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December 8, 2015

U.S. Environmental Protection Agency Region III  
Mr. Richard Rupert  
On-Scene Coordinator  
1650 Arch Street  
Philadelphia, Pennsylvania 19103

Subject: Final Trip Report Addendum for Groundwater Sampling and Water Level Study  
Conducted in August/September 2015 – Delmar Water Well Site.  
Project: Delmar Water Well Site  
EPA Contract No.: EP-S3-15-02  
TDD No.: WS01-15-07-014

Document Control No.: W0026.1A.01523

Dear Mr. Rupert:

Weston Solutions, Inc. (WESTON<sup>®</sup>) is submitting this trip report addendum for the Delmar Water Well Site (Site) located in Delmar, Sussex County, Delaware. This report is an addendum to the Final Trip Report for Monitoring Well Installation and Groundwater Sampling submitted by WESTON in March 2015 (WESTON, 2015a). This report summarizes the sampling activities and analytical results of the groundwater sampling conducted at the Site on August 24 and 25, 2015. This report also summarizes the short-term water level transducer study conducted at the Site in August and September 2015 to determine how the Delmar production wells are influencing groundwater flow through the surficial aquifer.

If you have any questions regarding this report, please call me at (302) 690-0398.

Very truly yours,  
WESTON SOLUTIONS, INC,

A handwritten signature in black ink that reads "Charles Rapone".

Charles Rapone  
Project Task Lead

Enclosure

## 1. INTRODUCTION

Under Eastern Area Superfund Technical Assessment and Response Team (START) Contract No. EP-S3-15-02, Technical Direction Document (TDD) No. W501-15-07-014, U.S. Environmental Protection Agency (EPA) Region III tasked WESTON to collect groundwater samples from the four groundwater monitoring wells installed by EPA in September and October 2015 (MW-1 through MW-4), and from three Delmar Utility Commission (Delmar) public water supply wells. The objective of the sampling was to determine the source of tetrachloroethene (PCE) contamination detected in the primary Delmar public water supply well (PSW-3A).

In addition, EPA tasked WESTON to conduct a short-term water level study at the Site to determine how the Delmar production wells influence groundwater flow in the surficial aquifer. Pressure transducers and associated data loggers were temporarily installed in MW-1 through MW-4 surrounding Delmar production wells, and in one idle, backup Delmar production well (well PSW-2).

## 2. SITE ACTIVITIES

This section discusses the groundwater sampling activities conducted at the Site by WESTON on August 24 and 25, 2015. All activities were conducted in accordance with the Field Sampling Plan – Monitoring Well Installations and Groundwater Sampling – Delmar Water Well Site (WESTON, 2014) and the final Field Sampling Plan Addendum – Delmar Water Well Groundwater Sampling Plan (WESTON, 2015b).

From August 24 to 25, 2015, groundwater samples were collected from MW-1 through MW-4 and from three Delmar public water supply wells (PSW-2, PSW-2A, and PSW-3A). A duplicate groundwater sample was collected from PSW-3A. Groundwater samples collected from PSW-2A and PSW-3A were split with Delaware Health and Social Services (DHSS). In addition, one sample was collected from the Delmar Public Works Department Building to determine the concentration of PCE in a treated water sample directly from the water tower. A trip blank and equipment blank sample were also collected for analysis. All samples were submitted to Spectrum Analytical for target compound list (TCL) volatile organic compound (VOC) analysis. A summary of the groundwater samples collected is presented in **Table 1** below.

Samples collected from MW-1 through MW-4 were collected with the pump intake set at the middle of the screened interval in each well, approximately 135 feet below ground surface (ft. bgs). Two samples were collected from idle, backup supply well PSW-2. One sample was collected with the pump intake set at the top of the reported screened interval, approximately 157 ft. bgs. The other sample was collected with the pump intake set at the bottom of the reported screened interval, approximately 200 ft. bgs. The samples from PSW-2A and PSW-3A were collected from taps attached to the discharge lines of the production well pumps within their respective well houses. The sample collected from the water tower was collected from a tap in a restroom at the Delmar Public Works Department Building. The pump intake depths and samples locations are summarized on Table 1.



