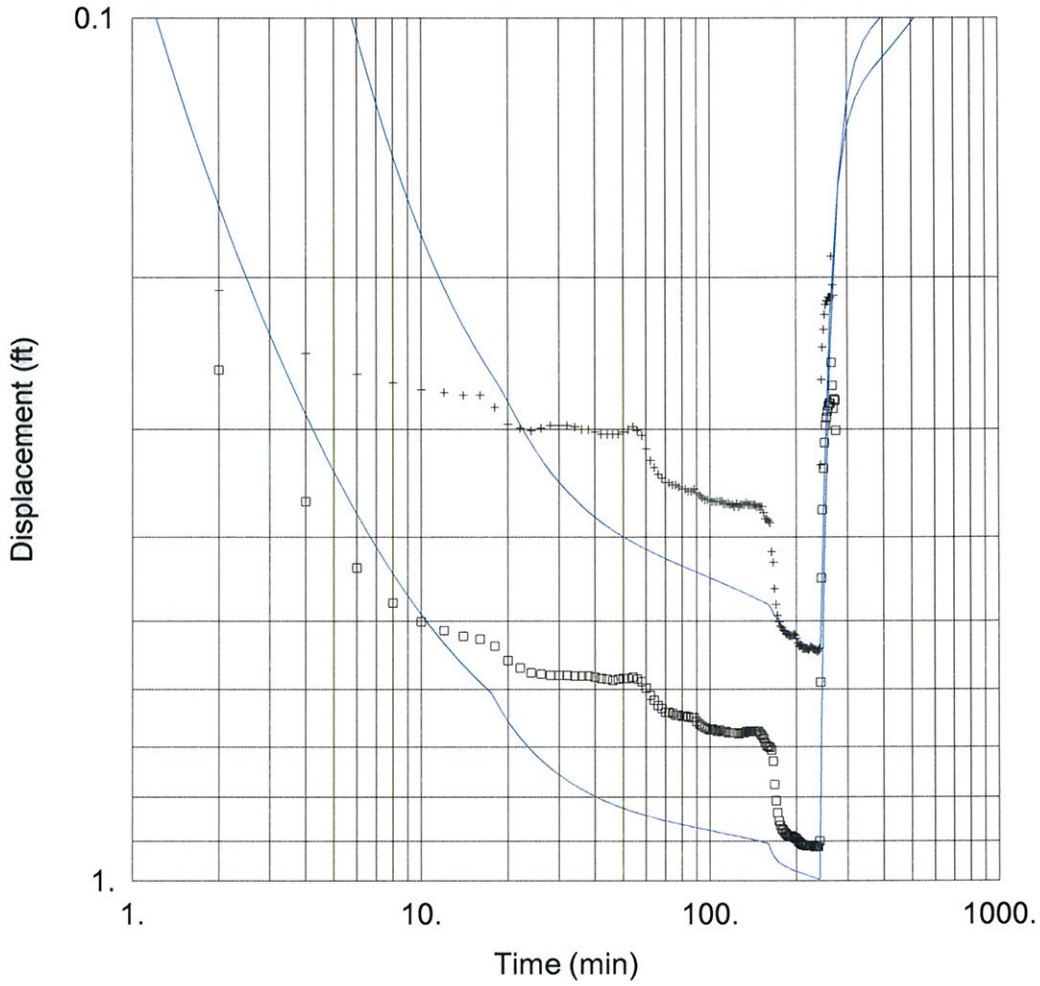
Observation wells: MW-40 (9.1 feet away); MW-43 (9.1 feet away)

Other data collected:

Remarks:




Time-drawdown recovery graph for Chester River Hospital Center IW-1 pumping test.




## WELL TEST ANALYSIS

### PROJECT INFORMATION

Company: EDI
Client: Kent County
Project: 2781
Location: Chestertown, MD
Test Well: IW-1
Test Date: 12/18/2009

### AQUIFER DATA

Saturated Thickness: 19. ft

### WELL DATA

Pumping Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| IW-1 | 0 | 0 |

Observation Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| + MW40 | 9.1 | 0 |
| □ MW-43 | -9.1 | 0 |

### SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 2052.4 gal/day/ft
S = 0.001642
Sy = 0.03301
Kz/Kr = 0.04359

PUMPING TEST
ADMINISTRATIVE DATA

Project Chester River Hospital Center  Pumping Well MW-22

W.O. 2781

| | | | | | |
|---|---|---|---|---|---|
| Type of Test: Constant Rate | | | | | |
| Purpose of the test: Well & Aquifer Characteristics | | | | | |
| **PUMPING EQUIPMENT** | | | | | |
| Type: Submersible | Make: Grundfos | | Model: 25507-5 | H.P.: 1 | |
| Intake Depth: 52 ft. | Lift pipe diameter: 3/4 in. | | Power Source: Hospital | | |
| Maximum pump capacity: gpm at a pumping level of: ft. | | | | | |
| **PRE-EXISTING CONDITIONS** | | | | | |
| Weather prior to the test: 63° F Sunny | During the test: 61° F Sunny | | | | |
| Natural water level fluctuations: Normal - Nearby Recovery wells OFF | | | | | |
| Effects from other wells: Some Recovery wells ON | | | | | |
| **TEST SEQUENCE** | | | | | |
| | Time | Date | Time | Date | Duration |
| Drawdown from: | 1140 | 10/18/11 | to: 1540 | 10/18/11 | mins. 4 hrs. |
| Recovery from: | 1540 | 10/18/11 | to: 22:27 | | 47 mins. 10 hrs. |
| Test supervised by: JPS/TL | | | Contractor: EDI | | |
| Personnel on test: JPS / TL / MW | | | | | |

| TIME | DISCHARGE |
|---|---|
| Method of measurement: STOP WATCH | Rates: 20.29 gpm |
| Clock time of: 1140 = ET of: 0.0 | How measured: Digital Totalizer |

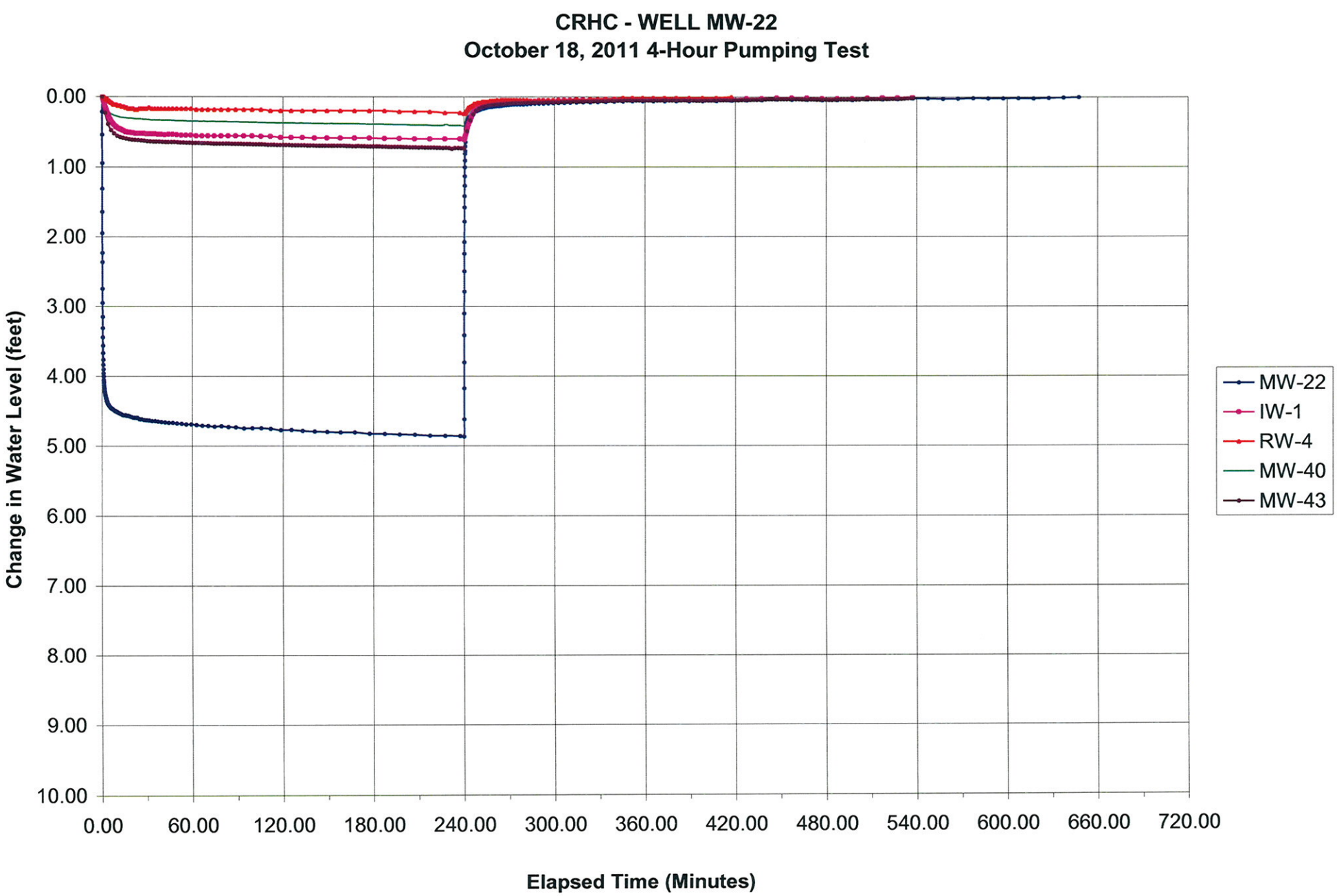
| WATER LEVEL MEASUREMENTS | | |
|---|---|---|
| | Level (ft) | Time |
| Pre-test SWL | 38.68 | 1140 |
| Maximum PWL | 43.55 | 1540 |
| Drawdown | 4.87 | 1540 |
| Nature of recovery: | | |

| MEASURING POINT |
|---|
| Description: Top of Casing |
| G.S. to M.P.: |
| Elevation of M.P.: |

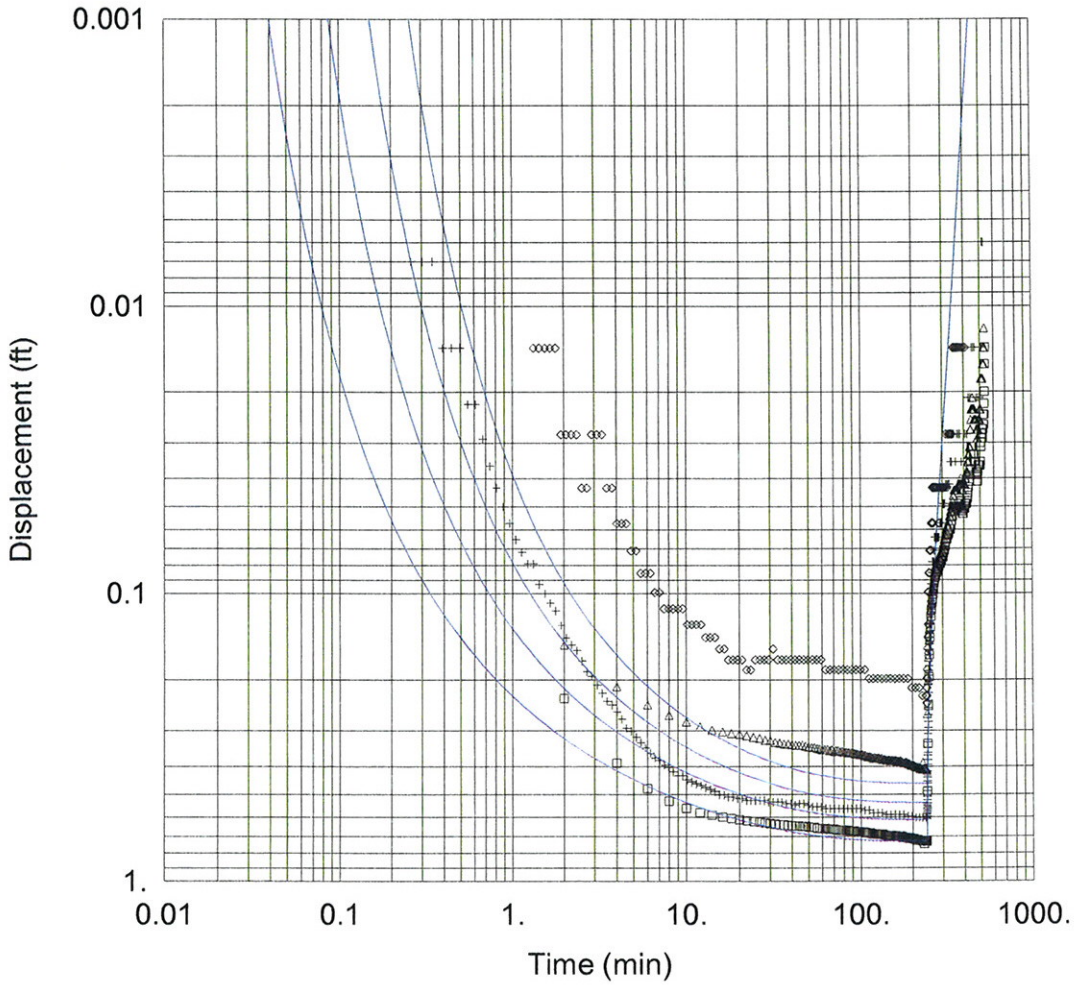
Specific capacity: 4.17 gpm/ft after 4 hours at a rate of 20.29gpm

| WATER QUALITY |
|---|
| Field tests: |
| Laboratories: |
| Analysis requested: |
| Well disenfection (method): Date: |

| OTHER DATA |
|---|
| Observation wells: MW-43; IW-1; MW-40; RW-4 |
| Other data collected: |
| Remarks: |




Time-drawdown and recovery graph fo well MW-22 pumping test.




## WELL TEST ANALYSIS

Data Set: J:\...\MW-22 ver1.aqt
Date: 11/04/11 Time: 10:15:01

## WELL DATA

Pumping Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| MW-22 | 6564.46 | 6517.65 |

Observation Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| □ MW-43 | 6550.4 | 6505.25 |
| + IW-1 | 6544.9 | 6497.99 |
| △ MW-40 | 6536.69 | 6494.06 |
| ◇ RW-4 | 6539.08 | 6477.46 |

## SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 1.551E+4 gal/day/ft
1/B = 0.005334 $ft^{-1}$
b = 19. ft

S = 0.002295
Kz/Kr = 0.001

PUMPING TEST
ADMINISTRATIVE DATA

Project Chester River Hospital Center  Pumping Well RW-4

W.O. 2781

Type of Test: Constant Rate

Purpose of the test: Well & Aquifer Characteristics

**PUMPING EQUIPMENT**

| Type | Make | Model | H.P. |
|---|---|---|---|
| Submersible | Grundfos | 16505-5 | 0.5 |

| Intake Depth | Lift pipe diameter | Power Source |
|---|---|---|
| 50 ft. | 1 in. | Hospital |

Maximum pump capacity: 16 gpm at a pumping level of: ft.

**PRE-EXISTING CONDITIONS**

Weather prior to the test: 61°F  During the test: 65°F Rain

Natural water level fluctuations: Nearest Recovery wells OFF

Effects from other wells: Some Recovery wells ON

**TEST SEQUENCE**

| | Time | Date | | Time | Date | Duration |
|---|---|---|---|---|---|---|
| Drawdown from: | 0900 | 10/19/11 | to: | 1300 | 10/19/11 | mins. 4 hrs. |
| Recovery from: | 1300 | 10/19/11 | to: | 1647 | 10/19/11 | 47 mins. 7 hrs. |

Test supervised by: M. Wojtko  Contractor: EDI

Personnel on test: JPS / MW / TL

**TIME**

Method of measurement: STOP WATCH

Clock time of: 0900 = ET of: 0.0

**DISCHARGE**

Rates: 12.13 gpm

How measured: Digital Totalizer

**WATER LEVEL MEASUREMENTS**

| | Level (ft) | Time |
|---|---|---|
| Pre-test SWL | 37.54 | 0900 |
| Maximum PWL | 44.75 | 1300 |
| Drawdown | 7.21 | 1300 |

Nature of recovery:

**MEASURING POINT**

Description: Top of Casing

G.S. to M.P.:

Elevation of M.P.:

Specific capacity: 1.68 gpm/ft after 4 hours at a rate of 12.13 gpm

**WATER QUALITY**

Field tests:

Laboratories:

Analysis requested:

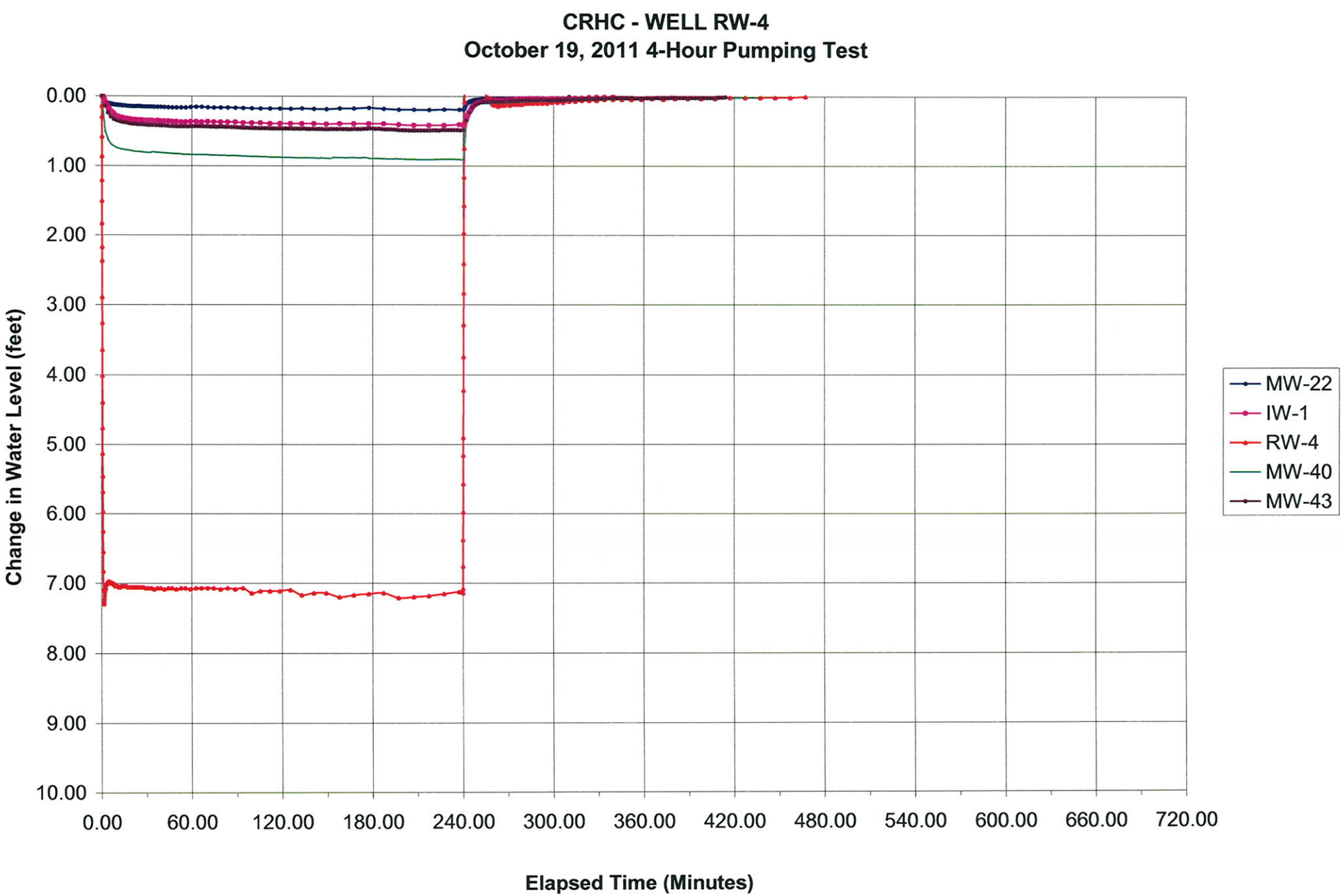
Well disenfection (method):  Date:

**OTHER DATA**

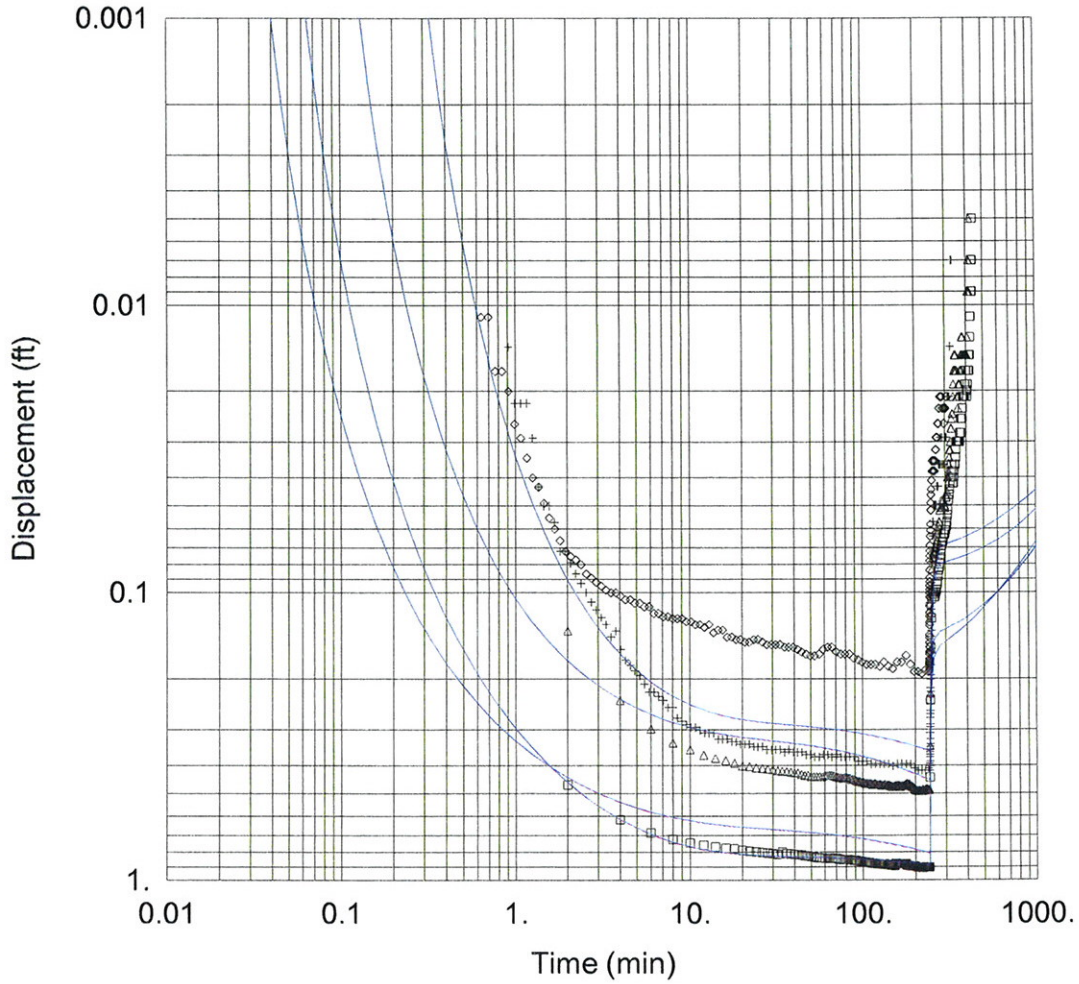
Observation wells: MW-40; IW-1; MW-43; MW-22

Other data collected:

Remarks:




Time-drawdown and recovery graph for well RW-4 pumping test.




## WELL TEST ANALYSIS

Data Set: J:\...\RW-4 ver1.aqt
Date: 11/04/11 Time: 10:18:18

## AQUIFER DATA

Saturated Thickness: 19. ft

## WELL DATA

Pumping Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| RW-4 | 6539.08 | 6477.46 |

Observation Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| □ MW-40 | 6536.69 | 6494.06 |
| + IW-1 | 6544.9 | 6497.99 |
| △ MW-43 | 6550.4 | 6505.25 |
| ◇ MW-22 | 6564.46 | 6517.65 |

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 4875.5 gal/day/ft
S = 0.001003
Sy = 0.08205
Kz/Kr = 0.0385

PUMPING TEST
ADMINISTRATIVE DATA

Project Chester River Hospital Center  Pumping Well IW-1

W.O. 2781

Type of Test: Constant Rate

Purpose of the test: Well + Aquifer Characteristics

**PUMPING EQUIPMENT**

| Type: Submersible | Make: Grundfos | Model: | H.P.: ½ |
|---|---|---|---|
| Intake Depth: ft. | Lift pipe diameter: in. | Power Source: Hospital | |
| Maximum pump capacity: 10 gpm at a pumping level of: 60 ft. | | | |

**PRE-EXISTING CONDITIONS**

Weather prior to the test: 65° F - Rain  During the test: 61°F - Fair

Natural water level fluctuations: Nearest Recovery Wells OFF

Effects from other wells: Some Recovery Wells ON

**TEST SEQUENCE**

| | Time | Date | | Time | Date | Duration |
|---|---|---|---|---|---|---|
| Drawdown from: | 1042 | 10/20/11 | to: | 1444 | 10/20/11 | 2 mins. 4 hrs. |
| Recovery from: | 1444 | 10/20/11 | to: | 1533 | 10/20/11 | 51 mins. 4 hrs. |

Test supervised by: JPS  Contractor: EDI

Personnel on test: MW/JPS/TL

**TIME**

Method of measurement: Stop Watch

Clock time of: 1042 = ET of: 0.0

**DISCHARGE**

Rates: 7.93 gpm

How measured: Digital Totalizer

**WATER LEVEL MEASUREMENTS**

| | Level (ft) | Time |
|---|---|---|
| Pre-test SWL | 38.97 | 1042 |
| Maximum PWL | 52.52 | 1444 |
| Drawdown | 13.55 | 1444 |

Nature of recovery:

**MEASURING POINT**

Description: Top of Casing

G.S. to M.P.:

Elevation of M.P.:

Specific capacity: 0.59 gpm/ft after 4 hours at a rate of 7.93 gpm

**WATER QUALITY**

Field tests:

Laboratories:

Analysis requested:

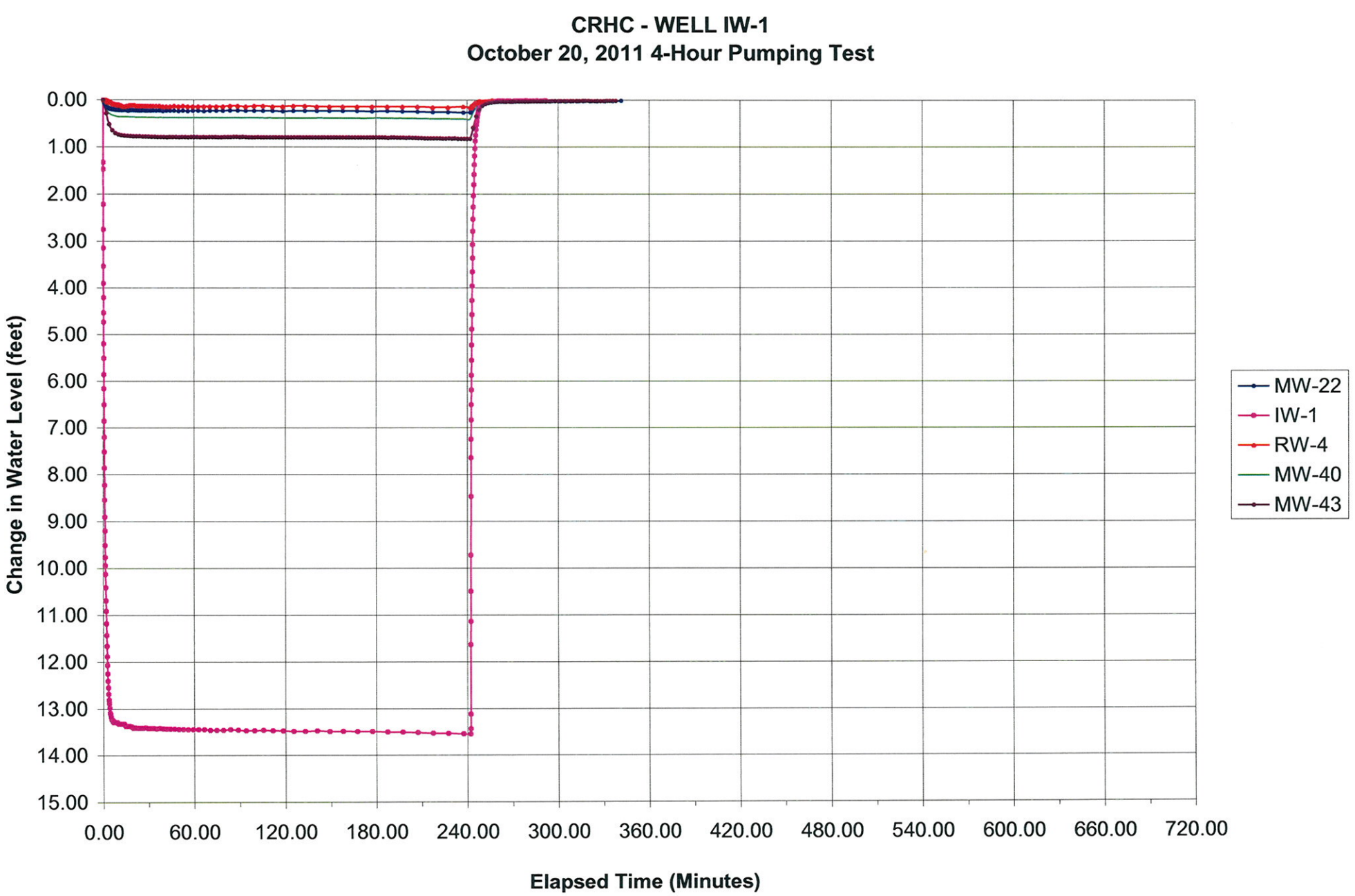
Well disenfection (method):  Date:

**OTHER DATA**

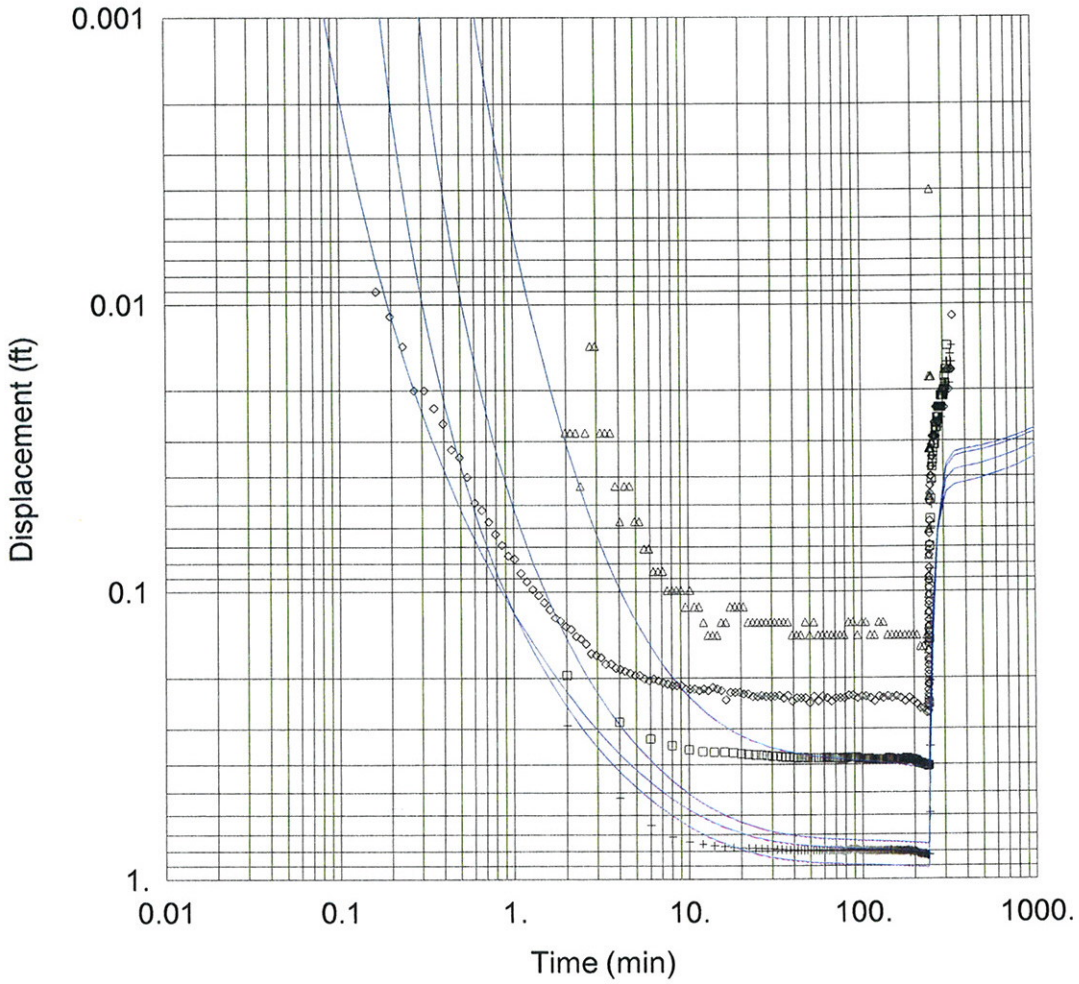
Observation wells: MW-40; MW-43; RW-4; MW-22

Other data collected:

Remarks:




Time-drawdown and recovery graph for well IW-1 pumping test.




## WELL TEST ANALYSIS

Data Set: Q:\2781 Oct2011\Oct 17-20 2011\Analysis\IW-1 ver1.aqt
Date: 11/04/11 Time: 10:12:53

## AQUIFER DATA

Saturated Thickness: 19. ft

## WELL DATA

Pumping Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| IW-1 | 6544.9 | 6497.99 |

Observation Wells

| Well Name | X (ft) | Y (ft) |
|---|---|---|
| □ MW-40 | 6536.69 | 6494.06 |
| + MW-43 | 6550.4 | 6505.25 |
| △ RW-4 | 6539.08 | 6477.46 |
| ◇ MW-22 | 6564.46 | 6517.65 |

## SOLUTION

Aquifer Model: Unconfined
Solution Method: Neuman

T = 2843.4 gal/day/ft
S = 0.001642
Sy = 0.13
Kz/Kr = 0.04357

# APPENDIX E

## Well Gauging Reports

## PETROLEUM PRODUCT / WATER - LEVEL DATA SHEET

W.O. #: 2781
PROJECT: Chester River Hospital Center
LOCATION: Chestertown, Maryland

DATE: 28-Dec-10
WEATHER: 30 F, windy
COLLECTED BY: TL, RB, HW
ENTERED BY: TL

Type product: Fuel oil
Petro correction factor: 0.80

| Monitoring Point | Description of Measuring Point (ft msl) | Measuring Point Elevation (ft) | Product Depth (ft) | Water Depth (ft) | Product Thickness (ft) | Fluid Level Elevation (ft msl) | Corrected Water Elevation (ft msl) | Estimated Amount Product Recovered (gal) / NOTES: |
|---|---|---|---|---|---|---|---|---|
| MW-1 | Lip of Casing | 57.05 | | | | ------ | ------ | not gauged - under snowbank |
| MW-2 | Lip of Casing | 56.37 | | 47.13 | | 9.24 | 9.24 | |
| MW-3 | Lip of Casing | 50.55 | | 42.15 | | 8.40 | 8.40 | |
| MW-4 | Lip of Casing | 53.4 | | 44.32 | | 9.08 | 9.08 | sampled (VOCs) |
| MW-5 | Lip of Casing | 61.08 | | 51.58 | | 9.50 | 9.50 | film after purging - sampled (indicator parameters, total iron) |
| MW-6 | Lip of Casing | ------ | ------ | ------ | ------ | ------ | ------ | Well destroyed in building expansion |
| MW-7 | Lip of Casing | ------ | ------ | ------ | ------ | ------ | ------ | Well destroyed in building expansion |
| MW-8 | Lip of Casing | 47.82 | 41.37 | 41.37 | 0.00 | 6.45 | 6.45 | sheen |
| MW-9 | Lip of Casing | 46.95 | 41.25 | 41.25 | 0.00 | 5.70 | 5.70 | sheen |
| MW-10 | Lip of Casing | 47.76 | | 40.43 | | 7.33 | 7.33 | sampled (VOCs, total iron) |
| MW-11 | Lip of Casing | 41.49 | | 34.20 | | 7.29 | 7.29 | sampled (VOCs) |
| MW-12 | Lip of Casing | 44.46 | | 37.36 | | 7.10 | 7.10 | |
| MW-13 | Lip of Casing | 40.82 | | 35.75 | | 5.07 | 5.07 | sheen after purging - sampled (total iron) |
| MW-14 | Lip of Casing | 41.38 | 36.60 | 36.61 | 0.01 | 4.78 | 4.78 | |
| MW-15 | Lip of Casing | 35.01 | | 27.55 | | 7.46 | 7.46 | not gauged - under vehicle |
| MW-16 | Lip of Casing | 35.55 | | 28.60 | | 6.95 | 6.95 | sampled (VOCs) |
| MW-17 | Lip of Casing | 35.49 | | 27.64 | | 7.85 | 7.85 | not gauged - under vehicle |
| MW-18 | Lip of Casing | 35.82 | | 28.50 | | 7.32 | 7.32 | |
| MW-19 | Lip of Casing | 38.85 | | 32.75 | | 6.10 | 6.10 | sampled (VOCs) |
| MW-20 | Lip of Casing | 38.72 | | 32.77 | | 5.95 | 5.95 | sampled (VOCs, indicator parameters, total iron) |
| MW-21 | Lip of Casing | 38.55 | | | | ------ | ------ | not gauged - under snowbank |
| MW-22 | Lip of Casing | 45.75 | 45.45 | 45.60 | 0.15 | 0.30 | 0.27 | sampled at wet well (VOCs, total iron) |
| MW-23 | Lip of Casing | 35.95 | | 28.78 | | 7.17 | 7.17 | sampled (VOCs, indicator parameters, total iron) |
| MW-24 | Lip of Casing | 36.56 | | 29.58 | | 6.98 | 6.98 | |
| MW-25 | Lip of Casing | 36.1 | | | | ------ | ------ | not gauged - frozen |
| MW-27 | Lip of Casing | ------ | ------ | ------ | ------ | ------ | ------ | well abandoned |
| MW-28 | Lip of Casing | 35.9 | | 27.96 | | 7.94 | 7.94 | |
| MW-29 | Lip of Casing | 35.15 | | | | ------ | ------ | not gauged - frozen |
| MW-30 | Lip of Casing | ------ | ------ | ------ | ------ | ------ | ------ | Well destroyed in building expansion |
| MW-31 | Lip of Casing | 46.31 | | 38.00 | | 8.31 | 8.31 | |
| MW-32 | Lip of Casing | 44.6 | | 37.47 | | 7.13 | 7.13 | |
| MW-33 | Lip of Casing | 36.52 | | 29.92 | | 6.60 | 6.60 | sampled (VOCs) |
| MW-34 | Lip of Casing | 36.64 | | 29.99 | | 6.65 | 6.65 | sampled (VOCs) |
| MW-35 | Lip of Casing | 38.62 | | 31.84 | | 6.78 | 6.78 | sampled (VOCs) |
| MW-37 | Lip of Casing | 50.54 | 41.95 | 41.95 | 0.00 | 8.59 | 8.59 | film |
| MW-38 | Lip of Casing | ------ | ------ | ------ | ------ | ------ | ------ | pump stuck in well - not able to gauge |
| RW-1B | Lip of Casing | 45.96 | 47.95 | 47.95 | 0.00 | -1.99 | -1.99 | film; sampled at wet well (VOCs, total iron) |
| RW-2D | Lip of Casing | 40.54 | 39.99 | 39.99 | 0.00 | 0.55 | 0.55 | film; sampled at wet well (VOCs, total iron) |
| RW-3B | Lip of Casing | 39.45 | 41.95 | 42.85 | 0.90 | -2.50 | -2.68 | sampled at wet well (VOCs, total iron) |
| MW-40 | Lip of Casing | 46.85 | | 39.96 | | 6.89 | 6.89 | sheen after purging - sampled (indicator parameters, total iron) |
| MW-41 | Lip of Casing | 42.92 | 38.96 | 38.96 | 0.00 | 3.96 | 3.96 | sheen |
| RW-4 | Lip of Casing | 45.69 | 42.66 | 42.67 | 0.01 | 3.03 | 3.03 | sampled at wet well (VOCs, total iron) |
| RW-5 | Lip of Casing | 42.92 | 40.19 | 40.19 | 0.00 | 2.73 | 2.73 | film; sampled at wet well (VOCs, total iron) |
| RW-6 | Lip of Casing | 47.22 | 48.00 | 48.00 | 0.00 | -0.78 | -0.78 | film; sampled at wet well (VOCs, total iron) |
| RW-2A | Lip of Casing | 39.84 | ------ | ------ | ------ | ------ | ------ | well abandoned 3-08 |
| RW-2B | Lip of Casing | 39.18 | ------ | ------ | ------ | ------ | ------ | well abandoned 3-08 |
| RW-2C | Lip of Casing | ------ | ------ | ------ | ------ | ------ | ------ | well abandoned 9-03 |
| RW-3A | Lip of Casing | ------ | ------ | ------ | ------ | ------ | ------ | well abandoned 9-03 |
| MW-42 | Lip of Casing | 47.04 | 41.33 | 41.33 | 0.00 | 5.71 | 5.71 | sheen |
| MW-43 | Lip of Casing | 46.55 | | 38.96 | | 7.59 | 7.59 | sampled (VOCs, total iron) |
| MW-44 | Lip of Casing | 46.66 | | 39.08 | | 7.58 | 7.58 | |
| MW-45 | Lip of Casing | 40.91 | | 34.18 | | 6.73 | 6.73 | |
| MW-46 | Lip of Casing | 41.08 | 35.71 | 35.76 | 0.05 | 5.37 | 5.36 | |
| MW-47 | Lip of Casing | 40.74 | | | | ------ | ------ | not gauged - frozen |
| IW-1 | Lip of Casing | ------ | | | | ------ | ------ | not gauged |

## PETROLEUM PRODUCT / WATER - LEVEL DATA SHEET

W.O. #: 2781
DATE: 31-Jan-11
WEATHER: 30 F
PROJECT: Chester River Hospital Center
COLLECTED BY: TL, RB
LOCATION: Chestertown, Maryland
ENTERED BY: TL

Type product: Fuel oil
Petro correction factor: 0.80

| Monitoring Point | Description of Measuring Point (ft msl) | Measuring Point Elevation (ft) | Product Depth (ft) | Water Depth (ft) | Product Thickness (ft) | Fluid Level Elevation (ft msl) | Corrected Water Elevation (ft msl) | Estimated Amount Product Recovered (gal) / NOTES: |
|---|---|---|---|---|---|---|---|---|
| MW-1 | Lip of Casing | 57.05 | | | | -------- | -------- | not gauged - under snowbank |
| MW-2 | Lip of Casing | 56.37 | | 47.31 | | 9.06 | 9.06 | |
| MW-3 | Lip of Casing | 50.55 | | 42.33 | | 8.22 | 8.22 | |
| MW-4 | Lip of Casing | 53.4 | | 44.49 | | 8.91 | 8.91 | |
| MW-5 | Lip of Casing | 61.08 | 51.76 | 51.76 | 0.00 | 9.32 | 9.32 | sheen |
| MW-6 | Lip of Casing | -------- | -------- | -------- | -------- | -------- | -------- | Well destroyed in building expansion |
| MW-7 | Lip of Casing | -------- | -------- | -------- | -------- | -------- | -------- | Well destroyed in building expansion |
| MW-8 | Lip of Casing | 47.82 | 41.57 | 41.57 | 0.00 | 6.25 | 6.25 | sheen |
| MW-9 | Lip of Casing | 46.95 | | 41.50 | | 5.45 | 5.45 | |
| MW-10 | Lip of Casing | 47.76 | | 40.52 | | 7.24 | 7.24 | |
| MW-11 | Lip of Casing | 41.49 | | 34.30 | | 7.19 | 7.19 | |
| MW-12 | Lip of Casing | 44.46 | | 37.50 | | 6.96 | 6.96 | |
| MW-13 | Lip of Casing | 40.82 | | 35.97 | | 4.85 | 4.85 | |
| MW-14 | Lip of Casing | 41.38 | 36.72 | 36.72 | 0.00 | 4.66 | 4.66 | sheen |
| MW-15 | Lip of Casing | 35.01 | | | | -------- | -------- | not gauged - under vehicle |
| MW-16 | Lip of Casing | 35.55 | | 28.68 | | 6.87 | 6.87 | |
| MW-17 | Lip of Casing | 35.49 | | 27.72 | | 7.77 | 7.77 | |
| MW-18 | Lip of Casing | 35.82 | | 28.53 | | 7.29 | 7.29 | |
| MW-19 | Lip of Casing | 38.85 | | 32.86 | | 5.99 | 5.99 | |
| MW-20 | Lip of Casing | 38.72 | | 32.90 | | 5.82 | 5.82 | |
| MW-21 | Lip of Casing | 38.55 | | | | -------- | -------- | not gauged - under snowbank |
| MW-22 | Lip of Casing | 45.75 | 44.50 | 44.61 | 0.11 | 1.25 | 1.23 | |
| MW-23 | Lip of Casing | 35.95 | | 28.80 | | 7.15 | 7.15 | |
| MW-24 | Lip of Casing | 36.56 | | 29.60 | | 6.96 | 6.96 | |
| MW-25 | Lip of Casing | 36.1 | | 28.73 | | 7.37 | 7.37 | |
| MW-27 | Lip of Casing | -------- | -------- | -------- | -------- | -------- | -------- | well abandoned |
| MW-28 | Lip of Casing | 35.9 | | | | -------- | -------- | not gauged - under snowbank |
| MW-29 | Lip of Casing | 35.15 | | | | -------- | -------- | not gauged - under snowbank |
| MW-30 | Lip of Casing | -------- | -------- | -------- | -------- | -------- | -------- | Well destroyed in building expansion |
| MW-31 | Lip of Casing | 46.31 | | 38.03 | | 8.28 | 8.28 | |
| MW-32 | Lip of Casing | 44.6 | | 37.55 | | 7.05 | 7.05 | |
| MW-33 | Lip of Casing | 36.52 | | 30.03 | | 6.49 | 6.49 | |
| MW-34 | Lip of Casing | 36.64 | | 30.07 | | 6.57 | 6.57 | |
| MW-35 | Lip of Casing | 38.62 | | 31.97 | | 6.65 | 6.65 | |
| MW-37 | Lip of Casing | 50.54 | 42.17 | 42.17 | 0.00 | 8.37 | 8.37 | sheen |
| MW-38 | Lip of Casing | -------- | -------- | -------- | -------- | -------- | -------- | pump stuck in well - not able to gauge |
| RW-1B | Lip of Casing | 45.96 | 48.03 | 48.03 | 0.00 | -2.07 | -2.07 | film |
| RW-2D | Lip of Casing | 40.54 | 44.01 | 44.01 | 0.00 | -3.47 | -3.47 | film |
| RW-3B | Lip of Casing | 39.45 | 42.20 | 43.01 | 0.81 | -2.75 | -2.91 | |
| MW-40 | Lip of Casing | 46.85 | 40.60 | 40.60 | 0.00 | 6.25 | 6.25 | sheen |
| MW-41 | Lip of Casing | 42.92 | 37.94 | 37.94 | 0.00 | 4.98 | 4.98 | sheen |
| RW-4 | Lip of Casing | 45.69 | | | | -------- | -------- | not gauged - under vehicle |
| RW-5 | Lip of Casing | 42.92 | 41.12 | 41.12 | 0.00 | 1.80 | 1.80 | film |
| RW-6 | Lip of Casing | 47.22 | 48.10 | 48.10 | 0.00 | -0.88 | -0.88 | film |
| RW-2A | Lip of Casing | 39.84 | -------- | -------- | -------- | -------- | -------- | well abandoned 3-08 |
| RW-2B | Lip of Casing | 39.18 | -------- | -------- | -------- | -------- | -------- | well abandoned 3-08 |
| RW-2C | Lip of Casing | -------- | -------- | -------- | -------- | -------- | -------- | well abandoned 9-03 |
| RW-3A | Lip of Casing | -------- | -------- | -------- | -------- | -------- | -------- | well abandoned 9-03 |
| MW-42 | Lip of Casing | 47.04 | 41.59 | 41.59 | 0.00 | 5.45 | 5.45 | sheen |
| MW-43 | Lip of Casing | 46.55 | 40.67 | 40.67 | 0.00 | 5.88 | 5.88 | sheen |
| MW-44 | Lip of Casing | 46.66 | | 41.15 | | 5.51 | 5.51 | |
| MW-45 | Lip of Casing | 40.91 | | | | -------- | -------- | not gauged - under ice |
| MW-46 | Lip of Casing | 41.08 | 35.85 | 35.90 | 0.05 | 5.23 | 5.22 | |
| MW-47 | Lip of Casing | 40.74 | | | | -------- | -------- | not gauged - under snowbank |
| IW-1 | Lip of Casing | -------- | | | | -------- | -------- | not gauged |

## PETROLEUM PRODUCT / WATER - LEVEL DATA SHEET

W.O. #: 2781
DATE: 31-May-11
WEATHER:
PROJECT: Chester River Hospital Center
COLLECTED BY: RB, MW
LOCATION: Chestertown, Maryland
ENTERED BY: TL

Type product: Fuel oil
Petro correction factor: 0.80

| Monitoring Point | Description of Measuring Point (ft msl) | Measuring Point Elevation (ft) | Product Depth (ft) | Water Depth (ft) | Product Thickness (ft) | Fluid Level Elevation (ft msl) | Corrected Water Elevation (ft msl) | Estimated Amount Product Recovered (gal) / NOTES: |
|---|---|---|---|---|---|---|---|---|
| MW-1 | Lip of Casing | 57.05 | | 46.34 | | 10.71 | 10.71 | |
| MW-2 | Lip of Casing | 56.37 | | 45.86 | | 10.51 | 10.51 | |
| MW-3 | Lip of Casing | 50.55 | | 41.59 | | 8.96 | 8.96 | |
| MW-4 | Lip of Casing | 53.4 | | 42.99 | | 10.41 | 10.41 | |
| MW-5 | Lip of Casing | 61.08 | | 50.39 | | 10.69 | 10.69 | |
| MW-6 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | Well destroyed in building expansion |
| MW-7 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | Well destroyed in building expansion |
| MW-8 | Lip of Casing | 47.82 | | 39.16 | | 8.66 | 8.66 | |
| MW-9 | Lip of Casing | 46.95 | | 38.99 | | 7.96 | 7.96 | |
| MW-10 | Lip of Casing | 47.76 | | 38.77 | | 8.99 | 8.99 | |
| MW-11 | Lip of Casing | 41.49 | | 32.66 | | 8.83 | 8.83 | |
| MW-12 | Lip of Casing | 44.46 | | 35.50 | | 8.96 | 8.96 | |
| MW-13 | Lip of Casing | 40.82 | | 33.71 | | 7.11 | 7.11 | |
| MW-14 | Lip of Casing | 41.38 | 34.90 | 34.91 | 0.01 | 6.48 | 6.48 | |
| MW-15 | Lip of Casing | 35.01 | | 26.66 | | 8.35 | 8.35 | |
| MW-16 | Lip of Casing | 35.55 | | 27.29 | | 8.26 | 8.26 | |
| MW-17 | Lip of Casing | 35.49 | | | | ------- | ------- | not gauged - under vehicle |
| MW-18 | Lip of Casing | 35.82 | | 27.62 | | 8.20 | 8.20 | |
| MW-19 | Lip of Casing | 38.85 | | 30.90 | | 7.95 | 7.95 | |
| MW-20 | Lip of Casing | 38.72 | | 30.88 | | 7.84 | 7.84 | |
| MW-21 | Lip of Casing | 38.55 | | 30.10 | | 8.45 | 8.45 | |
| MW-22 | Lip of Casing | 45.75 | 41.16 | 41.20 | 0.04 | 4.59 | 4.58 | |
| MW-23 | Lip of Casing | 35.95 | | 27.88 | | 8.07 | 8.07 | |
| MW-24 | Lip of Casing | 36.56 | | 28.22 | | 8.34 | 8.34 | |
| MW-25 | Lip of Casing | 36.1 | | 27.69 | | 8.41 | 8.41 | |
| MW-27 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | well abandoned |
| MW-28 | Lip of Casing | 35.9 | | 27.17 | | 8.73 | 8.73 | |
| MW-29 | Lip of Casing | 35.15 | | 27.02 | | 8.13 | 8.13 | |
| MW-30 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | Well destroyed in building expansion |
| MW-31 | Lip of Casing | 46.31 | | 36.57 | | 9.74 | 9.74 | |
| MW-32 | Lip of Casing | 44.6 | | 35.85 | | 8.75 | 8.75 | |
| MW-33 | Lip of Casing | 36.52 | | 28.34 | | 8.18 | 8.18 | |
| MW-34 | Lip of Casing | 36.64 | | 28.45 | | 8.19 | 8.19 | |
| MW-35 | Lip of Casing | 38.62 | | 30.20 | | 8.42 | 8.42 | |
| MW-37 | Lip of Casing | 50.54 | 40.38 | 40.39 | 0.01 | 10.16 | 10.16 | |
| MW-38 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | pump stuck in well - not able to gauge |
| RW-1B | Lip of Casing | 45.96 | | 43.18 | | 2.78 | 2.78 | |
| RW-2D | Lip of Casing | 40.54 | 40.51 | 40.52 | 0.01 | 0.03 | 0.03 | |
| RW-3B | Lip of Casing | 39.45 | 39.25 | 40.18 | 0.93 | 0.20 | 0.01 | |
| MW-40 | Lip of Casing | 46.85 | | 38.25 | | 8.60 | 8.60 | |
| MW-41 | Lip of Casing | 42.92 | 34.40 | 34.40 | 0.00 | 8.52 | 8.52 | sheen |
| RW-4 | Lip of Casing | 45.69 | 41.86 | 41.87 | 0.01 | 3.83 | 3.83 | |
| RW-5 | Lip of Casing | 43.34 | 40.50 | 40.56 | 0.06 | 2.84 | 2.83 | |
| RW-6 | Lip of Casing | 47.22 | 45.90 | 45.90 | 0.00 | 1.32 | 1.32 | sheen |
| RW-2A | Lip of Casing | 39.84 | ------- | ------- | ------- | ------- | ------- | well abandoned 3-08 |
| RW-2B | Lip of Casing | 39.18 | ------- | ------- | ------- | ------- | ------- | well abandoned 3-08 |
| RW-2C | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | well abandoned 9-03 |
| RW-3A | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | well abandoned 9-03 |
| MW-42 | Lip of Casing | 47.04 | | 39.03 | | 8.01 | 8.01 | |
| MW-43 | Lip of Casing | 46.55 | | 37.59 | | 8.96 | 8.96 | |
| MW-44 | Lip of Casing | 46.66 | | 37.54 | | 9.12 | 9.12 | |
| MW-45 | Lip of Casing | 40.91 | | 32.55 | | 8.36 | 8.36 | |
| MW-46 | Lip of Casing | 41.08 | | 33.40 | | 7.68 | 7.68 | |
| MW-47 | Lip of Casing | 40.74 | 33.47 | 33.47 | 0.00 | 7.27 | 7.27 | sheen |
| IW-1 | Lip of Casing | ------- | | | | ------- | ------- | not gauged |