**Table 1 Sample Summary: August 2015 Groundwater Sampling**

Sample Identifier	CLP Sample Number	Location	Pump Intake Depth (ft. bgs)/Sample Location	Analytical Parameters	Sample Type
DMW-082415-MW01	C0AJ0	MW-01	135 ft.	TCL VOC	Groundwater
DMW-082415-MW02	C0AJ1	MW-02	135 ft.	TCL VOC	Groundwater Sample
DMW-082515-MW03	C0AJ2	MW-03	135 ft.	TCL VOC	Groundwater
DMW-082515-MW04	C0AJ4	MW-04	135 ft.	TCL VOC	Groundwater
DMW-082515-DEP001	C0AJ7	Water Tower	NA - Collected from a Tap within Public Works Department Building	TCL VOC	Groundwater (Treated)
DMW-082515-DM02a	C0AJ5	PSW-2A	NA - Collected from Bypass Tap located on the Pump Discharge Line	TCL VOC	Groundwater
DMW-082515-DM02b	C0AK0	PSW-2	157 ft.	TCL VOC	Groundwater
DMW-082515-DM02b-02	C0AK3	PSW-2	200 ft.	TCL VOC	Groundwater
DMW-082515-DM03a	C0AJ6	PSW-3A	NA - Collected from Bypass Tap located on the Pump Discharge Line	TCL VOC	Groundwater
DMW-082515-DM03a-01	C0AK1	PSW-3A Duplicate	NA - Collected from Bypass Tap located on the Pump Discharge Line	TCL VOC	Groundwater
DMW-082415-TB	C0AJ9	Trip Blank	NA	TCL VOC	Trip Blank
DMW-082515-EB	C0AJ8	Equipment Blank	NA	TCL VOC	Equipment Blank

Notes:

CLP – Contract Laboratory Program  
 DMW – Delmar Well Site  
 EB – Equipment Blank  
 ft bgs – feet below ground surface  
 MW – Monitoring Well  
 NA – Not Applicable  
 PSW-Public Supply Well  
 TB – Trip Blank  
 TCL – Target Compound List  
 VOC – Volatile Organic Compound

Prior to sampling monitoring wells MW-1 through MW-4 and supply well PSW-2, the depth to groundwater in each well was first measured using an electronic water level meter. WESTON then used a 2-inch diameter stainless steel Grundfos® Redi-Flo submersible pump to conduct low-flow, micro-purge groundwater sampling from each well in accordance with the Field Sampling Plan Addendum – Delmar Water Well Groundwater Sampling Plan (WESTON, 2015b), WESTON SOP No. 201, Groundwater Well Sampling (WESTON, 2011a) and WESTON SOP No. 207, Sampling with a Submersible Pump (WESTON, 2011b). The flow rate was adjusted to approximately 250 liters per minute (L/min) throughout purging, and water quality measurements were collected using a YSI flow-through cell. The flow rate was maintained throughout sample collection to minimize both drawdown in the well and turbulence in the samples.

Water quality and purge stabilization parameters; including pH, temperature, dissolved oxygen (DO), specific conductance and oxidation/reduction potential (ORP), were measured using a YSI water quality meter every 5 minutes in accordance with WESTON SOP No. 207, Sampling with a Submersible Pump (WESTON, 2011b).

Purging continued until water quality parameters stabilized such that the values did not fluctuate by more than the following ranges over three successive readings:

- $\pm 0.1$  pH
- $\pm 3\%$  for specific conductance
- $\pm 10$  millivolts for ORP
- $\pm 10\%$  for DO
- $\pm 0.1^\circ\text{C}$  for temperature

Once water quality parameters stabilized, the tubing was disconnected from the YSI flow-through cell, and groundwater samples were collected directly from the pump tubing into the appropriate sample containers for TCL VOC analysis. Dedicated, disposable polyethylene tubing was used at each well.

Prior to sampling the Delmar production wells (PSW-2A and PSW-3A), the wells were activated and allowed to run for approximately 15 minutes. WESTON collected the samples from the bypass taps located on each of the well pump discharge lines. Samples were collected from the tap directly into the appropriate sample containers for TCL VOC analysis.

The sample collected from the water tower was collected from a tap in a restroom from the Delmar Public Works Department Building. Prior to sampling, the tap was turned on and allowed to run for approximately 10 minutes. WESTON collected the samples from the tap directly into the appropriate sample containers for TCL VOC analysis.

All samples collected during this sampling event were handled and packaged in accordance with the U.S. EPA Region III Sample Submission Procedures for the Office of Analytical Services and Quality Assurance Laboratory Branch (EPA, 2015). Samples were preserved with hydrochloric acid and placed on ice immediately following collection. Well sampling forms containing water quality measurements collected during well purging, and sample information from each well are presented in **Appendix A**.

On August 26, 2015, all samples were shipped via Federal Express for overnight delivery to Spectrum Analytical for TCL VOCs analysis. All samples were submitted on Contract Laboratory Program Routine Analytical Services case number 45538. All shipping containers were labeled with EPA chain-of-custody

seals and delivered with signed chain-of-custody forms and appropriate hazard warnings for the laboratory personnel. Copies of the chain-of-custody records are provided with the Analytical Results Packages in **Appendix B**.

### 3. ANALYTICAL RESULTS

Analytical results from the groundwater sampling conducted on 24 and 25 August 2015, indicated that of the seven wells sampled, only Delmar Public Supply Well PSW-3A had detections of PCE. The PSW-3A sample and its duplicate indicated estimated concentrations of PCE at 0.57 J micrograms per liter ( $\mu\text{g/L}$ ) and 0.5 J  $\mu\text{g/L}$ , respectively. The laboratory “J” qualifier indicates that a compound was detected, but at a concentration below the reporting limit for the analysis, and is thus estimated. These concentrations are below the EPA Maximum Contaminant Level (MCL) of 5  $\mu\text{g/L}$  for PCE. **Table 2** provides a summary of the analytical results for all samples collected from monitoring wells MW-01, MW-02, MW-03, and MW-04 and public supply wells PSW-2, PSW-2A, and PSW-3A.