## PETROLEUM PRODUCT / WATER - LEVEL DATA SHEET

W.O. #: 2781
DATE: 23-Jun-11
WEATHER: 90 F
PROJECT: Chester River Hospital Center
COLLECTED BY: RB, TL
LOCATION: Chestertown, Maryland
ENTERED BY: TL

Type product: Fuel oil
Petro correction factor: 0.80

| Monitoring Point | Description of Measuring Point (ft msl) | Measuring Point Elevation (ft) | Product Depth (ft) | Water Depth (ft) | Product Thickness (ft) | Fluid Level Elevation (ft msl) | Corrected Water Elevation (ft msl) | Estimated Amount Product Recovered (gal) / NOTES: |
|---|---|---|---|---|---|---|---|---|
| MW-1 | Lip of Casing | 57.05 | | 47.02 | | 10.03 | 10.03 | |
| MW-2 | Lip of Casing | 56.37 | | 46.51 | | 9.86 | 9.86 | |
| MW-3 | Lip of Casing | 50.55 | | 41.50 | | 9.05 | 9.05 | |
| MW-4 | Lip of Casing | 53.4 | | 43.74 | | 9.66 | 9.66 | |
| MW-5 | Lip of Casing | 61.08 | | 51.12 | | 9.96 | 9.96 | |
| MW-6 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | Well destroyed in building expansion |
| MW-7 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | Well destroyed in building expansion |
| MW-8 | Lip of Casing | 47.82 | | 40.60 | | 7.22 | 7.22 | |
| MW-9 | Lip of Casing | 46.95 | | 40.48 | | 6.47 | 6.47 | |
| MW-10 | Lip of Casing | 47.76 | | 39.99 | | 7.77 | 7.77 | |
| MW-11 | Lip of Casing | 41.49 | | 33.65 | | 7.84 | 7.84 | |
| MW-12 | Lip of Casing | 44.46 | | 36.65 | | 7.81 | 7.81 | |
| MW-13 | Lip of Casing | 40.82 | | 35.10 | | 5.72 | 5.72 | |
| MW-14 | Lip of Casing | 41.38 | 35.95 | 35.95 | 0.00 | 5.43 | 5.43 | sheen; wic partially sat'd. |
| MW-15 | Lip of Casing | 35.01 | | 26.98 | | 8.03 | 8.03 | |
| MW-16 | Lip of Casing | 35.55 | | 28.02 | | 7.53 | 7.53 | |
| MW-17 | Lip of Casing | 35.49 | | 27.10 | | 8.39 | 8.39 | |
| MW-18 | Lip of Casing | 35.82 | | 27.99 | | 7.83 | 7.83 | |
| MW-19 | Lip of Casing | 38.85 | | 32.01 | | 6.84 | 6.84 | |
| MW-20 | Lip of Casing | 38.72 | | 32.05 | | 6.67 | 6.67 | |
| MW-21 | Lip of Casing | 38.55 | | 31.03 | | 7.52 | 7.52 | |
| MW-22 | Lip of Casing | 45.75 | 42.48 | 42.69 | 0.21 | 3.27 | 3.23 | |
| MW-23 | Lip of Casing | 35.95 | | 28.28 | | 7.67 | 7.67 | |
| MW-24 | Lip of Casing | 36.56 | | 28.98 | | 7.58 | 7.58 | |
| MW-25 | Lip of Casing | 36.1 | | 28.13 | | 7.97 | 7.97 | |
| MW-27 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | well abandoned |
| MW-28 | Lip of Casing | 35.9 | | 27.48 | | 8.42 | 8.42 | |
| MW-29 | Lip of Casing | 35.15 | | 27.34 | | 7.81 | 7.81 | |
| MW-30 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | Well destroyed in building expansion |
| MW-31 | Lip of Casing | 46.31 | | 37.33 | | 8.98 | 8.98 | |
| MW-32 | Lip of Casing | 44.6 | | 36.93 | | 7.67 | 7.67 | |
| MW-33 | Lip of Casing | 36.52 | | 29.27 | | 7.25 | 7.25 | |
| MW-34 | Lip of Casing | 36.64 | | 29.37 | | 7.27 | 7.27 | |
| MW-35 | Lip of Casing | 38.62 | | 31.23 | | 7.39 | 7.39 | |
| MW-37 | Lip of Casing | 50.54 | 41.36 | 41.36 | 0.00 | 9.18 | 9.18 | sheen |
| MW-38 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | pump stuck in well - not able to gauge |
| RW-1B | Lip of Casing | 45.96 | 42.70 | 42.70 | 0.00 | 3.26 | 3.26 | sheen |
| RW-2D | Lip of Casing | 40.54 | 41.75 | 41.85 | 0.10 | -1.21 | -1.23 | |
| RW-3B | Lip of Casing | 39.45 | 40.70 | 40.78 | 0.08 | -1.25 | -1.27 | |
| MW-40 | Lip of Casing | 46.85 | | 40.01 | | 6.84 | 6.84 | |
| MW-41 | Lip of Casing | 42.92 | | | | ------- | ------- | not gauged |
| RW-4 | Lip of Casing | 45.69 | | 43.37 | | 2.32 | 2.32 | |
| RW-5 | Lip of Casing | 43.34 | 41.65 | 41.75 | 0.10 | 1.69 | 1.67 | |
| RW-6 | Lip of Casing | 47.22 | 47.30 | 47.30 | 0.00 | -0.08 | -0.08 | sheen |
| RW-2A | Lip of Casing | 39.84 | ------- | ------- | ------- | ------- | ------- | well abandoned 3-08 |
| RW-2B | Lip of Casing | 39.18 | ------- | ------- | ------- | ------- | ------- | well abandoned 3-08 |
| RW-2C | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | well abandoned 9-03 |
| RW-3A | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | well abandoned 9-03 |
| MW-42 | Lip of Casing | 47.04 | 40.55 | 40.55 | 0.00 | 6.49 | 6.49 | sheen |
| MW-43 | Lip of Casing | 46.55 | | 39.99 | | 6.56 | 6.56 | |
| MW-44 | Lip of Casing | 46.66 | | 38.50 | | 8.16 | 8.16 | |
| MW-45 | Lip of Casing | 40.91 | | 33.59 | | 7.32 | 7.32 | |
| MW-46 | Lip of Casing | 41.08 | 35.01 | 35.01 | 0.00 | 6.07 | 6.07 | sheen; wic partially sat'd. |
| MW-47 | Lip of Casing | 40.74 | 34.99 | 35.01 | 0.02 | 5.75 | 5.75 | |
| IW-1 | Lip of Casing | ------- | | | | ------- | ------- | not gauged |

## PETROLEUM PRODUCT / WATER - LEVEL DATA SHEET

W.O. #: 2781
PROJECT: Chester River Hospital Center
LOCATION: Chestertown, Maryland

DATE: 26-Aug-11
WEATHER: 80 F
COLLECTED BY: RB, MW
ENTERED BY: TL

Type product: Fuel oil
Petro correction factor: 0.80

| Monitoring Point | Description of Measuring Point (ft msl) | Measuring Point Elevation (ft) | Product Depth (ft) | Water Depth (ft) | Product Thickness (ft) | Fluid Level Elevation (ft msl) | Corrected Water Elevation (ft msl) | Estimated Amount Product Recovered (gal) / NOTES: |
|---|---|---|---|---|---|---|---|---|
| MW-1 | Lip of Casing | 57.05 | | 47.30 | | 9.75 | 9.75 | |
| MW-2 | Lip of Casing | 56.37 | | 46.85 | | 9.52 | 9.52 | |
| MW-3 | Lip of Casing | 50.55 | | 41.69 | | 8.86 | 8.86 | |
| MW-4 | Lip of Casing | 53.4 | | 44.01 | | 9.39 | 9.39 | |
| MW-5 | Lip of Casing | 61.08 | 51.32 | 51.33 | 0.01 | 9.76 | 9.76 | |
| MW-6 | Lip of Casing | ------ | ------ | ------ | ------ | ------ | ------ | Well destroyed in building expansion |
| MW-7 | Lip of Casing | ------ | ------ | ------ | ------ | ------ | ------ | Well destroyed in building expansion |
| MW-8 | Lip of Casing | 47.82 | | 40.45 | | 7.37 | 7.37 | |
| MW-9 | Lip of Casing | 46.95 | 40.36 | 40.37 | 0.01 | 6.59 | 6.59 | |
| MW-10 | Lip of Casing | 47.76 | | 39.90 | | 7.86 | 7.86 | |
| MW-11 | Lip of Casing | 41.49 | | 33.80 | | 7.69 | 7.69 | |
| MW-12 | Lip of Casing | 44.46 | | 36.80 | | 7.66 | 7.66 | |
| MW-13 | Lip of Casing | 40.82 | | | | ------ | ------ | under vehicle - well not gauged |
| MW-14 | Lip of Casing | 41.38 | | 35.98 | | 5.40 | 5.40 | |
| MW-15 | Lip of Casing | 35.01 | | | | ------ | ------ | under vehicle - well not gauged |
| MW-16 | Lip of Casing | 35.55 | | 28.42 | | 7.13 | 7.13 | |
| MW-17 | Lip of Casing | 35.49 | | 27.55 | | 7.94 | 7.94 | |
| MW-18 | Lip of Casing | 35.82 | | 28.45 | | 7.37 | 7.37 | |
| MW-19 | Lip of Casing | 38.85 | | 32.31 | | 6.54 | 6.54 | |
| MW-20 | Lip of Casing | 38.72 | | 32.30 | | 6.42 | 6.42 | |
| MW-21 | Lip of Casing | 38.55 | | 31.34 | | 7.21 | 7.21 | |
| MW-22 | Lip of Casing | 45.75 | 41.98 | 42.20 | 0.22 | 3.77 | 3.73 | |
| MW-23 | Lip of Casing | 35.95 | | 28.75 | | 7.20 | 7.20 | |
| MW-24 | Lip of Casing | 36.56 | | 29.38 | | 7.18 | 7.18 | |
| MW-25 | Lip of Casing | 36.1 | | 28.58 | | 7.52 | 7.52 | |
| MW-27 | Lip of Casing | -------- | -------- | ------- | ------ | ------- | ------- | well abandoned |
| MW-28 | Lip of Casing | 35.9 | | 27.91 | | 7.99 | 7.99 | |
| MW-29 | Lip of Casing | 35.15 | | 27.83 | | 7.32 | 7.32 | |
| MW-30 | Lip of Casing | -------- | -------- | ------- | -------- | ------- | ------- | Well destroyed in building expansion |
| MW-31 | Lip of Casing | 46.31 | | 37.65 | | 8.66 | 8.66 | |
| MW-32 | Lip of Casing | 44.6 | | 36.99 | | 7.61 | 7.61 | |
| MW-33 | Lip of Casing | 36.52 | | 29.60 | | 6.92 | 6.92 | |
| MW-34 | Lip of Casing | 36.64 | | 29.67 | | 6.97 | 6.97 | |
| MW-35 | Lip of Casing | 38.62 | | 31.49 | | 7.13 | 7.13 | |
| MW-37 | Lip of Casing | 50.54 | 41.46 | 41.50 | 0.04 | 9.08 | 9.07 | |
| MW-38 | Lip of Casing | -------- | -------- | -------- | -------- | -------- | -------- | pump stuck in well - not able to gauge |
| RW-1B | Lip of Casing | 45.96 | 41.04 | 41.05 | 0.01 | 4.92 | 4.92 | |
| RW-2D | Lip of Casing | 40.54 | 41.94 | 42.04 | 0.10 | -1.40 | -1.42 | |
| RW-3B | Lip of Casing | 39.45 | 40.73 | 41.30 | 0.57 | -1.28 | -1.39 | |
| MW-40 | Lip of Casing | 46.85 | | 39.42 | | 7.43 | 7.43 | |
| MW-41 | Lip of Casing | 42.92 | | 37.95 | | 4.97 | 4.97 | |
| RW-4 | Lip of Casing | 45.69 | 42.37 | 42.38 | 0.01 | 3.32 | 3.32 | |
| RW-5 | Lip of Casing | 43.34 | 40.15 | 40.50 | 0.35 | 3.19 | 3.12 | |
| RW-6 | Lip of Casing | 47.22 | 47.25 | 47.25 | 0.00 | -0.03 | -0.03 | film |
| RW-2A | Lip of Casing | 39.84 | -------- | -------- | -------- | -------- | -------- | well abandoned 3-08 |
| RW-2B | Lip of Casing | 39.18 | -------- | -------- | -------- | -------- | -------- | well abandoned 3-08 |
| RW-2C | Lip of Casing | -------- | -------- | -------- | -------- | ------- | ------- | well abandoned 9-03 |
| RW-3A | Lip of Casing | -------- | ------ | ------ | ------ | -------- | -------- | well abandoned 9-03 |
| MW-42 | Lip of Casing | 47.04 | | 40.36 | | 6.68 | 6.68 | |
| MW-43 | Lip of Casing | 46.55 | | 38.39 | | 8.16 | 8.16 | |
| MW-44 | Lip of Casing | 46.66 | | 38.67 | | 7.99 | 7.99 | |
| MW-45 | Lip of Casing | 40.91 | | 33.73 | | 7.18 | 7.18 | |
| MW-46 | Lip of Casing | 41.08 | | 35.13 | | 5.95 | 5.95 | |
| MW-47 | Lip of Casing | 40.74 | | | | ------- | ------- | under vehicle - well not gauged |
| IW-1 | Lip of Casing | -------- | | | | -------- | -------- | not gauged |

## PETROLEUM PRODUCT / WATER - LEVEL DATA SHEET

W.O. #: 2781
DATE: 27-Sep-11
WEATHER: 70 F, overcast, humid
PROJECT: Chester River Hospital Center
COLLECTED BY: TL, MW, JPS
LOCATION: Chestertown, Maryland
ENTERED BY: TL

Type product: Fuel oil
Petro correction factor: 0.80

| Monitoring Point | Description of Measuring Point (ft msl) | Measuring Point Elevation (ft) | Product Depth (ft) | Water Depth (ft) | Product Thickness (ft) | Fluid Level Elevation (ft msl) | Corrected Water Elevation (ft msl) | Estimated Amount Product Recovered (gal) / NOTES: |
|---|---|---|---|---|---|---|---|---|
| MW-1 | Lip of Casing | 57.05 | 47.45 | 47.47 | 0.02 | 9.60 | 9.60 | |
| MW-2 | Lip of Casing | 56.37 | | 47.06 | | 9.31 | 9.31 | |
| MW-3 | Lip of Casing | 50.55 | | 42.00 | | 8.55 | 8.55 | |
| MW-4 | Lip of Casing | 53.4 | | 44.22 | | 9.18 | 9.18 | |
| MW-5 | Lip of Casing | 61.08 | | 51.49 | | 9.59 | 9.59 | |
| MW-6 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | Well destroyed in building expansion |
| MW-7 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | Well destroyed in building expansion |
| MW-8 | Lip of Casing | 47.82 | 41.01 | 41.01 | 0.00 | 6.81 | 6.81 | film |
| MW-9 | Lip of Casing | 46.95 | | 41.07 | | 5.88 | 5.88 | |
| MW-10 | Lip of Casing | 47.76 | | 40.17 | | 7.59 | 7.59 | |
| MW-11 | Lip of Casing | 41.49 | | 34.03 | | 7.46 | 7.46 | |
| MW-12 | Lip of Casing | 44.46 | | 37.20 | | 7.26 | 7.26 | |
| MW-13 | Lip of Casing | 40.82 | 35.51 | 35.51 | 0.00 | 5.31 | 5.31 | sheen |
| MW-14 | Lip of Casing | 41.38 | | 36.42 | | 4.96 | 4.96 | |
| MW-15 | Lip of Casing | 35.01 | | | | ------- | ------- | under vehicle - well not gauged |
| MW-16 | Lip of Casing | 35.55 | | 28.63 | | 6.92 | 6.92 | |
| MW-17 | Lip of Casing | 35.49 | | 27.68 | | 7.81 | 7.81 | |
| MW-18 | Lip of Casing | 35.82 | | 28.65 | | 7.17 | 7.17 | |
| MW-19 | Lip of Casing | 38.85 | | 32.61 | | 6.24 | 6.24 | |
| MW-20 | Lip of Casing | 38.72 | | 32.60 | | 6.12 | 6.12 | |
| MW-21 | Lip of Casing | 38.55 | | 31.62 | | 6.93 | 6.93 | |
| MW-22 | Lip of Casing | 45.75 | 42.20 | 42.31 | 0.11 | 3.55 | 3.53 | |
| MW-23 | Lip of Casing | 35.95 | | 28.95 | | 7.00 | 7.00 | |
| MW-24 | Lip of Casing | 36.56 | | 29.59 | | 6.97 | 6.97 | |
| MW-25 | Lip of Casing | 36.1 | | 28.75 | | 7.35 | 7.35 | |
| MW-27 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | well abandoned |
| MW-28 | Lip of Casing | 35.9 | | 28.12 | | 7.78 | 7.78 | |
| MW-29 | Lip of Casing | 35.15 | | 28.03 | | 7.12 | 7.12 | |
| MW-30 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | Well destroyed in building expansion |
| MW-31 | Lip of Casing | 46.31 | | 37.77 | | 8.54 | 8.54 | |
| MW-32 | Lip of Casing | 44.6 | | 37.24 | | 7.36 | 7.36 | |
| MW-33 | Lip of Casing | 36.52 | | 29.87 | | 6.65 | 6.65 | |
| MW-34 | Lip of Casing | 36.64 | | 29.92 | | 6.72 | 6.72 | |
| MW-35 | Lip of Casing | 38.62 | | 31.74 | | 6.88 | 6.88 | |
| MW-37 | Lip of Casing | 50.54 | 41.79 | 41.81 | 0.02 | 8.75 | 8.75 | |
| MW-38 | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | pump stuck in well - not able to gauge |
| RW-1B | Lip of Casing | 45.96 | 45.72 | 45.74 | 0.02 | 0.24 | 0.24 | |
| RW-2D | Lip of Casing | 40.54 | 42.13 | 42.18 | 0.05 | -1.59 | -1.60 | |
| RW-3B | Lip of Casing | 39.45 | 41.21 | 41.97 | 0.76 | -1.76 | -1.91 | |
| MW-40 | Lip of Casing | 46.85 | 39.79 | 39.79 | 0.00 | 7.06 | 7.06 | film |
| MW-41 | Lip of Casing | 42.92 | 37.51 | 37.52 | 0.01 | 5.41 | 5.41 | |
| RW-4 | Lip of Casing | 45.69 | 42.75 | 42.77 | 0.02 | 2.94 | 2.94 | |
| RW-5 | Lip of Casing | 43.34 | 41.23 | 41.37 | 0.14 | 2.11 | 2.08 | |
| RW-6 | Lip of Casing | 47.22 | 48.12 | 48.13 | 0.01 | -0.90 | -0.90 | |
| RW-2A | Lip of Casing | 39.84 | ------- | ------- | ------- | ------- | ------- | well abandoned 3-08 |
| RW-2B | Lip of Casing | 39.18 | ------- | ------- | ------- | ------- | ------- | well abandoned 3-08 |
| RW-2C | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | well abandoned 9-03 |
| RW-3A | Lip of Casing | ------- | ------- | ------- | ------- | ------- | ------- | well abandoned 9-03 |
| MW-42 | Lip of Casing | 47.04 | | 41.11 | | 5.93 | 5.93 | |
| MW-43 | Lip of Casing | 46.55 | 39.18 | 39.19 | 0.01 | 7.37 | 7.37 | |
| MW-44 | Lip of Casing | 46.66 | | 38.92 | | 7.74 | 7.74 | |
| MW-45 | Lip of Casing | 40.91 | | 33.98 | | 6.93 | 6.93 | |
| MW-46 | Lip of Casing | 41.08 | | 35.54 | | 5.54 | 5.54 | |
| MW-47 | Lip of Casing | 40.74 | | 35.55 | | 5.19 | 5.19 | |
| IW-1 | Lip of Casing | ------- | | | | ------- | ------- | not gauged |

# APPENDIX F

## Earth Data Field Reports

**Earth Data Incorporated** 131 Comet Drive, Centreville, Maryland

# FIELD DATA NOTES

| | |
|---|---|
| **EDI W.O. #** 2781 | **PROJECT:** Chester River Hospital Center |
| **DATE:** January 31, 2011 | **LOCATION:** 100 Brown St., Chestertown, MD |

EDI Personnel Onsite: T. Lee, R. Beam

Weather: 30° F, windy

Time Onsite: 09:35 am

Earth Data personnel were onsite to perform monthly gauging of the monitoring wells. Additionally, several wells were sampled for Dissolved Oxygen (DO) using a YSI 556 Model Multimeter with a flow-thru cell. The recovery wells were also sampled for DO at the point where water pumped from each well enters into the transfer tank of the pump-and-treat system. The results the sampling are as follows:

| | Dissolved Oxygen | | | | Conductivity | ORP |
|---|---|---|---|---|---|---|
| Well ID | (%) | (mg/L) | Temp (°C) | pH | (mS/cm$^c$) | (mV) |
| MW-5 | 72.8 | 7.32 | 15.08 | 5.01 | 0.306 | 191.2 |
| MW-8 | 15.9 | 1.61 | 15.12 | 5.65 | 1.085 | 80.1 |
| MW-9 | 47.3 | 4.76 | 14.99 | 6.22 | 0.554 | - 26.1 |
| MW-10 | 52.2 | 5.20 | 15.84 | 5.04 | 0.436 | 243.0 |
| MW-13 | 43.3 | 4.39 | 14.50 | 4.98 | 0.303 | 253.4 |
| MW-20 | 40.5 | 4.12 | 14.72 | 4.97 | 0.318 | 230.1 |
| MW-23 | 78.7 | 8.04 | 14.36 | 4.82 | 0.092 | 308.9 |
| MW-40 | 58.5 | 5.89 | 15.03 | 4.83 | 0.221 | 289.1 |
| MW-41 | 8.7 | 0.88 | 14.28 | 5.42 | 0.157 | 124.3 |
| RW-1B | 75.2 | 7.57 | 15.07 | 5.01 | 0.116 | 196.9 |
| RW-2D | 76.7 | 7.73 | 14.96 | 5.04 | 0.180 | 191.1 |
| RW-3B | 87.5 | 8.69 | 15.62 | 5.03 | 0.163 | 203.3 |
| RW-4 | 68.4 | 6.76 | 16.16 | 4.93 | 0.266 | 215.6 |
| RW-5 | 65.5 | 6.62 | 15.11 | 5.17 | 0.096 | 180.5 |
| RW-6 | 86.1 | 8.60 | 15.47 | 5.17 | 0.165 | 174.7 |
| MW-22 | 86.4 | 8.53 | 15.52 | 5.23 | 0.170 | 166.7 |

**Signed:** _____

T. Lee
Environmental Scientist

**Earth Data Incorporated** 131 Comet Drive, Centreville, Maryland

# FIELD DATA NOTES

| | |
|---|---|
| **EDI W.O. #** 2781 | **PROJECT:** Chester River Hospital Center |
| **DATE:** April 12, 2011 | **LOCATION:** 100 Brown St., Chestertown, MD |

EDI Personnel Onsite: T. Lee, R. Beam

Weather: 60° F, rain

Time Onsite: 08:50 am

Earth Data personnel were onsite to sample several wells, including MW-5, MW-9, MW-20, MW-23, MW-40 and MW-43. Each well was purged of three-volumes of water prior to sampling. The purged water was pumped through a carbon filtration system before being discharged onsite. Water samples were also collected from RW-4 and MW-22 at the point where water pumped from each well enters into the transfer tank of the pump-and-treat system. Water samples collected from each well were analyzed for nitrate, sulfate, phosphate, methane, TPH-DRO, total iron (speciated), CO2 and hydrocarbon degrading bacteria. Additionally, each sample was analyzed in the field for Dissolved Oxygen (DO) using a YSI 556 Model Multimeter with a flow-thru cell. The results of the field analysis are as follows:

| | Dissolved Oxygen | | | | Conductivity | ORP |
|---|---|---|---|---|---|---|
| Well ID | (%) | (mg/L) | Temp (°C) | pH | (mS/cm$^c$) | (mV) |
| MW-5 | 82.1 | 8.07 | 16.08 | 4.78 | 0.351 | 204.9 |
| MW-9 | 26.5 | 2.62 | 16.39 | 5.55 | 0.284 | - 29.6 |
| MW-20 | 68.0 | 6.57 | 16.49 | 4.81 | 0.319 | 198.5 |
| MW-23 | 91.1 | 9.03 | 15.94 | 4.42 | 0.093 | 164.1 |
| MW-40 | 305.7 | 29.73 | 16.62 | 4.83 | 0.156 | 271.3 |
| MW-43 | 332.2 | 32.09 | 17.05 | 5.06 | 0.152 | 244.0 |
| RW-4 | 109.7 | 10.70 | 16.83 | 4.87 | 0.040 | 192.4 |
| MW-22 | 117.2 | 11.94 | 16.17 | 5.28 | 0.017 | 140.2 |

**Signed:** T. Lee

T. Lee
Environmental Scientist

**Earth Data Incorporated** 131 Comet Drive, Centreville, Maryland

# FIELD DATA NOTES

| | |
|---|---|
| **EDI W.O. #** 2781 | **PROJECT:** Chester River Hospital Center |
| **DATE:** May 31, 2011 | **LOCATION:** 100 Brown St., Chestertown, MD |

EDI Personnel Onsite: R. Beam, M.Wojtko

Weather: 90° F, sunny

Time Onsite: 12:00 pm

Earth Data personnel were onsite to collect water perimeters from several wells in the field for Dissolved Oxygen (DO) using an YSI 556 Model Multimeter with a flow-thru cell. MW-5, MW-9, MW-20, MW-23, MW-40 and MW-43 were each purged of three-volumes of water prior to sampling. The purged water was pumped through a carbon filtration system before being discharged onsite. Water parameters were also collected from RW-4, RW-5 and MW-22 at the point where water pumped from each well enters into the transfer tank of the pump-and-treat system. The results from the sampling are as follows.

| Well ID | Dissolved Oxygen (%) | Temp (°C) | pH | Conductivity (mS/cm°) | ORP (mV) |
|---|---|---|---|---|---|
| MW-5 | 84 | 16.15 | 5.19 | .374 | 161.9 |
| MW-9 | 5.9 | 16.95 | 5.70 | .281 | 101.1 |
| MW-20 | 61.8 | 16.55 | 4.99 | .291 | 237.0 |
| MW-23 | 101.6 | 16.16 | 5.12 | .093 | 248.6 |
| MW-40 | 113.2 | 22.40 | 6.04 | .170 | 411.3 |
| MW-43 | 91.1 | 23.16 | 6.04 | .204 | 235.3 |
| RW-4 | 73.7 | 17.36 | 5.35 | .246 | 193.8 |
| MW-22 | 101.1 | 17.99 | 5.84 | .193 | 129.6 |
| RW-5 | 65.5 | 15.87 | 5.66 | .137 | 148.2 |

**Signed:** R Beam

R.Beam
Well Driller

**Earth Data Incorporated** 131 Comet Drive, Centreville, Maryland

# FIELD DATA NOTES

| | |
|---|---|
| **EDI W.O. #** 2781 | **PROJECT:** Chester River Hospital Center |
| **DATE:** June 13, 2011 | **LOCATION:** 100 Brown St., Chestertown, MD |

EDI Personnel Onsite: R. Beam, T. Lee

Weather: 80° F, sunny

Time Onsite: 08:30 am

Earth Data personnel were onsite to collect field water quality parameters from several monitoring and recovery wells. Using a YSI 556 Model Multimeter with a flow-thru cell, several water quality measurements, including dissolved oxygen (DO), were collected from water pumped from monitoring wells MW-5, MW-9, MW-20, MW-23, MW-40 and MW-43. Using a 12-volt low-flow purge pump (eg. Geosquirt), water was pumped from each monitoring well through a flow-thru cell and a carbon filter before being discharged onsite. The multimeter was attached to the flow-thru cell and once the measurements stabilized (approximately 5 to 10 minutes), the measurements were recorded in a field data book. Water quality parameters were also collected from recovery wells RW-4, RW-5 and MW-22 at the point where water pumped from each well enters into the transfer tank of the pump-and-treat system. The results from the field sampling are as follows.

| | Dissolved Oxygen | | | | Conductivity | ORP |
|---|---|---|---|---|---|---|
| Well ID | (%) | (mg/L) | Temp (°C) | pH | (mS/cm°) | (mV) |
| MW-5 | 97.0 | 9.42 | 16.22 | 5.06 | 0.370 | 329.2 |
| MW-9 | 6.5 | 0.63 | 16.78 | 5.96 | 0.360 | 71.1 |
| MW-20 | 53.3 | 5.20 | 16.47 | 5.06 | 0.320 | 230.6 |
| MW-23 | 99.7 | 9.83 | 15.80 | 5.13 | 0.092 | 265.8 |
| MW-40 | 113.1 | 9.88 | 22.07 | 6.12 | 0.170 | 475.1 |
| MW-43 | 82.1 | 7.12 | 27.70 | 6.67 | 0.206 | 267.9 |
| RW-4 | 72.0 | 6.89 | 17.61 | 5.33 | 0.253 | 181.3 |
| RW-5 | 49.6 | 4.90 | 15.86 | 5.61 | 0.150 | 148.1 |
| MW-22 | 89.7 | 8.37 | 18.80 | 5.68 | 0.189 | 128.6 |

**Signed:** T. Lee

T. Lee
Environmental Scientist

**Earth Data Incorporated** 131 Comet Drive, Centreville, Maryland

# FIELD DATA NOTES

| | |
|---|---|
| **EDI W.O. #** 2781 | **PROJECT:** Chester River Hospital Center |
| **DATE:** June 27, 2011 | **LOCATION:** 100 Brown St., Chestertown, MD |

EDI Personnel Onsite: T. Lee, M. Wojtko

Weather: 85° F

Time Onsite: 10:05 am

Earth Data personnel were onsite to sample several wells, including MW-5, MW-9, MW-20, MW-23, MW-40 and MW-43. Each well was purged of three-volumes of water prior to sampling. The purged water was pumped through a carbon filtration system before being discharged onsite. Water samples were also collected from RW-4 and MW-22 at the point where water pumped from each well enters into the transfer tank of the pump-and-treat system. Water samples collected from each well were analyzed for nitrate, sulfate, phosphate, methane, TPH-DRO, total iron, naphthalene and hydrocarbon degrading bacteria. A sheen was observed in the water samples collected from MW-9, MW-40 an MW-43 after the each well was purged.

Additionally, each sample was analyzed in the field for Dissolved Oxygen (DO) using a YSI 556 Model Multimeter with a flow-thru cell. The results of the field analysis are as follows:

| | Dissolved Oxygen | | | | Conductivity | ORP |
|---|---|---|---|---|---|---|
| Well ID | (%) | (mg/L) | Temp (°C) | pH | (mS/cm$^c$) | (mV) |
| MW-5 | 60.8 | 5.89 | 16.92 | 5.09 | 0.345 | 215.5 |
| MW-9 | 27.8 | 2.67 | 17.16 | 6.08 | 0.406 | - 39.5 |
| MW-20 | 47.2 | 4.66 | 16.37 | 5.10 | 0.287 | 185.6 |
| MW-23 | 32.3 | 3.24 | 15.73 | 5.22 | 0.095 | 198.2 |
| MW-40 | 40.1 | 3.89 | 16.86 | 5.66 | 0.233 | 121.7 |
| MW-43 | 49.8 | 4.38 | 21.71 | 6.62 | 0.214 | 96.6 |
| RW-4 | 75.0 | 7.15 | 17.28 | 5.30 | 0.259 | 184.6 |
| MW-22 | 66.4 | 6.23 | 18.15 | 5.76 | 0.205 | 120.3 |

**Signed:** T. Lee

T. Lee
Environmental Scientist

**Earth Data Incorporated** 131 Comet Drive, Centreville, Maryland

# FIELD DATA NOTES

| | |
|---|---|
| **EDI W.O. #** 2781 | **PROJECT:** Chester River Hospital Center |
| **DATE:** August 26, 2011 | **LOCATION:** 100 Brown St., Chestertown, MD |

EDI Personnel Onsite: R. Beam, M. Wojtko

Weather: 80° F

Time Onsite: 10:15 am

Earth Data personnel were onsite to collect field water quality parameters from several monitoring and recovery wells. Using a YSI 556 Model Multimeter with a flow-thru cell, several water quality measurements, including dissolved oxygen (DO), were collected from water pumped from monitoring wells MW-5, MW-9, MW-20, MW-23, MW-40 and MW-43. Using a 12-volt low-flow purge pump (eg. Geosquirt), water was pumped from each monitoring well through a flow-thru cell and a carbon filter before being discharged onsite. The multimeter was attached to the flow-thru cell and once the measurements stabilized (approximately 5 to 10 minutes), the measurements were recorded in a field data book. Water quality parameters were also collected from recovery wells RW-4, RW-5 and MW-22 at the point where water pumped from each well enters into the transfer tank of the pump-and-treat system. The results from the field sampling are as follows.

| | Dissolved Oxygen | | | | Conductivity | ORP |
|---|---|---|---|---|---|---|
| Well ID | (%) | (mg/L) | Temp (°C) | pH | (mS/cm$^c$) | (mV) |
| MW-5 | 45.9 | 4.52 | 16.04 | 5.58 | 0.142 | 166.7 |
| MW-9 | 10.4 | 1.06 | 16.81 | 5.85 | 0.307 | 88.2 |
| MW-20 | 20.9 | 2.09 | 16.71 | 5.04 | 0.332 | 259.8 |
| MW-23 | 95.7 | 9.44 | 15.95 | 4.95 | 0.094 | 284.9 |
| MW-40 | 111.3 | 9.59 | 22.62 | 6.15 | 0.165 | 596.8 |
| MW-43 | 88.1 | 7.67 | 27.65 | 6.63 | 0.205 | |
| RW-4 | 67.8 | 6.42 | 17.93 | 5.30 | 0.062 | 199.9 |
| RW-5 | 47.3 | 4.69 | 15.91 | 5.45 | 0.091 | 156.3 |
| MW-22 | 86.3 | 7.95 | 19.28 | 5.75 | 0.187 | 145.9 |

**Signed:** _____

R. Beam
Environmental Technician/Well Driller

**Earth Data Incorporated** 131 Comet Drive, Centreville, Maryland

# FIELD DATA NOTES

| | |
|---|---|
| **EDI W.O. #** 2781 | **PROJECT:** Chester River Hospital Center |
| **DATE:** September 27, 2011 | **LOCATION:** 100 Brown St., Chestertown, MD |

EDI Personnel Onsite: T. Lee, M. Wojtko, JP Stokes

Weather: 70° F, overcast, humid

Time Onsite: 9:45 am

Earth Data personnel were onsite to sample several wells, including MW-5, MW-9, MW-16, MW-19, MW-20, MW-23, MW-33, MW-34, MW-35, MW-40 and MW-43. Each well was purged of three-volumes of water prior to sampling. The purged water was pumped through a carbon filtration system before being discharged onsite. Water samples were also collected from RW-4, RW-5 and MW-22 at the point where water pumped from each well enters into the transfer tank of the pump-and-treat system. Water samples collected from each well were analyzed for TPH-DRO, BTEX, naphthalene and hydrocarbon degrading bacteria. A sheen was observed in the water samples collected from MW-5 and MW-40 after the each well was purged.

Additionally, each sample was analyzed in the field for Dissolved Oxygen (DO) using a YSI 556 Model Multimeter with a flow-thru cell. The results of the field analysis are as follows:

| | Dissolved Oxygen | | | | Conductivity | ORP |
|---|---|---|---|---|---|---|
| Well ID | (%) | (mg/L) | Temp (°C) | pH | (mS/cm$^c$) | (mV) |
| MW-5 | 86.8 | 8.45 | 16.61 | 5.17 | 0.349 | 199.3 |
| MW-9 | 20.8 | 2.08 | 16.33 | 6.17 | 0.378 | - 21.2 |
| MW-16 | 90.5 | 8.98 | 15.68 | 5.24 | 0.193 | 204.3 |
| MW-19 | 89.3 | 8.90 | 15.47 | 5.13 | 0.260 | 198.8 |
| MW-20 | 80.2 | 7.84 | 16.44 | 5.18 | 0.261 | 203.4 |
| MW-23 | 94.8 | 9.37 | 15.96 | 5.17 | 0.091 | 223.6 |
| MW-33 | 89.2 | 8.83 | 15.80 | 5.16 | 0.223 | 200.4 |
| MW-34 | 90.4 | 8.79 | 16.67 | 5.14 | 0.258 | 199.2 |
| MW-35 | 83.6 | 8.17 | 16.27 | 5.09 | 0.403 | 197.7 |
| MW-40 | 108.2 | 9.71 | 20.68 | 6.45 | 0.192 | 642.5 |
| MW-43 | 97.6 | 8.92 | 20.74 | 6.90 | 0.221 | 59.5 |
| RW-4 | 68.1 | 6.50 | 17.58 | 5.28 | 0.231 | 178.9 |
| RW-5 | 56.2 | 5.56 | 15.87 | 5.59 | 0.147 | 137.8 |
| MW-22 | 89.1 | 8.27 | 19.03 | 5.78 | 0.192 | 121.9 |

**Signed:** T. Lee

T. Lee
Environmental Scientist

# APPENDIX G

## Laboratory Analytical Reports – Indicator Parameters

# Analytical Report for

## Earth Data, Inc

## Certificate of Analysis No.: 10122912

**Project Manager: Andrew Bullen**
**Project Name : Chester River Hospital Center**
**Project Location: Chestertown, MD**
**Project ID : 2781**

**January 6, 2011**

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# PHASE SEPARATION SCIENCE, INC.

January 6, 2011

**Andrew Bullen**
**Earth Data, Inc**
131 Comet Drive
Centerville, MD 21617

Reference: PSS Work Order No: **10122912**
Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID.: 2781

Dear Andrew Bullen :

The attached Analytical and QC Summary lists the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order numbered **10122912**.

All work reported herein has been performed in accordance with current NELAP standards referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on February 2, 2011. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 10 years, after which time it will be disposed without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

**Dan Prucnal**
Laboratory Manager

# Sample Summary

## Client Name: Earth Data, Inc

## Project Name: Chester River Hospital Center

**Project ID: 2781**

**Work Order Number: 10122912**

The following samples were received under chain of custody by Phase Separation Science (PSS) on 12/29/2010 at 02:00 pm

| Lab Sample Id | Sample Id | Matrix | Date/Time Collected |
|---|---|---|---|
| 10122912-001 | MW-4 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-002 | MW-5 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-003 | MW-10 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-004 | MW-11 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-005 | MW-13 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-006 | MW-16 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-007 | MW-19 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-008 | MW-20 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-009 | MW-23 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-010 | MW-33 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-011 | MW-34 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-012 | MW-35 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-013 | MW-40 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-014 | MW-43 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-015 | RW-1B | GROUND WATER | 12/28/2010 00:00 |
| 10122912-016 | RW-2D | GROUND WATER | 12/28/2010 00:00 |
| 10122912-017 | RW-3B | GROUND WATER | 12/28/2010 00:00 |
| 10122912-018 | RW-4 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-019 | RW-5 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-020 | RW-6 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-021 | MW-22 | GROUND WATER | 12/28/2010 00:00 |
| 10122912-022 | System Discharge | GROUND WATER | 12/28/2010 00:00 |

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

**Notes:**

1. The presence of common laboratory contaminants such as acetone, methylene chloride and phthalates, may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].

# Sample Summary

## Client Name: Earth Data, Inc

## Project Name: Chester River Hospital Center

**Work Order Number: 10122912**

**Project ID: 2781**

**Standard Flags/Abbreviations:**

B A target analyte or commone laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

C Results Pending Final Confirmation.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.

J The target analyte was positively identified below the reporting limit but greater than the LOD.

LOD Limit of Detection. An estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte and matrix specific.

ND Not Detected at or above the reporting limit.

RL PSS Reporting Limit.

U Not detected.

# Case Narrative Summary

**Client Name: Earth Data, Inc**

**Project Name: Chester River Hospital Center**

Project ID: 2781 Work Order Number: 10122912

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

**Sample Receipt:**

All sample receipt conditions were acceptable.

Analyses associated with analyst code 4005 were performed by Enviro-Chem Laboratories, Inc.
Analyses associated with analyst code 4010 were performed by Maryland Spectral Services

**NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.**

300.0, SM6221B/8015

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: MW-4** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-001**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.1** | mg/L | 0.1 | | 1 | 01/03/11 | 01/03/11 15:18 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/03/11 | 01/04/11 08:09 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/03/11 | 01/04/11 08:09 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/03/11 | 01/04/11 08:09 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/03/11 | 01/04/11 08:09 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/03/11 | 01/04/11 08:09 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/03/11 | 01/04/11 08:09 | 1011 |

**Sample ID: MW-5** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-002**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Specific Inorganic Anions — Analytical Method: EPA 300.0

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **4.0** | mg/L | 0.2 | | 12/29/10 | 12/29/10 17:44 | 4005 |
| Sulfate | ND | mg/L | 1.0 | | 12/29/10 | 12/29/10 17:44 | 4005 |
| Ortho-Phosphorus (as P) | ND | mg/L | 1.0 | | 12/29/10 | 12/29/10 17:44 | 4005 |

Dissolved Gases in Water — Analytical Method: SM6221B/8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | **0.106** | mg/L | 0.0084 | | 01/04/11 | 01/04/11 00:00 | 4010 |

Total Metals — Analytical Method: SW846 6020A — Preparation Method: SW846 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **6,200** | ug/L | 1,000 | | 10 | 12/30/10 | 01/03/11 13:08 | 1034 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: MW-10** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-003**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Metals — Analytical Method: SW846 6020A — Preparation Method: SW846 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **20,000** | ug/L | 10,000 | | 100 | 12/30/10 | 01/03/11 13:14 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **2.6** | mg/L | 0.1 | | 1 | 01/03/11 | 01/03/11 16:05 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/03/11 | 01/04/11 08:37 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/03/11 | 01/04/11 08:37 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/03/11 | 01/04/11 08:37 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/03/11 | 01/04/11 08:37 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/03/11 | 01/04/11 08:37 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/03/11 | 01/04/11 08:37 | 1011 |

**Sample ID: MW-11** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-004**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 01/03/11 | 01/03/11 16:28 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 15:34 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 15:34 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 15:34 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/04/11 15:34 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 15:34 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 15:34 | 1011 |

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## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: MW-13** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-005**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Metals — Analytical Method: SW846 6020A — Preparation Method: SW846 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **14,000** | ug/L | 10,000 | | 100 | 12/30/10 | 01/03/11 13:21 | 1034 |

**Sample ID: MW-16** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-006**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 01/03/11 | 01/03/11 16:51 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 16:07 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 16:07 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 16:07 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/04/11 16:07 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 16:07 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 16:07 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: MW-19** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-007**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 01/03/11 | 01/03/11 17:14 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 16:35 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 16:35 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 16:35 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/04/11 16:35 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 16:35 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 16:35 | 1011 |

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## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: MW-20** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-008**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Specific Inorganic Anions — Analytical Method: EPA 300.0

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **3.3** | mg/L | 0.2 | | 12/29/10 | 12/29/10 18:35 | 4005 |
| Sulfate | ND | mg/L | 1.0 | | 12/29/10 | 12/29/10 18:35 | 4005 |
| Ortho-Phosphorus (as P) | ND | mg/L | 1.0 | | 12/29/10 | 12/29/10 18:35 | 4005 |

Dissolved Gases in Water — Analytical Method: SM6221B/8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | ND | mg/L | 0.0071 | | 01/04/11 | 01/04/11 00:00 | 4010 |

Total Metals — Analytical Method: SW846 6020A — Preparation Method: SW846 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **23,000** | ug/L | 10,000 | | 100 | 12/30/10 | 01/03/11 13:27 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **19** | mg/L | 1 | | 10 | 01/03/11 | 01/04/11 10:17 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 17:04 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 17:04 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 17:04 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/04/11 17:04 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 17:04 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 17:04 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: MW-23** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-009**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Specific Inorganic Anions — Analytical Method: EPA 300.0

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **4.0** | mg/L | 0.2 | | 12/29/10 | 12/29/10 18:52 | 4005 |
| Sulfate | ND | mg/L | 1.0 | | 12/29/10 | 12/29/10 18:52 | 4005 |
| Ortho-Phosphorus (as P) | ND | mg/L | 1.0 | | 12/29/10 | 12/29/10 18:52 | 4005 |

Dissolved Gases in Water — Analytical Method: SM6221B/8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | ND | mg/L | 0.0065 | | 01/04/11 | 01/04/11 00:00 | 4010 |

Total Metals — Analytical Method: SW846 6020A — Preparation Method: SW846 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **21,000** | ug/L | 10,000 | | 100 | 12/30/10 | 01/03/11 13:53 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.1** | mg/L | 0.1 | | 1 | 01/03/11 | 01/03/11 17:37 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 17:32 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 17:32 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 17:32 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/04/11 17:32 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 17:32 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 17:32 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: MW-33** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-010**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 01/03/11 | 01/03/11 17:37 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:00 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:00 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:00 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/04/11 18:00 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:00 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:00 | 1011 |

**Sample ID: MW-34** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-011**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 01/03/11 | 01/03/11 18:23 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:29 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:29 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:29 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/04/11 18:29 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:29 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:29 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: MW-35** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-012**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 01/03/11 | 01/03/11 18:23 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:58 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:58 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:58 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/04/11 18:58 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:58 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 18:58 | 1011 |

**Sample ID: MW-40** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-013**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Specific Inorganic Anions — Analytical Method: EPA 300.0

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **2.6** | mg/L | 0.2 | | 12/29/10 | 12/29/10 19:08 | 4005 |
| Sulfate | **8.7** | mg/L | 1.0 | | 12/29/10 | 12/29/10 19:08 | 4005 |
| Ortho-Phosphorus (as P) | ND | mg/L | 1.0 | | 12/29/10 | 12/29/10 19:08 | 4005 |

Dissolved Gases in Water — Analytical Method: SM6221B/8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | **0.0668** | mg/L | 0.0084 | | 01/04/11 | 01/04/11 00:00 | 4010 |

Total Metals — Analytical Method: SW846 6020A — Preparation Method: SW846 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **28,000** | ug/L | 10,000 | | 100 | 12/30/10 | 01/03/11 13:59 | 1034 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: MW-43** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-014**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Metals — Analytical Method: SW846 6020A — Preparation Method: SW846 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **66,000** | ug/L | 10,000 | | 100 | 12/30/10 | 01/03/11 14:05 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.2** | mg/L | 0.1 | | 1 | 01/03/11 | 01/03/11 18:46 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 19:26 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 19:26 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 19:26 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/04/11 19:26 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 19:26 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/04/11 19:26 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: RW-1B** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-015**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Metals — Analytical Method: SW846 6020A — Preparation Method: SW846 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **950** | ug/L | 100 | | 1 | 12/30/10 | 01/03/11 14:11 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

*LF - Lighter fuel/oil pattern observed in sample.*

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.1** | mg/L | 0.1 | LF | 1 | 01/03/11 | 01/03/11 18:46 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:00 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:00 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:00 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/05/11 03:00 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:00 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:00 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: RW-2D** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-016**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Metals — Analytical Method: SW846 6020A — Preparation Method: SW846 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **1,200** | ug/L | 100 | | 1 | 12/30/10 | 01/03/11 14:18 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

*LF - Lighter fuel/oil pattern observed in sample.*

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.1** | mg/L | 0.1 | LF | 1 | 01/03/11 | 01/03/11 19:09 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:28 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:28 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:28 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/05/11 03:28 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:28 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:28 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: RW-3B** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-017**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Metals — Analytical Method: SW846 6020A — Preparation Method: SW846 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **1,300** | ug/L | 100 | | 1 | 12/30/10 | 01/03/11 14:24 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

*LF - Lighter fuel/oil pattern observed in sample.*

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.1** | mg/L | 0.1 | LF | 1 | 01/03/11 | 01/03/11 19:09 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:57 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:57 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:57 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/05/11 03:57 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:57 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 03:57 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: RW-4** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-018**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Metals — Analytical Method: SW846 6020A — Preparation Method: SW846 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **1,000** | ug/L | 100 | | 1 | 12/30/10 | 01/03/11 14:30 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

*LF - Lighter fuel/oil pattern observed in sample.*

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.1** | mg/L | 0.1 | LF | 1 | 01/03/11 | 01/03/11 19:32 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 04:25 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 04:25 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 04:25 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/05/11 04:25 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 04:25 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 04:25 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: RW-5** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-019**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Metals — Analytical Method: SW846 6020A — Preparation Method: SW846 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **3,600** | ug/L | 100 | | 1 | 12/30/10 | 01/03/11 14:36 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

*LF - Lighter fuel/oil pattern observed in sample.*

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.1** | mg/L | 0.1 | LF | 1 | 01/03/11 | 01/03/11 19:32 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 04:53 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 04:53 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 04:53 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/05/11 04:53 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 04:53 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 04:53 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: RW-6** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-020**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Metals — Analytical Method: SW846 6020A — Preparation Method: SW846 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **1,900** | ug/L | 100 | | 1 | 12/30/10 | 01/03/11 14:42 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

*LF - Lighter fuel/oil pattern observed in sample.*

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.1** | mg/L | 0.1 | LF | 1 | 01/03/11 | 01/03/11 19:55 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 05:21 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 05:21 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 05:21 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/05/11 05:21 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 05:21 | 1011 |
| Naphthalene | **1** | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 05:21 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: MW-22** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-021**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Metals — Analytical Method: SW846 6020A — Preparation Method: SW846 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **2,500** | ug/L | 100 | | 1 | 12/30/10 | 01/03/11 15:07 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

*LF - Lighter fuel/oil pattern observed in sample.*

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.1** | mg/L | 0.1 | LF | 1 | 01/03/11 | 01/03/11 19:55 | 1040 |

Purgeable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 05:49 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 05:49 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 05:49 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 01/04/11 | 01/05/11 05:49 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 05:49 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 05:49 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 10122912

**Earth Data, Inc, Centerville, MD**

January 6, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, MD
Project ID: 2781

**Sample ID: System Discharge** **Date/Time Sampled: 12/28/2010 00:00** **PSS Sample ID: 10122912-022**
**Matrix: GROUND WATER** **Date/Time Received: 12/29/2010 14:00**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW846 8015C — Preparation Method: SW846 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 01/03/11 | 01/03/11 20:18 | 1040 |

Purgable Aromatics — Analytical Method: SW846 8260B — Preparation Method: SW846 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| tert-Butanol | ND | ug/L | 20 | | 1 | 01/04/11 | 01/05/11 06:17 | 1011 |
| Methyl-t-Butyl Ether | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 06:17 | 1011 |
| Benzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 06:17 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 06:17 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 06:17 | 1011 |
| m&p-Xylene | ND | ug/L | 2 | | 1 | 01/04/11 | 01/05/11 06:17 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 06:17 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 01/04/11 | 01/05/11 06:17 | 1011 |

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

## PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
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(1) CLIENT: Earth Data Inc OFFICE LOC. Centreville, MD
PROJECT MGR: Andrew Bullen PHONE NO.: (410) 758-8160
EMAIL: abullen@earthdatainc.com FAX NO.: (410) 758-8168
PROJECT NAME: Chester River Hospital Center PROJECT NO.: 2781
SITE LOCATION: Chestertown, MD P.O. NO.:
SAMPLERS: T. Lee / R. Beam / H. Wilson

PSS Work Order #: 1012912 PAGE 1 OF 3

Matrix Codes:
SW=Surface Wtr DW=Drinking Wrt GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil WL=Waste Liquid WS=Waste Solid W= Wipe

(2)

| LAB NO. | SAMPLE IDENTIFICATION | DATE | TIME | MATRIX (See Codes) | No. CONTAINERS | SAMPLE TYPE C = COMP G = GRAB |
|---|---|---|---|---|---|---|
| 1 | MW-4 | 12-28-10 | | GW | 4 | G |
| 2 | MW-5 | 12-28-10 | | GW | 5 | G |
| 3 | MW-10 | 12-28-10 | | GW | 5 | G |
| 4 | MW-11 | 12-28-10 | | GW | 4 | G |
| 5 | MW-13 | 12-28-10 | | GW | 1 | G |
| 6 | MW-16 | 12-28-10 | | GW | 4 | G |
| 7 | MW-19 | 12-28-10 | | GW | 4 | G |
| 8 | MW-20 | 12-28-10 | | GW | 9 | G |
| 9 | MW-23 | 12-28-10 | | GW | 9 | G |
| 10 | MW-33 | 12-28-10 | | GW | 4 | G |

Preservatives Used: HCl → None | HNO3 | None →

(3) Analysis/Method Required: BTEX 8260 | Naphthalene → | TPH-DRO 8015 | Total Lead 6020B | Methane | Nitrate | Sulfate | Phosphorus | REMARKS

(5)

| Relinquished By: (1) | Date | Time | Received By: |
|---|---|---|---|
| T. Lee | 12-29-10 | 11am | |
| Relinquished By: (2) | Date | Time | Received By: |
| | 12-29-10 | 2:30p | |
| Relinquished By: (3) | Date | Time | Received By: |
| Relinquished By: (4) | Date | Time | Received By: |

(4)
Requested Turnaround Time
☒ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:

# of Coolers: 3 4
Custody Seal: ABS
Ice Present: YES Temp: 1°C
Shipping Carrier: DIAL

Special Instructions:

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

## PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) CLIENT: Earth Data Inc. OFFICE LOC. Centreville, MD
PROJECT MGR: Andrew Bullen PHONE NO.: (410) 758-8160
EMAIL: abullen@earthdatainc.com FAX NO.: (410) 758-8168
PROJECT NAME: Chester River Hospital Center PROJECT NO.: 2781
SITE LOCATION: Chestertown, MD P.O. NO.:
SAMPLERS: T. Lee / R. Beam / H. Wilson

PSS Work Order #: 1012912 PAGE 2 OF 3

Matrix Codes: SW=Surface Wtr DW=Drinking Wrt GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil WL=Waste Liquid WS=Waste Solid W= Wipe

(2)

| LAB NO. | SAMPLE IDENTIFICATION | DATE | TIME | MATRIX (See Codes) | No. CONTAINERS | SAMPLE TYPE C = COMP G = GRAB | Preservatives Used: HCl → None / HNO3 / None → | Analysis/ Method Required (3): BTEX 8260 | Naphthalene | TPH-DRO | Total Iron 6020 | Methane | Nitrate | Sulfate | Phosphorus | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | MW-34 | 12-28-10 | | GW | 4 | G | | X | X | X | | | | | | |
| 12 | MW-35 | 12-28-10 | | GW | 4 | G | | X | X | X | | | | | | |
| 13 | MW-40 | 12-28-10 | | GW | 5 | G | | | | X | X | X | X | X | | |
| 14 | MW-43 | 12-28-10 | | GW | 5 | G | | X | X | X | | | | | | |
| 15 | RW-1B | 12-28-10 | | GW | 5 | G | | X | X | X | | | | | | |
| 16 | RW-2D | 12-28-10 | | GW | 5 | G | | X | X | X | | | | | | |
| 17 | RW-3B | 12-28-10 | | GW | 5 | G | | X | X | X | | | | | | |
| 18 | RW-4 | 12-28-10 | | GW | 5 | G | | X | X | X | | | | | | |
| 19 | RW-5 | 12-28-10 | | GW | 5 | G | | X | X | X | | | | | | |
| 20 | RW-6 | 12-28-10 | | GW | 5 | G | | X | X | X | | | | | | dd |

(5)

| Relinquished By: (1) | Date | Time | Received By: |
|---|---|---|---|
| T. Lee | 12-29-10 | 11am | |
| Relinquished By: (2) | Date | Time | Received By: |
| | 12-29-10 | 2:30p | Dana Dow |
| Relinquished By: (3) | Date | Time | Received By: |
| Relinquished By: (4) | Date | Time | Received By: |

(4) Requested Turnaround Time
☒ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:

# of Coolers: 3 4
Custody Seal: ABS
Ice Present: PRES Temp: 10C
Shipping Carrier: DIAL

Special Instructions:

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# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

## PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) CLIENT: Earth Data Inc. OFFICE LOC.: Centreville, MD
PROJECT MGR: Andrew Bullen PHONE NO.: (410) 758-8160
EMAIL: abullen@earthdatainc.com FAX NO.: (410) 758-8168
PROJECT NAME: Chester River Hospital Center PROJECT NO.: 2781
SITE LOCATION: Chestertown, MD P.O. NO.:
SAMPLERS: T. Lee / R. Beam / H. Wilson

PSS Work Order #: 10122912 PAGE 3 OF 3

Matrix Codes: SW=Surface Wtr DW=Drinking Wrt GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil WL=Waste Liquid WS=Waste Solid W= Wipe

(2)

| LAB NO. | SAMPLE IDENTIFICATION | DATE | TIME | MATRIX (See Codes) | No. CONTAINERS | SAMPLE TYPE C = COMP G = GRAB | Preservatives Used: HCl → None HNO3 | Analysis/ Method Required (3): BTEX | Naphthalene | MTBE | TBA | TPH-DRO | Total Iron | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | MW-22 | 12-28-10 | | GW | 5 | G | | X | X | X | X | X | X | |
| 22 | System Discharge | 12-28-10 | | GW | 4 | G | | X | X | X | X | X | X | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | |

(5)

| Relinquished By: (1) | Date | Time | Received By: |
|---|---|---|---|
| T. Lee | 12-29-10 | 11AM | |
| Relinquished By: (2) | Date | Time | Received By: |
| | 12-29-10 | 7:00 | Dana Da |
| Relinquished By: (3) | Date | Time | Received By: |
| | | | |
| Relinquished By: (4) | Date | Time | Received By: |
| | | | |

(4)

Requested Turnaround Time
☒ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:

# of Coolers: 2 4 WP
Custody Seal: ABS
Ice Present: PRES Temp: 1°C
Shipping Carrier: DIAL

Special Instructions:

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# Phase Separation Science, Inc

## Sample Receipt Checklist

| | | | |
|---|---|---|---|
| **Work Order #** | 10122912 | **Received By** | Sara Dorr |
| **Client Name** | Earth Data, Inc | **Date Received** | 12/29/2010 02:00:00 PM |
| **Project Name** | Chester River Hospital Center | **Delivered By** | Dial Courier |
| **Project Number** | 2781 | **Tracking No** | Not Applicable |
| **Disposal Date** | 02/02/2011 | **Logged In By** | Rachel Davis |

**Shipping Container(s)**

No. of Coolers 4

| | |
|---|---|
| Custody Seal(s) Intact? | N/A |
| Seal(s) Signed / Dated? | N/A |

| | |
|---|---|
| Ice | Present |
| Temp (deg C) | 1 |
| Temp Blank Present | No |

Sampler Name Tracy Lee
MD DW Cert. No. N/A

**Documentation**

| | |
|---|---|
| COC agrees with sample labels? | Yes |
| Chain of Custody | Yes |

**Sample Container**

| | |
|---|---|
| Appropriate for Specified Analysis? | Yes |
| Intact? | Yes |
| Labeled and Labels Legible? | Yes |

| | |
|---|---|
| Custody Seal(s) Intact? | Not Applicable |
| Seal(s) Signed / Dated | Not Applicable |

Total No. of Samples Received 22

Total No. of Containers Received 106

**Preservation**

| | | |
|---|---|---|
| Metals | (pH<2) | Yes |
| Cyanides | (pH>12) | N/A |
| Sulfide | (pH>9) | N/A |
| TOC, COD, Phenols | (ph<2) | N/A |
| TOX, TKN, NH3, Total Phos | (pH<2) | N/A |
| VOC, BTEX (VOA Vials Rcvd Preserved) | (pH<2) | Yes |
| Do VOA vials have zero headspace? | | Yes |

**Comments: (Any "No" response must be detailed in the comments section below.)**

**For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.**

Samples Inspected/Checklist Completed By: Rachel Davis — Date: 12/29/2010
Rachel Davis

PM Review and Approval: — Date: 12/30/2010
Simon Crisp

# Analytical Report for

## Earth Data, Inc

## Certificate of Analysis No.: 11041312

**Project Manager: Andrew Bullen**
**Project Name : Chester River Hospital Center**
**Project Location: Chestertown, Maryland**
**Project ID : 2781**

**April 21, 2011**

**Phase Separation Science, Inc.**
**6630 Baltimore National Pike**
**Baltimore, MD 21228**
**Phone: (410) 747-8770**
**Fax: (410) 788-8723**

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**FAX 410-788-8723**

# PHASE SEPARATION SCIENCE, INC.

April 21, 2011

**Andrew Bullen**
**Earth Data, Inc**
131 Comet Drive
Centerville, MD 21617

Reference: PSS Work Order No: **11041312**
Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID.: 2781

Dear Andrew Bullen :

The attached Analytical and QC Summary lists the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order numbered **11041312**.

All work reported herein has been performed in accordance with current NELAP standards referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on May 18, 2011. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 10 years, after which time it will be disposed without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Dan Prucnal

**Dan Prucnal**
Laboratory Manager

# Sample Summary

## Client Name: Earth Data, Inc

## Project Name: Chester River Hospital Center

**Project ID: 2781**

**Work Order Number: 11041312**

The following samples were received under chain of custody by Phase Separation Science (PSS) on 04/13/2011 at 12:35 pm

| Lab Sample Id | Sample Id | Matrix | Date/Time Collected |
|---|---|---|---|
| 11041312-001 | MW-5 | GROUND WATER | 04/12/2011 14:45 |
| 11041312-002 | MW-9 | GROUND WATER | 04/12/2011 14:25 |
| 11041312-003 | MW-20 | GROUND WATER | 04/12/2011 13:05 |
| 11041312-004 | MW-22 | GROUND WATER | 04/12/2011 15:15 |
| 11041312-005 | MW-23 | GROUND WATER | 04/12/2011 12:28 |
| 11041312-006 | MW-40 | GROUND WATER | 04/12/2011 13:30 |
| 11041312-007 | MW-43 | GROUND WATER | 04/12/2011 14:00 |
| 11041312-008 | RW-4 | GROUND WATER | 04/12/2011 15:20 |

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

**Notes:**

1. The presence of common laboratory contaminants such as acetone, methylene chloride and phthalates, may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].

**Standard Flags/Abbreviations:**

- B A target analyte or commone laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- C Results Pending Final Confirmation.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
- J The target analyte was positively identified below the reporting limit but greater than the LOD.
- LOD Limit of Detection. An estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte and matrix specific.
- ND Not Detected at or above the reporting limit.
- RL PSS Reporting Limit.
- U Not detected.

# Case Narrative Summary

**Client Name: Earth Data, Inc**

**Project Name: Chester River Hospital Center**

Project ID: 2781 Work Order Number: 11041312

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

**Sample Receipt:**

All sample receipt conditions were acceptable.

Analyses associated with analyst code 4005 were performed by Enviro-Chem Laboratories, Inc.
Analyses associated with analyst code 4010 were performed by Maryland Spectral Services
**NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.**
EPA 300.0, SM 6211B/EPA 8015

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**BALTIMORE, MD 21228**
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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11041312

**Earth Data, Inc, Centerville, MD**

April 21, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-5** **Date/Time Sampled: 04/12/2011 14:45** **PSS Sample ID: 11041312-001**
**Matrix: GROUND WATER** **Date/Time Received: 04/13/2011 12:35**

Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **4.3** | mg/L | 0.1 | | 1 | 04/13/11 | 04/13/11 17:27 | 1035 |
| Sulfate | **0.3** | mg/L | 0.2 | | 1 | 04/13/11 | 04/18/11 18:19 | 1035 |

Specific Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Phosphate | ND | mg/L | 1.0 | | 04/13/11 | 04/14/11 23:32 | 4005 |

Dissolved Gases in Water — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | ND | mg/L | 0.0053 | | 04/19/11 | 04/19/11 00:00 | 4010 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.3** | mg/L | 0.1 | | 1 | 04/14/11 | 04/14/11 14:34 | 1040 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11041312

**Earth Data, Inc, Centerville, MD**

April 21, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-9** **Date/Time Sampled: 04/12/2011 14:25** **PSS Sample ID: 11041312-002**
**Matrix: GROUND WATER** **Date/Time Received: 04/13/2011 12:35**

Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **1.7** | mg/L | 0.1 | | 1 | 04/13/11 | 04/13/11 17:43 | 1035 |
| Sulfate | ND | mg/L | 0.2 | | 1 | 04/13/11 | 04/18/11 18:35 | 1035 |

Specific Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Phosphate | ND | mg/L | 1.0 | | 04/13/11 | 04/15/11 00:23 | 4005 |

Dissolved Gases in Water — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | **2.45** | mg/L | 0.0058 | | 04/19/11 | 04/19/11 00:00 | 4010 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.2** | mg/L | 0.1 | | 1 | 04/14/11 | 04/14/11 14:55 | 1040 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11041312

**Earth Data, Inc, Centerville, MD**

April 21, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-20** **Date/Time Sampled: 04/12/2011 13:05** **PSS Sample ID: 11041312-003**
**Matrix: GROUND WATER** **Date/Time Received: 04/13/2011 12:35**

Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **3.3** | mg/L | 0.1 | | 1 | 04/13/11 | 04/13/11 17:58 | 1035 |
| Sulfate | ND | mg/L | 0.2 | | 1 | 04/13/11 | 04/18/11 18:50 | 1035 |

Specific Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Phosphate | ND | mg/L | 1.0 | | 04/13/11 | 04/15/11 00:40 | 4005 |

Dissolved Gases in Water — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | ND | mg/L | 0.0062 | | 04/19/11 | 04/19/11 00:00 | 4010 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.2** | mg/L | 0.1 | | 1 | 04/14/11 | 04/14/11 17:10 | 1040 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11041312

**Earth Data, Inc, Centerville, MD**

April 21, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-22** **Date/Time Sampled: 04/12/2011 15:15** **PSS Sample ID: 11041312-004**
**Matrix: GROUND WATER** **Date/Time Received: 04/13/2011 12:35**

Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **2.5** | mg/L | 0.1 | | 1 | 04/13/11 | 04/13/11 22:05 | 1035 |
| Sulfate | **0.8** | mg/L | 0.2 | | 1 | 04/13/11 | 04/13/11 22:05 | 1035 |

Specific Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Phosphate | ND | mg/L | 1.0 | | 04/13/11 | 04/15/11 00:56 | 4005 |

Dissolved Gases in Water — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | **0.670** | mg/L | 0.0058 | | 04/19/11 | 04/19/11 00:00 | 4010 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 04/14/11 | 04/14/11 16:07 | 1040 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11041312

**Earth Data, Inc, Centerville, MD**

April 21, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-23** **Date/Time Sampled: 04/12/2011 12:28** **PSS Sample ID: 11041312-005**
**Matrix: GROUND WATER** **Date/Time Received: 04/13/2011 12:35**

Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **3.1** | mg/L | 0.1 | | 1 | 04/13/11 | 04/13/11 22:20 | 1035 |
| Sulfate | **0.3** | mg/L | 0.2 | | 1 | 04/13/11 | 04/13/11 22:20 | 1035 |

Specific Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Phosphate | ND | mg/L | 1.0 | | 04/13/11 | 04/15/11 01:13 | 4005 |

Dissolved Gases in Water — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | ND | mg/L | 0.0061 | | 04/19/11 | 04/19/11 00:00 | 4010 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 04/14/11 | 04/14/11 16:28 | 1040 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11041312

**Earth Data, Inc, Centerville, MD**

April 21, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-40** **Date/Time Sampled: 04/12/2011 13:30** **PSS Sample ID: 11041312-006**
**Matrix: GROUND WATER** **Date/Time Received: 04/13/2011 12:35**

Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **1.7** | mg/L | 0.1 | | 1 | 04/13/11 | 04/13/11 22:35 | 1035 |
| Sulfate | **0.5** | mg/L | 0.2 | | 1 | 04/13/11 | 04/13/11 22:35 | 1035 |

Specific Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Phosphate | ND | mg/L | 1.0 | | 04/13/11 | 04/15/11 01:30 | 4005 |

Dissolved Gases in Water — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | **0.485** | mg/L | 0.0058 | | 04/19/11 | 04/19/11 00:00 | 4010 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **200** | mg/L | 5 | | 50 | 04/14/11 | 04/14/11 18:34 | 1040 |

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**800-932-9047**
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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11041312

**Earth Data, Inc, Centerville, MD**

April 21, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-43** **Date/Time Sampled: 04/12/2011 14:00** **PSS Sample ID: 11041312-007**
**Matrix: GROUND WATER** **Date/Time Received: 04/13/2011 12:35**

Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **1.1** | mg/L | 0.1 | | 1 | 04/13/11 | 04/13/11 22:51 | 1035 |
| Sulfate | **5.5** | mg/L | 0.2 | | 1 | 04/13/11 | 04/13/11 22:51 | 1035 |

Specific Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Phosphate | ND | mg/L | 1.0 | | 04/13/11 | 04/15/11 01:47 | 4005 |

Dissolved Gases in Water — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | ND | mg/L | 0.0061 | | 04/19/11 | 04/19/11 00:00 | 4010 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 04/14/11 | 04/14/11 17:31 | 1040 |

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**FAX 410-788-8723**

# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11041312

**Earth Data, Inc, Centerville, MD**

April 21, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: RW-4** **Date/Time Sampled: 04/12/2011 15:20** **PSS Sample ID: 11041312-008**
**Matrix: GROUND WATER** **Date/Time Received: 04/13/2011 12:35**

Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **4.9** | mg/L | 0.1 | | 1 | 04/13/11 | 04/13/11 23:06 | 1035 |
| Sulfate | ND | mg/L | 0.2 | | 1 | 04/13/11 | 04/13/11 23:06 | 1035 |

Specific Inorganic Anions — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Phosphate | ND | mg/L | 1.0 | | 04/13/11 | 04/15/11 02:04 | 4005 |

Dissolved Gases in Water — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | **0.334** | mg/L | 0.0058 | | 04/19/11 | 04/19/11 00:00 | 4010 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 04/14/11 | 04/14/11 17:52 | 1040 |

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

## PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) CLIENT: Earth Data Inc. OFFICE LOC.: Centreville, MD
PROJECT MGR: Andrew Bullen PHONE NO.: (410) 758-8166
EMAIL: abullen@earthdatainc.com FAX NO.: (410) 758-8168
PROJECT NAME: Chester River Hospital Center PROJECT NO.: 2781
SITE LOCATION: Chestertown, MD P.O. NO.:
SAMPLERS: T. Lee / R. Beam

PSS Work Order #: 1104312 PAGE 1 OF 1

Matrix Codes: **SW**=Surface Wtr **DW**=Drinking Wrt **GW**=Ground Wtr **WW**=Waste Wtr **O**=Oil **S**=Soil **WL**=Waste Liquid **WS**=Waste Solid **W**= Wipe

(2)

| LAB NO. | SAMPLE IDENTIFICATION | DATE | TIME | MATRIX (See Codes) | No. CONTAINERS | SAMPLE TYPE C = COMP G = GRAB | Preservatives Used: None | Analysis/ Method Required (3): Nitrate / Sulfate / Phosphate / Methane / TPH-DRO | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-5 | 4-12-11 | 1445 | GW | 5 | G | | | |
| 2 | MW-9 | 4-12-11 | 1425 | GW | 5 | G | | | |
| 3 | MW-20 | 4-12-11 | 1305 | GW | 5 | G | | | |
| 4 | MW-22 | 4-12-11 | 1515 | GW | 5 | G | | | |
| 5 | MW-23 | 4-12-11 | 1228 | GW | 5 | G | | | |
| 6 | MW-40 | 4-12-11 | 1330 | GW | 5 | G | | | Free product |
| 7 | MW-43 | 4-12-11 | 1400 | GW | 5 | G | | | |
| 8 | RW-4 | 4-12-11 | 1520 | GW | 5 | G | | | |
| | | | | | | | | | |
| | | | | | | | | | |

(5)

| Relinquished By: (1) | Date | Time | Received By: |
|---|---|---|---|
| T. Lee | 4-13-11 | 10:55 | E. Belletiere |
| Relinquished By: (2) E. Belletiere | 4-13-11 | 12:35 | Received By: |
| Relinquished By: (3) | Date | Time | Received By: |
| Relinquished By: (4) | Date | Time | Received By: |

(4)

**Requested Turnaround Time**
☒ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:

# of Coolers: 2
Custody Seal: ABS
Ice Present: PRES Temp: 3°C
Shipping Carrier: DIAL

Special Instructions:
48-Hour Holding Time For Nitrates

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

# Phase Separation Science, Inc

## Sample Receipt Checklist

| | | | |
|---|---|---|---|
| **Work Order #** | 11041312 | **Received By** | Lynn Moran |
| **Client Name** | Earth Data, Inc | **Date Received** | 04/13/2011 12:35:00 PM |
| **Project Name** | Chester River Hospital Center | **Delivered By** | Dial Courier |
| **Project Number** | 2781 | **Tracking No** | Not Applicable |
| **Disposal Date** | 05/18/2011 | **Logged In By** | Sara Dorr |

**Shipping Container(s)**

| | | | |
|---|---|---|---|
| No. of Coolers | 1 | Ice | Present |
| | | Temp (deg C) | 3 |
| Custody Seal(s) Intact? | N/A | Temp Blank Present | No |
| Seal(s) Signed / Dated? | N/A | | |

**Documentation**

| | | | |
|---|---|---|---|
| | | Sampler Name | T. Lee |
| | | MD DW Cert. No. | N/A |
| COC agrees with sample labels? | Yes | | |
| Chain of Custody | Yes | | |

**Sample Container**

| | | | |
|---|---|---|---|
| | | Custody Seal(s) Intact? | Not Applicable |
| Appropriate for Specified Analysis? | Yes | Seal(s) Signed / Dated | Not Applicable |
| Intact? | Yes | | |
| Labeled and Labels Legible? | Yes | | |

| | |
|---|---|
| Total No. of Samples Received | 8 |
| Total No. of Containers Received | 40 |

**Preservation**

| | | |
|---|---|---|
| Metals | (pH<2) | N/A |
| Cyanides | (pH>12) | N/A |
| Sulfide | (pH>9) | N/A |
| TOC, COD, Phenols | (ph<2) | N/A |
| TOX, TKN, NH3, Total Phos | (pH<2) | N/A |
| VOC, BTEX (VOA Vials Rcvd Preserved) | (pH<2) | N/A |
| Do VOA vials have zero headspace? | | Yes |

**Comments: (Any "No" response must be detailed in the comments section below.)**

**For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.**

Samples Inspected/Checklist Completed By: Sara Dorr — Date: 04/13/2011

Sara Dorr

PM Review and Approval: — Date: 04/15/2011

Simon Crisp

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

## PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1)
CLIENT: Earth Data Inc. OFFICE LOC. Centreville, MD
PROJECT MGR: Andrew Bullen PHONE NO.: (410) 758-8160
EMAIL: abullen@earthdatainc.com FAX NO.: (410) 758-8168
PROJECT NAME: Chester River Hospital Center PROJECT NO.: 2781
SITE LOCATION: Chestertown, MD P.O. NO.:
SAMPLERS: T. Lee / R. Beam

PSS Work Order #: 1104312 PAGE 1 OF 1

Matrix Codes: **SW**=Surface Wtr **DW**=Drinking Wrt **GW**=Ground Wtr **WW**=Waste Wtr **O**=Oil **S**=Soil **WL**=Waste Liquid **WS**=Waste Solid **W**= Wipe

(2)

| LAB NO. | SAMPLE IDENTIFICATION | DATE | TIME | MATRIX (See Codes) | No. CONTAINERS | SAMPLE TYPE C = COMP G = GRAB | Preservatives Used: None | Analysis/ Method Required (3): Nitrate | Sulfate | Phosphate | Methane | TPH-DRO | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-5 | 4-12-11 | 1445 | GW | 5 | G | | X | X | X | X | X | |
| 2 | MW-9 | 4-12-11 | 1425 | GW | 5 | G | | X | X | X | X | X | |
| 3 | MW-20 | 4-12-11 | 1305 | GW | 5 | G | | X | X | X | X | X | |
| 4 | MW-22 | 4-12-11 | 1515 | GW | 5 | G | | X | X | X | X | X | |
| 5 | MW-23 | 4-12-11 | 1228 | GW | 5 | G | | X | X | X | X | X | |
| 6 | MW-40 | 4-12-11 | 1330 | GW | 5 | G | | X | X | X | X | X | Free product |
| 7 | MW-43 | 4-12-11 | 1400 | GW | 5 | G | | X | X | X | X | X | |
| 8 | RW-4 | 4-12-11 | 1520 | GW | 5 | G | | X | X | X | X | X | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

(5)

| Relinquished By: | Date | Time | Received By: |
|---|---|---|---|
| (1) T. Lee | 4-13-11 | 10:55 | |
| (2) | 4-13-11 | 12:35 | |
| (3) | | | |
| (4) | | | |

(4)
**Requested Turnaround Time**
☒ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:

# of Coolers: 2
Custody Seal: ABS
Ice Present: PRES Temp: 3°C
Shipping Carrier: DIAL

Special Instructions:
48-HOUR HOLDING TIME FOR NITRATES

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# Analytical Report for

## Earth Data, Inc

## Certificate of Analysis No.: 11062413

**Project Manager: Andrew Bullen**
**Project Name : Chester River Hospital Center**
**Project Location: Chestertown, Maryland**
**Project ID : 2781**

**July 1, 2011**

**Phase Separation Science, Inc.**
**6630 Baltimore National Pike**
**Baltimore, MD 21228**
**Phone: (410) 747-8770**
**Fax: (410) 788-8723**

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**800-932-9047**
**FAX 410-788-8723**

# PHASE SEPARATION SCIENCE, INC.

July 1, 2011

**Andrew Bullen**
**Earth Data, Inc**
131 Comet Drive
Centerville, MD 21617

Reference: PSS Work Order No: **11062413**
Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID.: 2781

Dear Andrew Bullen :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order numbered **11062413**.

All work reported herein has been performed in accordance with current NELAP standards referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on July 29, 2011. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

**John Richardson**
Laboratory Director

# Sample Summary

## Client Name: Earth Data, Inc

## Project Name: Chester River Hospital Center

**Project ID: 2781** **Work Order Number: 11062413**

The following samples were received under chain of custody by Phase Separation Science (PSS) on 06/24/2011 at 12:55 pm

| Lab Sample Id | Sample Id | Matrix | Date/Time Collected |
|---|---|---|---|
| 11062413-001 | MW-4 | GROUND WATER | 06/23/2011 00:00 |
| 11062413-002 | MW-11 | GROUND WATER | 06/23/2011 00:00 |
| 11062413-003 | MW-16 | GROUND WATER | 06/23/2011 00:00 |
| 11062413-004 | MW-19 | GROUND WATER | 06/23/2011 00:00 |
| 11062413-005 | MW-33 | GROUND WATER | 06/23/2011 00:00 |
| 11062413-006 | MW-34 | GROUND WATER | 06/23/2011 00:00 |
| 11062413-007 | MW-35 | GROUND WATER | 06/23/2011 00:00 |
| 11062413-008 | System Discharge | GROUND WATER | 06/23/2011 00:00 |

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

**Notes:**

1. The presence of common laboratory contaminants such as acetone, methylene chloride and phthalates, may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].

**Standard Flags/Abbreviations:**

B A target analyte or commone laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C Results Pending Final Confirmation.
E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J The target analyte was positively identified below the reporting limit but greater than the LOD.
LOD Limit of Detection. An estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte and matrix specific.
ND Not Detected at or above the reporting limit.
RL PSS Reporting Limit.
U Not detected.

# Case Narrative Summary

**Client Name: Earth Data, Inc**

**Project Name: Chester River Hospital Center**

Project ID: 2781 Work Order Number: 11062413

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

**Sample Receipt:**

All sample receipt conditions were acceptable.

**NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.**

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**FAX 410-788-8723**

# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11062413

**Earth Data, Inc, Centerville, MD**

July 1, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-4** **Date/Time Sampled: 06/23/2011 00:00** **PSS Sample ID: 11062413-001**
**Matrix: GROUND WATER** **Date/Time Received: 06/24/2011 12:55**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 06/29/11 | 06/29/11 16:57 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 09:18 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 09:18 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 09:18 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 06/30/11 | 07/01/11 09:18 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 09:18 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 09:18 | 1011 |

**Sample ID: MW-11** **Date/Time Sampled: 06/23/2011 00:00** **PSS Sample ID: 11062413-002**
**Matrix: GROUND WATER** **Date/Time Received: 06/24/2011 12:55**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.1** | mg/L | 0.1 | | 1 | 06/29/11 | 06/29/11 16:57 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 09:47 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 09:47 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 09:47 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 06/30/11 | 07/01/11 09:47 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 09:47 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 09:47 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11062413

**Earth Data, Inc, Centerville, MD**

July 1, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-16** **Date/Time Sampled: 06/23/2011 00:00** **PSS Sample ID: 11062413-003**
**Matrix: GROUND WATER** **Date/Time Received: 06/24/2011 12:55**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 06/29/11 | 06/29/11 17:21 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 10:15 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 10:15 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 10:15 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 06/30/11 | 07/01/11 10:15 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 10:15 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 10:15 | 1011 |

**Sample ID: MW-19** **Date/Time Sampled: 06/23/2011 00:00** **PSS Sample ID: 11062413-004**
**Matrix: GROUND WATER** **Date/Time Received: 06/24/2011 12:55**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 06/29/11 | 06/29/11 17:21 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 10:44 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 10:44 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 10:44 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 06/30/11 | 07/01/11 10:44 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 10:44 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 10:44 | 1011 |

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**410-747-8770**
**800-932-9047**
**FAX 410-788-8723**

# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11062413

**Earth Data, Inc, Centerville, MD**

July 1, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-33** **Date/Time Sampled: 06/23/2011 00:00** **PSS Sample ID: 11062413-005**
**Matrix: GROUND WATER** **Date/Time Received: 06/24/2011 12:55**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 06/29/11 | 06/29/11 17:44 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 11:13 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 11:13 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 11:13 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 06/30/11 | 07/01/11 11:13 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 11:13 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 11:13 | 1011 |

**Sample ID: MW-34** **Date/Time Sampled: 06/23/2011 00:00** **PSS Sample ID: 11062413-006**
**Matrix: GROUND WATER** **Date/Time Received: 06/24/2011 12:55**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 06/29/11 | 06/29/11 17:44 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 12:16 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 12:16 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 12:16 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 06/30/11 | 07/01/11 12:16 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 12:16 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 12:16 | 1011 |

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**BALTIMORE, MD 21228**
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**800-932-9047**
**FAX 410-788-8723**

# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11062413

**Earth Data, Inc, Centerville, MD**

July 1, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-35** **Date/Time Sampled: 06/23/2011 00:00** **PSS Sample ID: 11062413-007**
**Matrix: GROUND WATER** **Date/Time Received: 06/24/2011 12:55**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 06/29/11 | 06/29/11 18:08 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 12:45 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 12:45 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 12:45 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 06/30/11 | 07/01/11 12:45 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 12:45 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 12:45 | 1011 |

**Sample ID: System Discharge** **Date/Time Sampled: 06/23/2011 00:00** **PSS Sample ID: 11062413-008**
**Matrix: GROUND WATER** **Date/Time Received: 06/24/2011 12:55**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.1** | mg/L | 0.1 | | 1 | 06/29/11 | 06/29/11 18:08 | 1040 |

BTEX MTBE TBA Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| tert-Butyl alcohol | ND | ug/L | 20 | | 1 | 06/30/11 | 07/01/11 13:14 | 1011 |
| Methyl-t-butyl ether | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 13:14 | 1011 |
| Benzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 13:14 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 13:14 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 13:14 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 06/30/11 | 07/01/11 13:14 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 13:14 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 06/30/11 | 07/01/11 13:14 | 1011 |

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

## PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) CLIENT: Earth Data Inc. OFFICE LOC.: Centreville, MD
PROJECT MGR: Andrew Bullen PHONE NO.: (410) 758-8160
EMAIL: abullen@earthdatainc.com FAX NO.: (410) 758-8168
PROJECT NAME: Chester River Hospital Center PROJECT NO.: 2781
SITE LOCATION: Chestertown, MD P.O. NO.:
SAMPLERS: T. Lee / R. Beam

PSS Work Order #: 11062413 PAGE 1 OF 1

Matrix Codes: SW=Surface Wtr DW=Drinking Wrt GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil WL=Waste Liquid WS=Waste Solid W= Wipe

(2)

| LAB NO. | SAMPLE IDENTIFICATION | DATE | TIME | MATRIX (See Codes) | No. CONTAINERS | SAMPLE TYPE C = COMP G = GRAB | Preservatives Used | Analysis/ Method Required (3) BTEX | Naphthalene | MTBE | TBA | TPH-DRO | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | HCl → None | | | | | | |
| 1 | MW-4 | 6-23-11 | | GW | 4 | G | | X | X | | | X | |
| 2 | MW-11 | 6-23-11 | | GW | 4 | G | | X | X | | | X | |
| 3 | MW-16 | 6-23-11 | | GW | 4 | G | | X | X | | | X | |
| 4 | MW-19 | 6-23-11 | | GW | 4 | G | | X | X | | | X | |
| 5 | MW-33 | 6-23-11 | | GW | 4 | G | | X | X | | | X | |
| 6 | MW-34 | 6-23-11 | | GW | 4 | G | | X | X | | | X | |
| 7 | MW-35 | 6-23-11 | | GW | 4 | G | | X | X | | | X | |
| 8 | System Discharge | 6-23-11 | | GW | 4 | G | | X | X | X | X | X | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

(5)

| Relinquished By: (1) | Date | Time | Received By: |
|---|---|---|---|
| T. Lee | 6-24-11 | 1040 | D Toomey |
| Relinquished By: (2) D Toomey | Date 11 | Time 1255 | Received By: |
| Relinquished By: (3) | Date | Time | Received By: |
| Relinquished By: (4) | Date | Time | Received By: |

(4)

Requested Turnaround Time
☒ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:

# of Coolers: 1
Custody Seal: ABS
Ice Present: YES Temp 4°
Shipping Carrier: DHL

Special Instructions:




6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

# Phase Separation Science, Inc

## Sample Receipt Checklist

| | | | |
|---|---|---|---|
| **Work Order #** | 11062413 | **Received By** | Sara Dorr |
| **Client Name** | Earth Data, Inc | **Date Received** | 06/24/2011 12:55:00 PM |
| **Project Name** | Chester River Hospital Center | **Delivered By** | Dial Courier |
| **Project Number** | 2781 | **Tracking No** | Not Applicable |
| **Disposal Date** | 07/29/2011 | **Logged In By** | Lynn Moran |

**Shipping Container(s)**

| | | | |
|---|---|---|---|
| No. of Coolers | 1 | Ice | Present |
| | | Temp (deg C) | 4 |
| Custody Seal(s) Intact? | N/A | Temp Blank Present | No |
| Seal(s) Signed / Dated? | N/A | | |
| | | Sampler Name | T. Lee |
| | | MD DW Cert. No. | N/A |

**Documentation**

| | |
|---|---|
| COC agrees with sample labels? | Yes |
| Chain of Custody | Yes |

**Sample Container**

| | | | |
|---|---|---|---|
| Appropriate for Specified Analysis? | Yes | Custody Seal(s) Intact? | Not Applicable |
| Intact? | Yes | Seal(s) Signed / Dated | Not Applicable |
| Labeled and Labels Legible? | Yes | | |

Total No. of Samples Received 8

Total No. of Containers Received 32

**Preservation**

| | | |
|---|---|---|
| Metals | (pH<2) | N/A |
| Cyanides | (pH>12) | N/A |
| Sulfide | (pH>9) | N/A |
| TOC, COD, Phenols | (ph<2) | N/A |
| TOX, TKN, NH3, Total Phos | (pH<2) | N/A |
| VOC, BTEX (VOA Vials Rcvd Preserved) | (pH<2) | Yes |
| Do VOA vials have zero headspace? | | Yes |

**Comments: (Any "No" response must be detailed in the comments section below.)**

**For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.**

Samples Inspected/Checklist Completed By: Lynn Moran Date: 06/24/2011

PM Review and Approval: Simon Crisp Date: 06/24/2011

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM


**PHASE SEPARATION SCIENCE, INC.**

www.phaseonline.com
email: info@phaseonline.com


(1)

CLIENT: Earth Data Inc. OFFICE LOC.: Centreville, MD
PROJECT MGR: Andrew Bullen PHONE NO.: (410) 758-8160
EMAIL: abullen@earthdatainc.com FAX NO.: (410) 758-8168
PROJECT NAME: Chester River Hospital Center PROJECT NO.: 2781
SITE LOCATION: Chestertown, MD P.O. NO.:
SAMPLERS: T. Lee / R. Beam

PSS Work Order #: 1106243 PAGE 1 OF 1

Matrix Codes:
**SW**=Surface Wtr **DW**=Drinking Wrt **GW**=Ground Wtr **WW**=Waste Wtr **O**=Oil **S**=Soil **WL**=Waste Liquid **WS**=Waste Solid **W**= Wipe

(2)

| LAB NO. | SAMPLE IDENTIFICATION | DATE | TIME | MATRIX (See Codes) | No. CONTAINERS | SAMPLE TYPE C = COMP G = GRAB | Preservatives Used: HCl → None | Analysis/ Method Required (3): BTEX | Naphthalene | MTBE | TBA | TPH-DRO | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-4 | 6-23-11 | | GW | 4 | G | | X | X | | | X | |
| 2 | MW-11 | 6-23-11 | | GW | 4 | G | | X | X | | | X | |
| 3 | MW-16 | 6-23-11 | | GW | 4 | G | | X | X | | | X | |
| 4 | MW-19 | 6-23-11 | | GW | 4 | G | | X | X | | | X | |
| 5 | MW-33 | 6-23-11 | | GW | 4 | G | | X | X | | | X | |
| 6 | MW-34 | 6-23-11 | | GW | 4 | G | | X | X | | | X | |
| 7 | MW-35 | 6-23-11 | | GW | 4 | G | | X | X | | | X | |
| 8 | System Discharge | 6-23-11 | | GW | 4 | G | | X | X | X | X | X | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

(5)

| Relinquished By: | Date | Time | Received By: |
|---|---|---|---|
| (1) T. Lee | 6-24-11 | 1040 | S Towsome |
| (2) S Towsome | 11 | 1255 | Sarah B |
| (3) | | | |
| (4) | | | |

(4)

**Requested Turnaround Time**
☒ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:

# of Coolers: 1
Custody Seal: ABS
Ice Present: YES Temp: 4°
Shipping Carrier: DIA

Special Instructions:


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# Analytical Report for



## Earth Data, Inc

## Certificate of Analysis No.: 11062816

**Project Manager: Andrew Bullen**
**Project Name : Chester River Hospital Center**
**Project Location: Chestertown, Maryland**
**Project ID : 2781**

**July 12, 2011**

**Phase Separation Science, Inc.**
**6630 Baltimore National Pike**
**Baltimore, MD 21228**
**Phone: (410) 747-8770**
**Fax: (410) 788-8723**

**OFFICES:**
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**FAX 410-788-8723**

# PHASE SEPARATION SCIENCE, INC.

July 12, 2011

**Andrew Bullen**
**Earth Data, Inc**
131 Comet Drive
Centerville, MD 21617

Reference: PSS Work Order No: **11062816**
Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID.: 2781

Dear Andrew Bullen :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order numbered **11062816**.

All work reported herein has been performed in accordance with current NELAP standards referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on August 2, 2011. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Dan Prucnal

**Dan Prucnal**
Laboratory Manager

# Sample Summary

## Client Name: Earth Data, Inc

## Project Name: Chester River Hospital Center

**Project ID: 2781**

**Work Order Number: 11062816**

The following samples were received under chain of custody by Phase Separation Science (PSS) on 06/28/2011 at 02:10 pm

| Lab Sample Id | Sample Id | Matrix | Date/Time Collected |
|---|---|---|---|
| 11062816-001 | MW-5 | GROUND WATER | 06/27/2011 13:15 |
| 11062816-002 | MW-9 | GROUND WATER | 06/27/2011 11:35 |
| 11062816-003 | MW-20 | GROUND WATER | 06/27/2011 11:00 |
| 11062816-004 | MW-23 | GROUND WATER | 06/27/2011 10:25 |
| 11062816-005 | MW-40 | GROUND WATER | 06/27/2011 12:30 |
| 11062816-006 | MW-43 | GROUND WATER | 06/27/2011 12:10 |
| 11062816-007 | RW-4 | GROUND WATER | 06/27/2011 13:40 |
| 11062816-008 | MW-22 | GROUND WATER | 06/27/2011 13:50 |

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

**Notes:**

1. The presence of common laboratory contaminants such as acetone, methylene chloride and phthalates, may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].

**Standard Flags/Abbreviations:**

B A target analyte or commone laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
C Results Pending Final Confirmation.
E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
J The target analyte was positively identified below the reporting limit but greater than the LOD.
LOD Limit of Detection. An estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte and matrix specific.
ND Not Detected at or above the reporting limit.
RL PSS Reporting Limit.
U Not detected.

# Case Narrative Summary

**Client Name: Earth Data, Inc**

**Project Name: Chester River Hospital Center**

Project ID: 2781 Work Order Number: 11062816

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

**Sample Receipt:**

All sample receipt conditions were acceptable.

Analyses associated with analyst code 4005 were performed by Enviro-Chem Laboratories, Inc.
Analyses associated with analyst code 4010 were performed by Maryland Spectral Services

**General Comments:**
Phosphate analysis performed beyond 48 hours from sampling.
**NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.**
EPA 300.0, SM 6211B/EPA 8015

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**BALTIMORE, MD 21228**
**410-747-8770**
**800-932-9047**
**FAX 410-788-8723**

# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11062816

**Earth Data, Inc, Centerville, MD**

July 12, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-5** **Date/Time Sampled: 06/27/2011 13:15** **PSS Sample ID: 11062816-001**
**Matrix: GROUND WATER** **Date/Time Received: 06/28/2011 14:10**

Phosphate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Ortho-Phosphorus as P | ND | mg/L | 1.0 | | 06/28/11 | 06/29/11 17:07 | 4005 |

Sulfate + Nitrate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **4.2** | mg/L | 0.1 | | 1 | 06/28/11 | 06/28/11 17:49 | 1035 |
| Sulfate | **0.3** | mg/L | 0.2 | | 1 | 06/28/11 | 06/28/11 17:49 | 1035 |

Dissolved Methane — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | **0.0097** | mg/L | 0.0061 | | 06/30/11 | 06/30/11 14:08 | 4010 |

Total Iron — Analytical Method: SW-846 6020 A — Preparation Method: 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | ND | ug/L | 100 | | 1 | 07/01/11 | 07/01/11 16:55 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 06/30/11 | 06/30/11 17:40 | 1040 |

Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | ug/L | 1 | | 1 | 07/02/11 | 07/03/11 09:40 | 1011 |

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**800-932-9047**
**FAX 410-788-8723**

# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11062816

**Earth Data, Inc, Centerville, MD**

July 12, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-9** **Date/Time Sampled: 06/27/2011 11:35** **PSS Sample ID: 11062816-002**
**Matrix: GROUND WATER** **Date/Time Received: 06/28/2011 14:10**

Phosphate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Ortho-Phosphorus as P | ND | mg/L | 1.0 | | 06/28/11 | 06/29/11 18:00 | 4005 |

Sulfate + Nitrate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **1.4** | mg/L | 0.1 | | 1 | 06/28/11 | 06/28/11 18:05 | 1035 |
| Sulfate | **0.3** | mg/L | 0.2 | | 1 | 06/28/11 | 06/28/11 18:05 | 1035 |

Dissolved Methane — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | **0.760** | mg/L | 0.0064 | | 06/30/11 | 06/30/11 14:42 | 4010 |

Total Iron — Analytical Method: SW-846 6020 A — Preparation Method: 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **38,000** | ug/L | 10,000 | | 100 | 07/01/11 | 07/05/11 12:59 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **3.8** | mg/L | 0.1 | | 1 | 06/30/11 | 06/30/11 17:40 | 1040 |

Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | **5** | ug/L | 1 | | 1 | 07/02/11 | 07/03/11 10:09 | 1011 |

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**ROUTE 40 WEST**
**BALTIMORE, MD 21228**
**410-747-8770**
**800-932-9047**
**FAX 410-788-8723**

# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11062816
**Earth Data, Inc, Centerville, MD**
July 12, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-20** **Date/Time Sampled: 06/27/2011 11:00** **PSS Sample ID: 11062816-003**
**Matrix: GROUND WATER** **Date/Time Received: 06/28/2011 14:10**

Phosphate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Ortho-Phosphorus as P | ND | mg/L | 1.0 | | 06/28/11 | 06/29/11 18:18 | 4005 |

Sulfate + Nitrate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **2.8** | mg/L | 0.1 | | 1 | 06/28/11 | 06/28/11 18:20 | 1035 |
| Sulfate | **0.3** | mg/L | 0.2 | | 1 | 06/28/11 | 06/28/11 18:20 | 1035 |

Dissolved Methane — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | **0.0074** | mg/L | 0.0056 | | 06/30/11 | 06/30/11 14:55 | 4010 |

Total Iron — Analytical Method: SW-846 6020 A — Preparation Method: 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **17,000** | ug/L | 10,000 | | 100 | 07/01/11 | 07/05/11 13:04 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **5.5** | mg/L | 0.1 | | 1 | 06/30/11 | 06/30/11 18:04 | 1040 |

Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | ug/L | 1 | | 1 | 07/02/11 | 07/03/11 10:38 | 1011 |

OFFICES:
6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11062816

**Earth Data, Inc, Centerville, MD**

July 12, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-23** **Date/Time Sampled: 06/27/2011 10:25** **PSS Sample ID: 11062816-004**
**Matrix: GROUND WATER** **Date/Time Received: 06/28/2011 14:10**

Phosphate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Ortho-Phosphorus as P | ND | mg/L | 1.0 | | 06/28/11 | 06/29/11 18:36 | 4005 |

Sulfate + Nitrate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **3.0** | mg/L | 0.1 | | 1 | 06/28/11 | 06/28/11 18:35 | 1035 |
| Sulfate | **0.2** | mg/L | 0.2 | | 1 | 06/28/11 | 06/28/11 18:35 | 1035 |

Dissolved Methane — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | ND | mg/L | 0.0061 | | 06/30/11 | 06/30/11 15:17 | 4010 |

Total Iron — Analytical Method: SW-846 6020 A — Preparation Method: 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **18,000** | ug/L | 10,000 | | 100 | 07/01/11 | 07/05/11 13:10 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 06/30/11 | 06/30/11 18:04 | 1040 |

Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | ug/L | 1 | | 1 | 07/02/11 | 07/03/11 11:06 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11062816
**Earth Data, Inc, Centerville, MD**
July 12, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-40** **Date/Time Sampled: 06/27/2011 12:30** **PSS Sample ID: 11062816-005**
**Matrix: GROUND WATER** **Date/Time Received: 06/28/2011 14:10**

Phosphate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Ortho-Phosphorus as P | ND | mg/L | 1.0 | | 06/28/11 | 06/29/11 18:53 | 4005 |

Sulfate + Nitrate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **2.3** | mg/L | 0.1 | | 1 | 06/28/11 | 06/28/11 18:51 | 1035 |
| Sulfate | **4.1** | mg/L | 0.2 | | 1 | 06/28/11 | 06/28/11 18:51 | 1035 |

Dissolved Methane — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | **6.22** | mg/L | 0.0058 | | 06/30/11 | 06/30/11 15:30 | 4010 |

Total Iron — Analytical Method: SW-846 6020 A — Preparation Method: 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **15,000** | ug/L | 10,000 | | 100 | 07/01/11 | 07/05/11 13:15 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **16** | mg/L | 1 | | 10 | 06/30/11 | 07/01/11 10:17 | 1040 |

Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | ug/L | 1 | | 1 | 07/02/11 | 07/03/11 11:35 | 1011 |

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**FAX 410-788-8723**

# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11062816

**Earth Data, Inc, Centerville, MD**

July 12, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-43** **Date/Time Sampled: 06/27/2011 12:10** **PSS Sample ID: 11062816-006**
**Matrix: GROUND WATER** **Date/Time Received: 06/28/2011 14:10**

Phosphate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Ortho-Phosphorus as P | ND | mg/L | 1.0 | | 06/28/11 | 06/29/11 19:11 | 4005 |

Sulfate + Nitrate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **1.2** | mg/L | 0.1 | | 1 | 06/28/11 | 06/28/11 19:06 | 1035 |
| Sulfate | **11** | mg/L | 0.2 | | 1 | 06/28/11 | 06/28/11 19:06 | 1035 |

Dissolved Methane — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | **0.0126** | mg/L | 0.0055 | | 06/30/11 | 06/30/11 15:51 | 4010 |

Total Iron — Analytical Method: SW-846 6020 A — Preparation Method: 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **33,000** | ug/L | 10,000 | | 100 | 07/01/11 | 07/05/11 13:20 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.3** | mg/L | 0.1 | | 1 | 06/30/11 | 06/30/11 18:28 | 1040 |

Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | ug/L | 1 | | 1 | 07/02/11 | 07/03/11 12:03 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11062816

**Earth Data, Inc, Centerville, MD**

July 12, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: RW-4** **Date/Time Sampled: 06/27/2011 13:40** **PSS Sample ID: 11062816-007**
**Matrix: GROUND WATER** **Date/Time Received: 06/28/2011 14:10**

Phosphate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Ortho-Phosphorus as P | ND | mg/L | 1.0 | | 06/28/11 | 06/29/11 19:29 | 4005 |

Sulfate + Nitrate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **4.5** | mg/L | 0.1 | | 1 | 06/28/11 | 06/28/11 19:22 | 1035 |
| Sulfate | **0.4** | mg/L | 0.2 | | 1 | 06/28/11 | 06/28/11 19:22 | 1035 |

Dissolved Methane — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | **0.258** | mg/L | 0.0066 | | 06/30/11 | 06/30/11 16:10 | 4010 |

Total Iron — Analytical Method: SW-846 6020 A — Preparation Method: 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **1,100** | ug/L | 100 | | 1 | 07/01/11 | 07/01/11 18:06 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 06/30/11 | 06/30/11 18:52 | 1040 |

Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | ug/L | 1 | | 1 | 07/02/11 | 07/03/11 12:32 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11062816
**Earth Data, Inc, Centerville, MD**
July 12, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-22** **Date/Time Sampled: 06/27/2011 13:50** **PSS Sample ID: 11062816-008**
**Matrix: GROUND WATER** **Date/Time Received: 06/28/2011 14:10**

Phosphate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Ortho-Phosphorus as P | ND | mg/L | 1.0 | | 06/28/11 | 06/29/11 19:47 | 4005 |

Sulfate + Nitrate — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Nitrate (as N) | **2.1** | mg/L | 0.1 | | 1 | 06/28/11 | 06/28/11 19:37 | 1035 |
| Sulfate | **2.6** | mg/L | 0.2 | | 1 | 06/28/11 | 06/28/11 19:37 | 1035 |

Dissolved Methane — Analytical Method: SM 6211B/EPA 8015

| | Result | Units | RL | Flag | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|
| Methane | **0.935** | mg/L | 0.0056 | | 06/30/11 | 06/30/11 16:47 | 4010 |

Total Iron — Analytical Method: SW-846 6020 A — Preparation Method: 3010A

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Iron | **3,200** | ug/L | 100 | | 1 | 07/01/11 | 07/01/11 18:12 | 1034 |

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.3** | mg/L | 0.1 | | 1 | 06/30/11 | 06/30/11 18:52 | 1040 |

Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | **2** | ug/L | 1 | | 1 | 07/02/11 | 07/03/11 13:00 | 1011 |

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

## PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) CLIENT: Earth Data Inc. OFFICE LOC.: Centreville, MD
PROJECT MGR: Andrew Bullen PHONE NO.: (410) 758-8160
EMAIL: abullen@earthdatainc.com FAX NO.: (410) 758-8168
PROJECT NAME: Chester River Hospital Center PROJECT NO.: 2781
SITE LOCATION: Chestertown, MD P.O. NO.:
SAMPLERS: T. Lee / M. Wojtko

PSS Work Order #: 1106 2816 PAGE 1 OF 1

Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil WL=Waste Liquid WS=Waste Solid W= Wipe

(2)

| LAB NO. | SAMPLE IDENTIFICATION | DATE | TIME | MATRIX (See Codes) | No. CONTAINERS | SAMPLE TYPE C = COMP G = GRAB | Preservatives Used: HCl above → HNO3 | Analysis/ Method Required (3): Naphthalene / Methane / TPH-DRO / Nitrate / Phosphate / Sulfate / Total Iron | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-5 | 6-27-11 | 1315 | GW | 8 | G | | | 1 sample for for Naphthalene bottle |
| 2 | MW-9 | 6-27-11 | 1135 | GW | 9 | G | | | Sheen in sample |
| 3 | MW-20 | 6-27-11 | 1100 | GW | 9 | G | | | |
| 4 | MW-23 | 6-27-11 | 1025 | GW | 9 | G | | | |
| 5 | MW-40 | 6-27-11 | 1230 | GW | 9 | G | | | Sheen in Sample |
| 6 | MW-43 | 6-27-11 | 1210 | GW | 9 | G | | | Sheen in sample |
| 7 | RW-4 | 6-27-11 | 1340 | GW | 9 | G | | | |
| 8 | MW-22 | 6-27-11 | 1350 | GW | 9 | G | | | |
| | | | | | | | | | |
| | | | | | | | | | |

(5)

| Relinquished By: (1) | Date | Time | Received By: |
|---|---|---|---|
| T. Lee | 6-28-11 | 14:10 | |
| Relinquished By: (2) | Date | Time | Received By: |
| Relinquished By: (3) | Date | Time | Received By: |
| Relinquished By: (4) | Date | Time | Received By: |

(4)

Requested Turnaround Time
[X] 5-Day [ ] 3-Day [ ] 2-Day
[ ] Next Day [ ] Emergency [ ] Other

Data Deliverables Required:

# of Coolers: 2
Custody Seal: ABS
Ice Present: PRES Temp: 2°C
Shipping Carrier: DIAL

Special Instructions:
Sheen observed in samples from MW-9, MW-40 and MW-43
48-HOUR HOLDING TIME for Nitrates

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

# Phase Separation Science, Inc

## Sample Receipt Checklist

| | | | |
|---|---|---|---|
| **Work Order #** | 11062816 | **Received By** | Lynn Moran |
| **Client Name** | Earth Data, Inc | **Date Received** | 06/28/2011 02:10:00 PM |
| **Project Name** | Chester River Hospital Center | **Delivered By** | Dial Courier |
| **Project Number** | 2781 | **Tracking No** | Not Applicable |
| **Disposal Date** | 08/02/2011 | **Logged In By** | Sara Dorr |

**Shipping Container(s)**

| | | | |
|---|---|---|---|
| No. of Coolers | 1 | Ice | Present |
| | | Temp (deg C) | 2 |
| Custody Seal(s) Intact? | N/A | Temp Blank Present | No |
| Seal(s) Signed / Dated? | N/A | | |

**Documentation**

| | | | |
|---|---|---|---|
| | | Sampler Name | T. Lee |
| | | MD DW Cert. No. | N/A |
| COC agrees with sample labels? | Yes | | |
| Chain of Custody | Yes | | |

**Sample Container**

| | | | |
|---|---|---|---|
| | | Custody Seal(s) Intact? | Not Applicable |
| Appropriate for Specified Analysis? | Yes | Seal(s) Signed / Dated | Not Applicable |
| Intact? | Yes | | |
| Labeled and Labels Legible? | Yes | | |

Total No. of Samples Received 8

Total No. of Containers Received 79

**Preservation**

| | | |
|---|---|---|
| Metals | (pH<2) | Yes |
| Cyanides | (pH>12) | N/A |
| Sulfide | (pH>9) | N/A |
| TOC, COD, Phenols | (ph<2) | N/A |
| TOX, TKN, NH3, Total Phos | (pH<2) | N/A |
| VOC, BTEX (VOA Vials Rcvd Preserved) | (pH<2) | Yes |
| Do VOA vials have zero headspace? | | Yes |

**Comments: (Any "No" response must be detailed in the comments section below.)**

**For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.**

Samples Inspected/Checklist Completed By: Lynn Moran Date: 06/28/2011

PM Review and Approval: Simon Crisp Date: 06/28/2011

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

## PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) CLIENT: Earth Data Inc. OFFICE LOC.: Centreville, MD
PROJECT MGR: Andrew Bullen PHONE NO.: (410) 758-8160
EMAIL: abullen@earthdatainc.com FAX NO.: (410) 758-8168
PROJECT NAME: Chester River Hospital Center PROJECT NO.: 2781
SITE LOCATION: Chestertown, MD P.O. NO.:
SAMPLERS: T. Lee / M. Wojtko

PSS Work Order #: 1106028160 PAGE 1 OF 1

Matrix Codes: SW=Surface Wtr DW=Drinking Wrt GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil WL=Waste Liquid WS=Waste Solid W= Wipe

(2) (3)

| LAB NO. | SAMPLE IDENTIFICATION | DATE | TIME | MATRIX (See Codes) | No. CONTAINERS | SAMPLE TYPE C = COMP G = GRAB | Preservatives Used: HCl / None / HNO3 — Analysis/Method Required: Naphthalene, Methane, TPH-DRO, Nitrate, Phosphate, Sulfate, Total Iron | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1 | MW-5 | 6-27-11 | 1315 | GW | 8 | G | | 1 sample jar for Naphthalene broke |
| 2 | MW-9 | 6-27-11 | 1135 | GW | 9 | G | Sheen in sample | |
| 3 | MW-20 | 6-27-11 | 1100 | GW | 9 | G | | |
| 4 | MW-23 | 6-27-11 | 1025 | GW | 9 | G | | |
| 5 | MW-40 | 6-27-11 | 1230 | GW | 9 | G | Sheen in sample | |
| 6 | MW-43 | 6-27-11 | 1210 | GW | 9 | G | Sheen in sample | |
| 7 | RW-4 | 6-27-11 | 1340 | GW | 9 | G | | |
| 8 | MW-22 | 6-27-11 | 1350 | GW | 9 | G | | |
| | | | | | | | | |
| | | | | | | | | |

(5)

| Relinquished By: | Date | Time | Received By: |
|---|---|---|---|
| (1) T. Lee | 6-28-11 | 14:10 | |
| (2) | | | |
| (3) | | | |
| (4) | | | |

(4)

Requested Turnaround Time
☒ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:

# of Coolers: 2
Custody Seal: ABS
Ice Present: PRES Temp: 2°C
Shipping Carrier: DIAL

Special Instructions:
Sheen observed in samples from MW-9, MW-40 and MW-43
48-Hour Holding Time for Nitrates

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# Analytical Report for

## Earth Data, Inc

## Certificate of Analysis No.: 11092814

**Project Manager: Andrew Bullen**
**Project Name : Chester River Hospital Center**
**Project Location: Chestertown, Maryland**
**Project ID : 2781**

**October 5, 2011**

**Phase Separation Science, Inc.**
**6630 Baltimore National Pike**
**Baltimore, MD 21228**
**Phone: (410) 747-8770**
**Fax: (410) 788-8723**

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**FAX 410-788-8723**

# PHASE SEPARATION SCIENCE, INC.

October 5, 2011

**Andrew Bullen**
**Earth Data, Inc**
131 Comet Drive
Centerville, MD 21617

Reference: PSS Work Order No: **11092814**
Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID.: 2781

Dear Andrew Bullen :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order numbered **11092814**.

All work reported herein has been performed in accordance with current NELAP standards referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on November 2, 2011. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Dan Prucnal

**Dan Prucnal**
Laboratory Manager

# Sample Summary

## Client Name: Earth Data, Inc

## Project Name: Chester River Hospital Center

**Project ID: 2781** **Work Order Number: 11092814**

The following samples were received under chain of custody by Phase Separation Science (PSS) on 09/28/2011 at 11:45 am

| Lab Sample Id | Sample Id | Matrix | Date/Time Collected |
|---|---|---|---|
| 11092814-001 | MW-5 | GROUND WATER | 09/27/2011 14:25 |
| 11092814-002 | MW-9 | GROUND WATER | 09/27/2011 14:30 |
| 11092814-003 | MW-16 | GROUND WATER | 09/27/2011 12:26 |
| 11092814-004 | MW-19 | GROUND WATER | 09/27/2011 13:10 |
| 11092814-005 | MW-20 | GROUND WATER | 09/27/2011 13:29 |
| 11092814-006 | MW-23 | GROUND WATER | 09/27/2011 12:03 |
| 11092814-007 | MW-33 | GROUND WATER | 09/27/2011 12:37 |
| 11092814-008 | MW-34 | GROUND WATER | 09/27/2011 12:45 |
| 11092814-009 | MW-35 | GROUND WATER | 09/27/2011 12:58 |
| 11092814-010 | MW-40 | GROUND WATER | 09/27/2011 14:50 |
| 11092814-011 | MW-43 | GROUND WATER | 09/27/2011 15:10 |
| 11092814-012 | RW-4 | GROUND WATER | 09/27/2011 11:12 |
| 11092814-013 | RW-5 | GROUND WATER | 09/27/2011 11:13 |
| 11092814-014 | MW-22 | GROUND WATER | 09/27/2011 11:15 |
| 11092814-015 | System Discharge | GROUND WATER | 09/27/2011 14:40 |

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

**Notes:**

1. The presence of common laboratory contaminants such as acetone, methylene chloride and phthalates, may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].

**Standard Flags/Abbreviations:**

- B A target analyte or commone laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- C Results Pending Final Confirmation.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
- J The target analyte was positively identified below the reporting limit but greater than the LOD.
- LOD Limit of Detection. An estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte and matrix specific.
- ND Not Detected at or above the reporting limit.
- RL PSS Reporting Limit.
- U Not detected.

# Case Narrative Summary

**Client Name: Earth Data, Inc**

**Project Name: Chester River Hospital Center**

Project ID: 2781 Work Order Number: 11092814

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

**Sample Receipt:**

All sample receipt conditions were acceptable.

**NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.**

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11092814

**Earth Data, Inc, Centerville, MD**

October 5, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-5** **Date/Time Sampled: 09/27/2011 14:25** **PSS Sample ID: 11092814-001**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **6.8** | mg/L | 0.1 | | 1 | 10/01/11 | 10/02/11 11:47 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/03/11 15:36 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/03/11 15:36 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/03/11 15:36 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/03/11 | 10/03/11 15:36 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/03/11 15:36 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/03/11 15:36 | 1011 |

**Sample ID: MW-9** **Date/Time Sampled: 09/27/2011 14:30** **PSS Sample ID: 11092814-002**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **6.3** | mg/L | 0.1 | | 1 | 10/01/11 | 10/02/11 12:11 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/03/11 16:04 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/03/11 16:04 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/03/11 16:04 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/03/11 | 10/03/11 16:04 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/03/11 16:04 | 1011 |
| Naphthalene | **4** | ug/L | 1 | | 1 | 10/03/11 | 10/03/11 16:04 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11092814

**Earth Data, Inc, Centerville, MD**

October 5, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-16** **Date/Time Sampled: 09/27/2011 12:26** **PSS Sample ID: 11092814-003**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 10/01/11 | 10/02/11 12:35 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 00:49 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 00:49 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 00:49 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/03/11 | 10/04/11 00:49 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 00:49 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 00:49 | 1011 |

**Sample ID: MW-19** **Date/Time Sampled: 09/27/2011 13:10** **PSS Sample ID: 11092814-004**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 10/01/11 | 10/02/11 13:00 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 01:17 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 01:17 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 01:17 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/03/11 | 10/04/11 01:17 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 01:17 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 01:17 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11092814

**Earth Data, Inc, Centerville, MD**

October 5, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-20** **Date/Time Sampled: 09/27/2011 13:29** **PSS Sample ID: 11092814-005**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **3.9** | mg/L | 0.1 | | 1 | 10/01/11 | 10/02/11 13:00 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 01:46 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 01:46 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 01:46 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/03/11 | 10/04/11 01:46 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 01:46 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 01:46 | 1011 |

**Sample ID: MW-23** **Date/Time Sampled: 09/27/2011 12:03** **PSS Sample ID: 11092814-006**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 10/01/11 | 10/02/11 13:48 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 02:15 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 02:15 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 02:15 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/03/11 | 10/04/11 02:15 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 02:15 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 02:15 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11092814

**Earth Data, Inc, Centerville, MD**

October 5, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-33** **Date/Time Sampled: 09/27/2011 12:37** **PSS Sample ID: 11092814-007**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 10/01/11 | 10/02/11 13:48 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 02:44 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 02:44 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 02:44 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/03/11 | 10/04/11 02:44 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 02:44 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 02:44 | 1011 |

**Sample ID: MW-34** **Date/Time Sampled: 09/27/2011 12:45** **PSS Sample ID: 11092814-008**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 10/01/11 | 10/02/11 14:12 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 03:13 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 03:13 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 03:13 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/03/11 | 10/04/11 03:13 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 03:13 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 03:13 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11092814

**Earth Data, Inc, Centerville, MD**

October 5, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-35** **Date/Time Sampled: 09/27/2011 12:58** **PSS Sample ID: 11092814-009**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | ND | mg/L | 0.1 | | 1 | 10/01/11 | 10/02/11 14:12 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 03:42 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 03:42 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 03:42 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/03/11 | 10/04/11 03:42 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 03:42 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 03:42 | 1011 |

**Sample ID: MW-40** **Date/Time Sampled: 09/27/2011 14:50** **PSS Sample ID: 11092814-010**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **47** | mg/L | 2 | | 20 | 10/01/11 | 10/03/11 12:36 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 04:11 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 04:11 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 04:11 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/03/11 | 10/04/11 04:11 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 04:11 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 04:11 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11092814

**Earth Data, Inc, Centerville, MD**

October 5, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: MW-43** **Date/Time Sampled: 09/27/2011 15:10** **PSS Sample ID: 11092814-011**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.1** | mg/L | 0.1 | | 1 | 10/01/11 | 10/02/11 14:36 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 04:40 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 04:40 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 04:40 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/03/11 | 10/04/11 04:40 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 04:40 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 04:40 | 1011 |

**Sample ID: RW-4** **Date/Time Sampled: 09/27/2011 11:12** **PSS Sample ID: 11092814-012**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.1** | mg/L | 0.1 | | 1 | 10/01/11 | 10/02/11 15:00 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 05:10 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 05:10 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 05:10 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/03/11 | 10/04/11 05:10 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 05:10 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 10/03/11 | 10/04/11 05:10 | 1011 |

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# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11092814

**Earth Data, Inc, Centerville, MD**

October 5, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: RW-5** **Date/Time Sampled: 09/27/2011 11:13** **PSS Sample ID: 11092814-013**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.2** | mg/L | 0.1 | | 1 | 10/01/11 | 10/02/11 15:00 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 14:51 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 14:51 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 14:51 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/04/11 | 10/04/11 14:51 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 14:51 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 14:51 | 1011 |

**Sample ID: MW-22** **Date/Time Sampled: 09/27/2011 11:15** **PSS Sample ID: 11092814-014**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.2** | mg/L | 0.1 | | 1 | 10/01/11 | 10/02/11 15:24 | 1040 |

BTEX Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 15:20 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 15:20 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 15:20 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/04/11 | 10/04/11 15:20 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 15:20 | 1011 |
| Naphthalene | **2** | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 15:20 | 1011 |

**OFFICES:**
**6630 BALTIMORE NATIONAL PIKE**
**ROUTE 40 WEST**
**BALTIMORE, MD 21228**
**410-747-8770**
**800-932-9047**
**FAX 410-788-8723**

# PHASE SEPARATION SCIENCE, INC.

## CERTIFICATE OF ANALYSIS

No: 11092814

**Earth Data, Inc, Centerville, MD**

October 5, 2011

Project Name: Chester River Hospital Center
Project Location: Chestertown, Maryland
Project ID: 2781

**Sample ID: System Discharge** **Date/Time Sampled: 09/27/2011 14:40** **PSS Sample ID: 11092814-015**
**Matrix: GROUND WATER** **Date/Time Received: 09/28/2011 11:45**

Total Petroleum Hydrocarbons - DRO — Analytical Method: SW-846 8015 C — Preparation Method: 3510C

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| TPH-DRO (Diesel Range Organics) | **0.1** | mg/L | 0.1 | | 1 | 10/01/11 | 10/02/11 15:24 | 1040 |

BTEX MTBE TBA Naphthalene — Analytical Method: SW-846 8260 B — Preparation Method: 5030B

| | Result | Units | RL | Flag | Dil | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| tert-Butyl alcohol | ND | ug/L | 20 | | 1 | 10/04/11 | 10/04/11 15:49 | 1011 |
| Methyl-t-butyl ether | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 15:49 | 1011 |
| Benzene | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 15:49 | 1011 |
| Toluene | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 15:49 | 1011 |
| Ethylbenzene | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 15:49 | 1011 |
| m,p-Xylenes | ND | ug/L | 2 | | 1 | 10/04/11 | 10/04/11 15:49 | 1011 |
| o-Xylene | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 15:49 | 1011 |
| Naphthalene | ND | ug/L | 1 | | 1 | 10/04/11 | 10/04/11 15:49 | 1011 |

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

## PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) CLIENT: Earth Data Inc. OFFICE LOC.: Centreville, MD
PROJECT MGR: Andrew Butler PHONE NO.: (410) 758-8160
EMAIL: abutler@earthdatainc.com FAX NO.: (410) 758-8165
PROJECT NAME: Chester River Hospital Center PROJECT NO.: 2781
SITE LOCATION: Chestertown, Maryland P.O. NO.:
SAMPLERS: T. Lee, M. Wojtko, JP Stokes

PSS Work Order #: 1109 2814 PAGE 1 OF 2

Matrix Codes: SW=Surface Wtr DW=Drinking Wrt GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil WL=Waste Liquid WS=Waste Solid W= Wipe

(2)

| LAB NO. | SAMPLE IDENTIFICATION | DATE | TIME | MATRIX (See Codes) | No. CONTAINERS | SAMPLE TYPE C = COMP G = GRAB | Preservatives Used: HCl → None; Analysis/Method Required (3): BTEX, Naphthalene, TPH-DRO | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1 | MW-5 | 9-27-11 | 1425 | GW | 4 | G | | sheen in sample |
| 2 | MW-9 | 9-27-11 | 1430 | GW | 4 | G | | |
| 3 | MW-16 | 9-27-11 | 1226 | GW | 4 | G | | |
| 4 | MW-19 | 9-27-11 | 1310 | GW | 4 | G | | |
| 5 | MW-20 | 9-27-11 | 1329 | GW | 4 | G | | |
| 6 | MW-23 | 9-27-11 | 1203 | GW | 4 | G | | |
| 7 | MW-33 | 9-27-11 | 1237 | GW | 4 | G | | |
| 8 | MW-34 | 9-27-11 | 1245 | GW | 4 | G | | |
| 9 | MW-35 | 9-27-11 | 1258 | GW | 4 | G | | |
| 10 | MW-40 | 9-27-11 | 1450 | GW | 4 | G | | sheen in sample |

(5)

| Relinquished By: (1) | Date | Time | Received By: |
|---|---|---|---|
| T. Lee | 9-28-11 | 0935 | D. Boome |
| Relinquished By: (2) | Date | Time | Received By: |
| D. Boome | 11 | 1145 | |
| Relinquished By: (3) | Date | Time | Received By: |
| Relinquished By: (4) | Date | Time | Received By: |

(4) Requested Turnaround Time
☒ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:

# of Coolers: 2
Custody Seal: PBS
Ice Present: PRES Temp: 5°c
Shipping Carrier: DIAL

Special Instructions:

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

# SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

## PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) CLIENT: Earth Data Inc. OFFICE LOC.: Centreville, MD
PROJECT MGR: Andrew Bullen PHONE NO.: (410) 758-8160
EMAIL: abullen@earthdatainc.com FAX NO.: (410) 758-8168
PROJECT NAME: Chester River Hospital Center PROJECT NO.: 2781
SITE LOCATION: Chestertown, Maryland P.O. NO.:
SAMPLERS: T. Lee, M. Wojtko, JP Stokes

PSS Work Order #: 1092814 PAGE 2 OF 2

Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil WL=Waste Liquid WS=Waste Solid W= Wipe

(2)

| LAB NO. | SAMPLE IDENTIFICATION | DATE | TIME | MATRIX (See Codes) | No. CONTAINERS | SAMPLE TYPE C = COMP G = GRAB | Preservatives Used: HCl → None | (3) Analysis/Method Required: BTEX | Naphthalene | MTBE | TBA | TPH-DRO | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | MW-43 | 9-27-11 | 1510 | GW | 4 | G | | X | X | | | X | |
| 12 | RW-4 | 9-27-11 | 1112 | GW | 4 | G | | X | X | | | X | |
| 13 | RW-5 | 9-27-11 | 1113 | GW | 4 | G | | X | X | | | X | |
| 14 | MW-22 | 9-27-11 | 1115 | GW | 4 | G | | X | X | | | X | |
| 15 | System Discharge | 9-27-11 | 1440 | GW | 4 | G | | X | X | X | X | X | |

(5)

| Relinquished By: (1) | Date | Time | Received By: |
|---|---|---|---|
| T. Lee | 9-28-11 | 0935 | S. Boone |
| Relinquished By: (2) | Date | Time | Received By: |
| S. Boone | 9-28-11 | 1145 | |
| Relinquished By: (3) | Date | Time | Received By: |
| Relinquished By: (4) | Date | Time | Received By: |

(4) Requested Turnaround Time
☒ 5-Day ☐ 3-Day ☐ 2-Day
☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required:

# of Coolers: 2
Custody Seal: ABS
Ice Present: PRES Temp: 5°C
Shipping Carrier: DIAL

Special Instructions:

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

# Phase Separation Science, Inc

## Sample Receipt Checklist

| | | | |
|---|---|---|---|
| **Work Order #** | 11092814 | **Received By** | Rachel Davis |
| **Client Name** | Earth Data, Inc | **Date Received** | 09/28/2011 11:45:00 AM |
| **Project Name** | Chester River Hospital Center | **Delivered By** | Dial Courier |
| **Project Number** | 2781 | **Tracking No** | Not Applicable |
| **Disposal Date** | 11/02/2011 | **Logged In By** | Rachel Davis |

**Shipping Container(s)**

No. of Coolers 2

| | |
|---|---|
| Custody Seal(s) Intact? | N/A |
| Seal(s) Signed / Dated? | N/A |

| | |
|---|---|
| Ice | Present |
| Temp (deg C) | 5 |
| Temp Blank Present | No |

| | |
|---|---|
| Sampler Name | Tracy Lee |
| MD DW Cert. No. | N/A |

**Documentation**

| | |
|---|---|
| COC agrees with sample labels? | Yes |
| Chain of Custody | Yes |

**Sample Container**

| | |
|---|---|
| Appropriate for Specified Analysis? | Yes |
| Intact? | Yes |
| Labeled and Labels Legible? | Yes |

| | |
|---|---|
| Custody Seal(s) Intact? | Not Applicable |
| Seal(s) Signed / Dated | Not Applicable |

Total No. of Samples Received 15

Total No. of Containers Received 60

**Preservation**

| | | |
|---|---|---|
| Metals | (pH<2) | N/A |
| Cyanides | (pH>12) | N/A |
| Sulfide | (pH>9) | N/A |
| TOC, COD, Phenols | (ph<2) | N/A |
| TOX, TKN, NH3, Total Phos | (pH<2) | N/A |
| VOC, BTEX (VOA Vials Rcvd Preserved) | (pH<2) | Yes |
| Do VOA vials have zero headspace? | | Yes |

**Comments: (Any "No" response must be detailed in the comments section below.)**

**For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.**

Samples Inspected/Checklist Completed By: Rachel Davis — Date: 09/28/2011

Rachel Davis

PM Review and Approval: Lynn Moran — Date: 09/30/2011

Lynn Moran

BAL LABORATORY

# BAL Laboratory

*The Microbiology Division of Thielsch Engineering, Inc.*

## *CERTIFICATE OF ANALYSIS*

Client: Earth Data Incorporated
Client Project ID: Chester River Hospital Center

Work Order Number: C104091
Date Received: 4/13/2011 9:00:00AM

### Heterotrophic Plate Count

**Client Sample ID:** MW-5
**BAL Sample ID:** C104091-01 **Matrix:** Aqueous **Sampled:** 04/12/11 14:45

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **300** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **135** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |

**Client Sample ID:** MW-9
**BAL Sample ID:** C104091-02 **Matrix:** Aqueous **Sampled:** 04/12/11 14:25

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **1440** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **2500** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |

**Client Sample ID:** MW-20
**BAL Sample ID:** C104091-03 **Matrix:** Aqueous **Sampled:** 04/12/11 13:05

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | < **100** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **17500** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |

**Client Sample ID:** MW-22
**BAL Sample ID:** C104091-04 **Matrix:** Aqueous **Sampled:** 04/12/11 15:15

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **42000** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **99000** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |

**Client Sample ID:** MW-23
**BAL Sample ID:** C104091-05 **Matrix:** Aqueous **Sampled:** 04/12/11 12:28

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **4600** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **4800** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |

**Client Sample ID:** MW-40
**BAL Sample ID:** C104091-06 **Matrix:** Aqueous **Sampled:** 04/12/11 13:30

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **41500** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **69500** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |

BAL LABORATORY

# BAL Laboratory

*The Microbiology Division of Thielsch Engineering, Inc.*

*CERTIFICATE OF ANALYSIS*

Client: Earth Data Incorporated
Client Project ID: Chester River Hospital Center

Work Order Number: C104091
Date Received: 4/13/2011 9:00:00AM

**Heterotrophic Plate Count**

**Client Sample ID:** MW-43
**BAL Sample ID:** C104091-07 **Matrix:** Aqueous **Sampled:** 04/12/11 14:00

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **3500** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **2500** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |

**Client Sample ID:** RW-4
**BAL Sample ID:** C104091-08 **Matrix:** Aqueous **Sampled:** 04/12/11 15:20

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **90000** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **355000** | CFU/ml | 04/13/11 09:20 | JEV | 9215B-Modified |

BAL LABORATORY

# BAL Laboratory

*The Microbiology Division of Thielsch Engineering, Inc.*

*CERTIFICATE OF ANALYSIS*

Client: Earth Data Incorporated
Client Project ID: Chester River Hospital Center

Work Order Number: C104091
Date Received: 4/13/2011 9:00:00AM

## Notes and Definitions

| | |
|---|---|
| < | Less than the Method Detection Limit. |
| MF | Membrane Filtration |
| MPN | Most Probable Number |
| TNTC | Too Numerous to Count |
| dry | Sample results reported on a dry weight basis |

# BAL Laboratory

The Microbiology Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, Rhode Island 02910
401-785-0241 FAX 401-785-2374

## CHAIN OF CUSTODY

C104091

PROJECT NAME: CHESTER RIVER HOSPITAL CENTER | LOCATION: CHESTERTOWN, MD | NUMBER: 2781

Source Code:
W = Well | O = Outfall | RO = Runoff | B = Bottom Sediment | DR = Diluent River
LF = Landfill | T = Treatment Facility | L = Lake/Ocean | X = Other/Specify_____ | DO = Diluent Ocean

| BAL Sample No. | Sample ID. | Source Code | Sample Type Grab | Sample Type Comp. | Container No. | Container Type | Container Size | Container Pres. | Analysis Required | Date/Time of Collection Start | Date/Time of Collection End |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-5 | W | X | | 2 | P | 80ml | | HYDROCARBON 92158M DEGRADING BACTERIA | Date: 04/12/11 Time: 14:45 | |
| 2 | MW-9 | W | X | | ↓ | ↓ | ↓ | | ↓ | Date: 04/12/11 Time: 14:25 | |
| 3 | MW-20 | W | X | | ↓ | ↓ | ↓ | | ↓ | Date: 04/12/11 Time: 13:05 | |
| 4 | MW-22 | W | X | | ↓ | ↓ | ↓ | | ↓ | Date: 04/12/11 Time: 15:15 | |
| 5 | MW-23 | W | X | | ↓ | ↓ | ↓ | | ↓ | Date: 04/12/11 Time: 12:28 | |
| 6 | MW-40 | W | X | | ↓ | ↓ | ↓ | | ↓ | Date: 04/12/11 Time: 13:30 | |
| 7 | MW-43 | W | X | | ↓ | ↓ | ↓ | | ↓ | Date: 04/12/11 Time: 14:00 | |

*CONTAINER TYPE:* P = Plastic | E = EPA Vial | C = Cube | G = Glass | A = Amber Glass | B = Bacteria
*PRESERVATION CODE:* I = Iced | F = Filtered | N = Nitric Acid | H = Hydrocloric Acid (HCL)
S = Sodium Hydroxide (NaOH) | T = Sodium Thiosulfate | O = Other/Specify

| Samplers Signature | Affiliation | Date | Time | Transfers Relinquished By: | Accepted By: | Date | Time |
|---|---|---|---|---|---|---|---|
| TRACY LEE | EDI | 4/12/11 | 16:00 | | | | |
| Additional Comments: | | | | | [signature] | 4/13/11 | 0900 |
| Method of Shipment: | | Date | Time | | | | |

# BAL Laboratory

The Microbiology Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, Rhode Island 02910
401-785-0241 FAX 401-785-2374

## CHAIN OF CUSTODY

C1040 91

PROJECT NAME: CHESTER RIVER HOSPITAL CENTER

LOCATION: CHESTERTOWN, MD

NUMBER: 2781

Source Code:
W = Well; LF = Landfill; O = Outfall; T = Treatment Facility; RO = Runoff; L = Lake/Ocean; B = Bottom Sediment; X = Other/Specify_____; DR = Diluent River; DO = Diluent Ocean

| BAL Sample No. | Sample ID. | Source Code | Sample Type Grab | Sample Type Comp. | Container No. | Container Type | Container Size | Container Pres. | Analysis Required | Date/Time of Collection Start | Date/Time of Collection End |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | RW-4 | W | X | | 2 | P | 80ML | | HYDROCARBOB DEGRADING BACTERIA 9215BM | Date: 04/12/11 Time: 15:20 | |
| | | | | | | | | | | Date: Time: | |
| | | | | | | | | | | Date: Time: | |
| | | | | | | | | | | Date: Time: | |
| | | | | | | | | | | Date: Time: | |
| | | | | | | | | | | Date: Time: | |
| | | | | | | | | | | Date: Time: | |

*CONTAINER TYPE:* P = Plastic; E = EPA Vial; C = Cube; G = Glass; A = Amber Glass; B = Bacteria

*PRESERVATION CODE:* I = Iced; F = Filtered; N = Nitric Acid; H = Hydrocloric Acid (HCL); S = Sodium Hydroxide (NaOH); T = Sodium Thiosulfate; O = Other/Specify

| Samplers Signature | Affiliation | Date | Time | Transfers Relinquished By: | Accepted By: | Date | Time |
|---|---|---|---|---|---|---|---|
| TRACY LEE | EDI | 4/12/11 | 16:00 | | | | |
| Additional Comments: | | | | | 4.13.11 | | 0900 |
| Method of Shipment: | | Date | Time | | | | |

6/27/11

# BAL Laboratory

*The Microbiology Division of Thielsch Engineering, Inc.*

Tracy Lee
Earth Data Incorporated
131 Comet Dr
Centreville. MD 21617

**RE: Chester River Hospital Center**

Dear Tracy Lee:

We appreciate this opportunity to provide you with our analytical services. BAL Laboratory is committed to providing the highest quality service. Our dedication to each client includes responsiveness to emergencies, dependability, well-written reports and superior client services.

Enclosed is your data report for **Work Order Number C104091.** The invoice for this project is included with this report unless other arrangements have previously been made with the laboratory. Samples will be disposed of thirty days after the final report has been mailed. If you have any questions or concerns, please feel free to call our Customer Service Department. We value our continued relationship and look forward to hearing from you in the future.

Sincerely,

BAL Laboratory

Darlene Capuano
Laboratory Director

RI Laboratory License Number: A36
MA Laboratory License Number: M RI-M01

enclosure

*Industrial Microbiology - Environmental Investigation - Biological and Specialty Analyses of Water and Wastes - Pollution Tracking and Source Determination - Monitoring Programs - Trend Assessments - Seafood Analyses - Drinking Water Quality - Biosolids and Compost Testing - Biofilter Assessment - Bioaerosol Monitoring - Corrosion Analysis*

# BAL Laboratory

*The Microbiology Division of Thielsch Engineering, Inc.*



Tracy Lee
Earth Data Incorporated
131 Comet Dr
Centreville. MD 21617

**RE: Chester River Hospital Center**

Dear Tracy Lee:

We appreciate this opportunity to provide you with our analytical services. BAL Laboratory is committed to providing the highest quality service. Our dedication to each client includes responsiveness to emergencies, dependability, well-written reports and superior client services.

Enclosed is your data report for **Work Order Number C106292.** The invoice for this project is included with this report unless other arrangements have previously been made with the laboratory. Samples will be disposed of thirty days after the final report has been mailed. If you have any questions or concerns, please feel free to call our Customer Service Department. We value our continued relationship and look forward to hearing from you in the future.

Sincerely,

BAL Laboratory

Darlene Capuano
Laboratory Director

RI Laboratory License Number: A36
MA Laboratory License Number: M RI-M01

enclosure

*Industrial Microbiology - Environmental Investigation - Biological and Specialty Analyses of Water and Wastes - Pollution Tracking and Source Determination - Monitoring Programs - Trend Assessments - Seafood Analyses - Drinking Water Quality - Biosolids and Compost Testing - Biofilter Assessment - Bioaerosol Monitoring - Corrosion Analysis*

185 Frances Avenue, Cranston, RI 02910-2211 Tel: (401) 785-0241 Fax: (401) 785-2374 www.ballaboratory.com

# BAL Laboratory

*The Microbiology Division of Thielsch Engineering, Inc.*

*CERTIFICATE OF ANALYSIS*

Client: Earth Data Incorporated
Client Project ID: Chester River Hospital Center

Work Order Number: C106292
Date Received: 6/28/2011 1:40:00PM

**Heterotrophic Plate Count**

**Client Sample ID:** MW-5
**BAL Sample ID:** C106292-01 **Matrix:** Aqueous **Sampled:** 06/27/11 13:15

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **335** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **80** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |

**Client Sample ID:** MW-9
**BAL Sample ID:** C106292-02 **Matrix:** Aqueous **Sampled:** 06/27/11 11:35

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **23500** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **13000** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |

**Client Sample ID:** MW-20
**BAL Sample ID:** C106292-03 **Matrix:** Aqueous **Sampled:** 06/27/11 11:00

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **1200** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **1800** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |

**Client Sample ID:** MW-22
**BAL Sample ID:** C106292-04 **Matrix:** Aqueous **Sampled:** 06/27/11 13:50

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **1950** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **2700** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |

**Client Sample ID:** MW-23
**BAL Sample ID:** C106292-05 **Matrix:** Aqueous **Sampled:** 06/27/11 10:25

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **1500** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **1000** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |

**Client Sample ID:** MW-40
**BAL Sample ID:** C106292-06 **Matrix:** Aqueous **Sampled:** 06/27/11 12:30

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **119000** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **172000** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |

# BAL Laboratory

*The Microbiology Division of Thielsch Engineering, Inc.*


*CERTIFICATE OF ANALYSIS*

Client: Earth Data Incorporated
Client Project ID: Chester River Hospital Center

Work Order Number: C106292
Date Received: 6/28/2011 1:40:00PM

**Heterotrophic Plate Count**

**Client Sample ID:** MW-43
**BAL Sample ID:** C106292-07 **Matrix:** Aqueous **Sampled:** 06/27/11 12:10

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **7750** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **15600** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |

**Client Sample ID:** RW-4
**BAL Sample ID:** C106292-08 **Matrix:** Aqueous **Sampled:** 06/27/11 13:40

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **800** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **400** | CFU/ml | 06/30/11 13:30 | JEV | 9215B-Modified |

# BAL Laboratory

*The Microbiology Division of Thielsch Engineering, Inc.*

*CERTIFICATE OF ANALYSIS*

Client: Earth Data Incorporated
Client Project ID: Chester River Hospital Center

Work Order Number: C106292
Date Received: 6/28/2011 1:40:00PM

## Notes and Definitions

| | |
|---|---|
| MF | Membrane Filtration |
| MPN | Most Probable Number |
| TNTC | Too Numerous to Count |
| dry | Sample results reported on a dry weight basis |

C1106292

# BAL Laboratory

The Microbiology Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, Rhode Island 02910
401-785-0241 FAX 401-785-2374

## CHAIN OF CUSTODY

EARTH DATA

PROJECT NAME: CHESTER RIVER HOSPITAL CENTER | LOCATION: CHESTERTOWN, MD | NUMBER: 2781

Source Code:
W = Well | O = Outfall | RO = Runoff | B = Bottom Sediment | DR = Diluent River
LF = Landfill | T = Treatment Facility | L = Lake/Ocean | X = Other/Specify_____ | DO = Diluent Ocean

| BAL Sample No. | Sample ID. | Source Code | Sample Type Grab | Sample Type Comp | Container No. | Container Type | Container Size | Container Pres. | Analysis Required | Date/Time of Collection Start | Date/Time of Collection End |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | MW-5 | W | X | | 2 | P | | Iced/None | HYDROCARBON DEGRADING BACTERIA 92158M | Date: 06/27/11 Time: 1315 | |
| 02 | MW-9 | W | X | | 2 | P | | Iced/None | | Date: 6-27-11 Time: 1135 | |
| 03 | MW-20 | W | X | | 2 | P | | Iced/None | | Date: 6-27-11 Time: 1100 | |
| 04 | MW-22 | W | X | | 2 | P | | Iced/None | | Date: 6-27-11 Time: 1350 | |
| 05 | MW-23 | W | X | | 2 | P | | Iced/None | | Date: 6-27-11 Time: 1025 | |
| 06 | MW-40 | W | X | | 2 | P | | Iced/None | | Date: 6-27-11 Time: 1230 | |
| 07 | MW-43 | W | X | | 2 | P | | Iced/None | | Date: 6-27-11 Time: 1210 | |

*CONTAINER TYPE:* P = Plastic | E = EPA Vial | C = Cube | G = Glass | A = Amber Glass | B = Bacteria
*PRESERVATION CODE:* I = Iced | F = Filtered | N = Nitric Acid | H = Hydrocloric Acid (HCL) | S = Sodium Hydroxide (NaOH) | T = Sodium Thiosulfate | O = Other/Specify

| Samplers Signature | Affiliation | Date | Time | Transfers Relinquished By: | Accepted By: | Date | Time |
|---|---|---|---|---|---|---|---|
| Tracy Lee | Earth Data | 6/27/11 | 1615 | | | | |
| Additional Comments: | | | | | D Capuano | 06/28/11 | 1340 |
| Method of Shipment: | | Date | Time | | | | |

# BAL Laboratory

The Microbiology Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, Rhode Island 02910
401-785-0241 FAX 401-785-2374

## CHAIN OF CUSTODY

EARTH DATA

C106292

| PROJECT NAME: | LOCATION: | NUMBER: |
|---|---|---|
| CHESTER RIVER HOSPITAL CENTER | CHESTERTOWN, MD | 2781 |

Source Code:
W = Well | O = Outfall | RO = Runoff | B = Bottom Sediment | DR = Diluent River
LF = Landfill | T = Treatment Facility | L = Lake/Ocean | X = Other/Specify_____ | DO = Diluent Ocean

| BAL Sample No. | Sample ID. | Source Code | Sample Type Grab | Sample Type Comp. | Container No. | Container Type | Container Size | Container Pres. | Analysis Required | Date/Time of Collection Start | Date/Time of Collection End |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | RW-4 | W | X | | 2 | P | | Iced/None | HYDROCARBON DEGRADING BACTERIA 92158M | Date: 06/27/11 Time: 1340 | |
| | | | | | | | | | | Date: Time: | |
| | | | | | | | | | | Date: Time: | |
| | | | | | | | | | | Date: Time: | |
| | | | | | | | | | | Date: Time: | |
| | | | | | | | | | | Date: Time: | |
| | | | | | | | | | | Date Time: | |

*CONTAINER TYPE:* P = Plastic | E = EPA Vial | C = Cube | G = Glass | A = Amber Glass | B = Bacteria
*PRESERVATION CODE:* I = Iced | F = Filtered | N = Nitric Acid | H = Hydrocloric Acid (HCL)
S = Sodium Hydroxide (NaOH) | T = Sodium Thiosulfate | O = Other/Specify

| Samplers Signature | Affiliation | Date | Time | Transfers Relinquished By: | Accepted By: | Date | Time |
|---|---|---|---|---|---|---|---|
| Tracy Lee | Earth Data | 6/27/11 | 1615 | | | | |
| Additional Comments: | | | | | D Capuano | 06/28/11 | 1340 |
| Method of Shipment: | | Date | Time | | | | |

**BAL LABORATORY**
**The Microbiology Division of Thielsch Engineering, Inc.**
**185 Frances Avenue**
**Cranston, Rhode Island 02910-2211**

# INVOICE

To: Earth Data Incorporated
131 Comet Dr
Centreville, MD 21617
Attention: Accounts Payable
Contact: Tracy Lee
Client Project: Chester River Hospital Center
Client Project Number: 2781
PO Number:
Date: 07/14/11

Work Order: C106292

| Analysis | Unit Cost | Quantity | Rush Surcharge | Extended Cost |
|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria by 9215B-Modified - | $50.00 | 8 | 0% | $400.00 |
| **Invoice Total:** | | | | **$400.00** |

Terms: Net 30 Days
1.5% Monthly Finance Rate

C106292

**REMIT TO: THIELSCH ENGINEERING, INC. - P.O. BOX 845327 - BOSTON, MA 02284-5327**
For additional services, please call: (401) 785-0241
Federal ID: 050405629

# BAL Laboratory

*The Microbiology Division of Thielsch Engineering, Inc.*


Andrew Bullen
Earth Data Incorporated
131 Comet Drive
Centreville. MD 21617

**RE: Chester River Hospital Center**

Dear Andrew Bullen:

We appreciate this opportunity to provide you with our analytical services. BAL Laboratory is committed to providing the highest quality service. Our dedication to each client includes responsiveness to emergencies, dependability, well-written reports and superior client services.

Enclosed is your data report for **Work Order Number C109218.** The invoice for this project is included with this report unless other arrangements have previously been made with the laboratory. Samples will be disposed of thirty days after the final report has been mailed. If you have any questions or concerns, please feel free to call our Customer Service Department. We value our continued relationship and look forward to hearing from you in the future.

Sincerely,

BAL Laboratory

Darlene Capuano
Laboratory Director

RI Laboratory License Number: A36
MA Laboratory License Number: M RI-M01

enclosure

*Industrial Microbiology - Environmental Investigation - Biological and Specialty Analyses of Water and Wastes - Pollution Tracking and Source Determination - Monitoring Programs - Trend Assessments - Seafood Analyses - Drinking Water Quality - Biosolids and Compost Testing - Biofilter Assessment - Bioaerosol Monitoring - Corrosion Analysis*

# BAL Laboratory

*The Microbiology Division of Thielsch Engineering, Inc.*

*CERTIFICATE OF ANALYSIS*

Client: Earth Data Incorporated
Client Project ID: Chester River Hospital Center

Work Order Number: C109218
Date Received: 9/28/2011 10:15:00AM

**Heterotrophic Plate Count**

**Client Sample ID:** MW-34
**BAL Sample ID:** C109218-01 **Matrix:** Aqueous **Sampled:** 09/27/11 12:45

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **2800** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **1300** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |

**Client Sample ID:** MW-35
**BAL Sample ID:** C109218-02 **Matrix:** Aqueous **Sampled:** 09/27/11 12:58

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **2600** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **1050** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |

**Client Sample ID:** RW-4
**BAL Sample ID:** C109218-03 **Matrix:** Aqueous **Sampled:** 09/27/11 11:12

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **300** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **100** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |

**Client Sample ID:** RW-5
**BAL Sample ID:** C109218-04 **Matrix:** Aqueous **Sampled:** 09/27/11 11:13

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **500** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **400** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |

**Client Sample ID:** MW-22
**BAL Sample ID:** C109218-05 **Matrix:** Aqueous **Sampled:** 09/27/11 11:15

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **1050** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **150** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |

**Client Sample ID:** MW-40
**BAL Sample ID:** C109218-06 **Matrix:** Aqueous **Sampled:** 09/27/11 14:50

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **63500** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **13000** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |

# BAL Laboratory

*The Microbiology Division of Thielsch Engineering, Inc.*

*CERTIFICATE OF ANALYSIS*

Client: Earth Data Incorporated
Client Project ID: Chester River Hospital Center

Work Order Number: C109218
Date Received: 9/28/2011 10:15:00AM

**Heterotrophic Plate Count**

**Client Sample ID:** MW-43
**BAL Sample ID:** C109218-07 **Matrix:** Aqueous **Sampled:** 09/27/11 15:10

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **11100** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **18800** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |

**Client Sample ID:** MW-5
**BAL Sample ID:** C109218-08 **Matrix:** Aqueous **Sampled:** 09/27/11 14:25

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **10300** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **2350** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |

**Client Sample ID:** MW-9
**BAL Sample ID:** C109218-09 **Matrix:** Aqueous **Sampled:** 09/27/11 14:30

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **16800** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **11200** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |

**Client Sample ID:** MW-16
**BAL Sample ID:** C109218-10 **Matrix:** Aqueous **Sampled:** 09/27/11 12:26

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **2350** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **1300** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |

**Client Sample ID:** MW-19
**BAL Sample ID:** C109218-11 **Matrix:** Aqueous **Sampled:** 09/27/11 13:10

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **9550** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **7000** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |

**Client Sample ID:** MW-23
**BAL Sample ID:** C109218-12 **Matrix:** Aqueous **Sampled:** 09/27/11 12:03

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **3850** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **4900** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |

# BAL Laboratory

*The Microbiology Division of Thielsch Engineering, Inc.*

*CERTIFICATE OF ANALYSIS*

Client: Earth Data Incorporated
Client Project ID: Chester River Hospital Center

Work Order Number: C109218
Date Received: 9/28/2011 10:15:00AM

**Heterotrophic Plate Count**

**Client Sample ID:** MW-33
**BAL Sample ID:** C109218-13 **Matrix:** Aqueous **Sampled:** 09/27/11 12:37

| Analyte | Result | Units | Analyzed | Analyst | Method |
|---|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria | **5600** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |
| Heterotrophic Plate Count - 7 day | **2450** | CFU/ml | 09/28/11 10:30 | JEV | 9215B-Modified |

# BAL Laboratory

*The Microbiology Division of Thielsch Engineering, Inc.*

*CERTIFICATE OF ANALYSIS*

Client: Earth Data Incorporated
Client Project ID: Chester River Hospital Center

Work Order Number: C109218
Date Received: 9/28/2011 10:15:00AM

## Notes and Definitions

| | |
|---|---|
| MF | Membrane Filtration |
| MPN | Most Probable Number |
| TNTC | Too Numerous to Count |
| dry | Sample results reported on a dry weight basis |

# BAL Laboratory

The Microbiology Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, Rhode Island 02910
401-785-0241 FAX 401-785-2374

## CHAIN OF CUSTODY

C109218

PROJECT NAME: CHESTER RIVER HOSPITAL CENTER | LOCATION: CHESTERTOWN, MD | NUMBER: 2781

Source Code:
W = Well | O = Outfall | RO = Runoff | B = Bottom Sediment | DR = Diluent River
LF = Landfill | T = Treatment Facility | L = Lake/Ocean | X = Other/Specify_____ | DO = Diluent Ocean

| BAL Sample No. | Sample ID. | Source Code | Sample Type Grab | Sample Type Comp. | Container No. | Container Type | Container Size | Container Pres | Analysis Required | Date/Time of Collection Start | Date/Time of Collection End |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-34 | W | X | | 1 | P | 4 oz. | ICED/NONE | HYDROCARBON DEGRADING BACTERIA 92158M | Date: 9-27-11 Time: 1245 | |
| 2 | MW-35 | W | X | | 1 | P | 4 oz. | | | Date: 9-27-11 Time: 1258 | |
| 3 | RW-4 | W | X | | 1 | P | 4 oz. | | | Date: 9-27-11 Time: 1112 | |
| 4 | RW-5 | W | X | | 1 | P | 4 oz. | | | Date: 9-27-11 Time: 1113 | |
| 5 | MW-22 | W | X | | 1 | P | 4 oz. | | | Date: 9-27-11 Time 1115 | |
| 6 | MW-40 | W | X | | 1 | P | 4 oz. | | | Date: 9-27-11 Time 1450 | |
| 7 | MW-43 | W | X | | 1 | P | 4 oz. | | | Date: 9-27-11 Time: 1510 | |

*CONTAINER TYPE:* P = Plastic | E = EPA Vial | C = Cube | G = Glass | A = Amber Glass | B = Bacteria
*PRESERVATION CODE:* I = Iced | F = Filtered | N = Nitric Acid | H = Hydrocloric Acid (HCL) | S = Sodium Hydroxide (NaOH) | T = Sodium Thiosulfate | O = Other/Specify

| Samplers Signature | Affiliation | Date | Time | Transfers Relinquished By: | Accepted By: | Date | Time |
|---|---|---|---|---|---|---|---|
| T. Lee | Earth Data Inc | 9-27-11 | 1632 | | | | |
| Additional Comments: | | | | | | | |
| Method of Shipment: | | Date | Time | | | | |
| | | | | | 9-28-11 | | 1015 |

# BAL Laboratory

The Microbiology Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, Rhode Island 02910
401-785-0241 FAX 401-785-2374

## CHAIN OF CUSTODY

C109218

PROJECT NAME: CHESTER RIVER HOSPITAL CENTER | LOCATION: CHESTERTOWN, MD | NUMBER: 2781

Source Code:
W = Well | O = Outfall | RO = Runoff | B = Bottom Sediment | DR = Diluent River
LF = Landfill | T = Treatment Facility | L = Lake/Ocean | X = Other/Specify _____ | DO = Diluent Ocean

| BAL Sample No. | Sample ID. | Source Code | Sample Type Grab | Sample Type Comp | Container No. | Container Type | Container Size | Pres | Analysis Required | Date/Time of Collection Start | End |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | MW-5 | W | X | | 1 | P | 4 oz. | ICED/NONE | HYDROCARBON DEGRADING BACTERIA 92158 M | Date: 9-27-11 Time: 1425 | |
| 9 | MW-9 | W | X | | 1 | P | 4 oz. | | | Date: 9-27-11 Time: 1430 | |
| 10 | MW-16 | W | X | | 1 | P | 4 oz. | | | Date: 9-27-11 Time: 1226 | |
| 11 | MW-19 | W | X | | 1 | P | 4 oz. | | | Date: 9-27-11 Time: 1310 | |
| * | MW-20 | W | X | | 1 | P | 4 oz. | | | Date: 9-27-11 Time: 1329 | |
| 12 | MW-23 | W | X | | 1 | P | 4 oz. | | | Date: 9-27-11 Time: 1203 | |
| 13 | MW-33 | W | X | | 1 | P | 4 oz. | | | Date: 9-27-11 Time: 1237 | |

*CONTAINER TYPE:* P = Plastic | E = EPA Vial | C = Cube | G = Glass | A = Amber Glass | B = Bacteria
*PRESERVATION CODE:* I = Iced | F = Filtered | N = Nitric Acid | H = Hydrocloric Acid (HCL) | S = Sodium Hydroxide (NaOH) | T = Sodium Thiosulfate | O = Other/Specify

| Samplers Signature | Affiliation | Date | Time | Transfers Relinquished By: | Accepted By: | Date | Time |
|---|---|---|---|---|---|---|---|
| T. Lee | Earth Data Inc | 9-27-11 | 1632 | | | | |
| Additional Comments: | | | | | | | |
| Method of Shipment: | | Date | Time | | | | |

D Dorsten 9-28-11 1015

* Cup Empty

**BAL LABORATORY**
**The Microbiology Division of Thielsch Engineering, Inc.**
**185 Frances Avenue**
**Cranston, Rhode Island 02910-2211**

# INVOICE

To: Earth Data Incorporated
131 Comet Drive
Centreville, MD 21617
Attention: Accounts Payable
Contact: Andrew Bullen
Client Project: Chester River Hospital Center
Client Project Number: [none]
PO Number:
Date: 10/13/11

Work Order: C109218

| Analysis | Unit Cost | Quantity | Rush Surcharge | Extended Cost |
|---|---|---|---|---|
| Hydrocarbon Degrading Bacteria by 9215B-Modified | $50.00 | 13 | 0% | $650.00 |
| **Invoice Total:** | | | | **$650.00** |

Terms: Net 30 Days
1.5% Monthly Finance Rate

C109218

**REMIT TO: THIELSCH ENGINEERING, INC. - P.O. BOX 845327 - BOSTON, MA 02284-5327**
For additional services, please call: (401) 785-0241
Federal ID: 050405629