Benzene and Methyl tert-Butyl Ether (MTBE) were also detected in well PSW-3A at estimated concentrations of only 0.46 J  $\mu\text{g/L}$  and 0.23 J  $\mu\text{g/L}$ , respectively. These concentrations are below the EPA MCL of 5  $\mu\text{g/L}$  for benzene and the EPA Regional Screening Level (RSL) of 14  $\mu\text{g/L}$  for MTBE.

Analytical results of the sample collected from the water tower from within the Town of Delmar Public Works Department Building indicated concentrations of chloroform at 0.34 J  $\mu\text{g/L}$ , and Dibromochloromethane at 0.58  $\mu\text{g/L}$ . Although below their respective EPA RSLs, these compounds are likely bi-products of the chlorinated treatment process. No VOCs in any of the wells exceeded EPA MCLs.

The analytical results were validated to the EPA Region III M3 level according to the National Functional Guidelines for Validation of Organic Data (EPA, 2008) by the EPA Environmental Services Assistance Team contractor. The validated analytical results packages are provided in **Appendix B**.

### 4. GROUNDWATER FLOW DIRECTION

The groundwater flow direction at the Site was determined based on a complete round of static depth to water measurements collected at monitoring wells MW-1 through MW-4 prior to purging and sampling on August 24 and 25, 2015. Depth to water measurements were referenced from the top of the well casings. The water level measurements were then converted to groundwater elevations, relative to feet above mean sea level, based on the surveyed casing elevations, which were presented in North American Vertical Datum 1988. The horizontal coordinates of each well were surveyed in accordance with the Delaware State Plane Coordinate System. Groundwater elevations are provided on **Table 3** below.

**Table 2  
Delmar Water Well Site  
August 2015 Groundwater Sampling  
Detected Analytical Results**

CLP Sample Number:	MCL	RSL	COAJ0	COAJ1	COAJ2	COAJ4	COAJ7	COAJ5
Sample Number:			DMW-082415-MW01	DMW-082415-MW02	DMW-082515-MW03	DMW-082515-MW04	DMW-082515-DEP001	DMW-082515-DM02a
Sample Type:			Monitoring Well-MW1	Monitoring Well-MW2	Monitoring Well-MW3	Monitoring Well-MW4	Public Supply Well-Tower	Public Supply Well-DM02a
Matrix:			Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Units:			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Date Sampled:			8/24/2015	8/24/2015	8/25/2015	8/25/2015	8/25/2015	8/25/2015
Time Sampled:			16:30	18:30	10:15	14:30	11:35	11:28
Location Description:	Farm Field	Residential Well - N. 2nd St	Residential Well - DE Ave	Playground	DEP Split Sample/Tower	Supply Well 2A		
<b>Volatile Organic Compounds</b>								
Acetone	No MCL	No RSL	--	--	--	--	4.5 J	--
Benzene	5	0.46	--	--	--	--	--	--
Carbon disulfide	No MCL	81	--	--	--	--	0.23 J	--
Chloroform	80 <sup>#</sup>	0.22	--	--	--	--	0.34 J	--
Chloromethane	No MCL	19	0.7	0.66	--	--	0.74	0.79 J-
Dibromochloromethane	80 <sup>#</sup>	0.87	--	--	--	--	0.58	--
Ethylbenzene	700	1.5	--	--	--	--	0.5 R	--
Isopropylbenzene (Cumene)	No MCL	No RSL	--	--	--	--	0.5 R	--
m,p-Xylene	10,000*	19	--	--	--	--	0.5 R	--
Methylene chloride	5	11	--	--	--	--	--	--
o-Xylene	10,000*	19	--	--	--	--	0.5 R	--
Styrene	100	120	--	--	--	--	0.5 R	--
Methyl tert-Butyl Ether (MTBE)	No MCL	14	--	--	--	--	--	--
Tetrachloroethene	5	4.1	--	--	--	--	0.5 R	--
Toluene	1,000	120	--	--	--	--	0.5 R	--
Trichloroethene	5	0.28	--	--	--	--	0.5 R	--
Vinyl chloride	2	0.019	--	--	--	--	0.5 R	--

CLP Sample Number:	MCL	RSL	COAK0	COAK3	COAJ6	COAK1	COAJ9	COAJ8
Sample Number:			DMW-082515-DM02b	DMW-082515-DM02b-02	DMW-082515-DM03a	DMW-082515-DM03a-01	DMW-082415-TB	DMW-082515-EB
Sample Type:			Public Supply Well-DM02b	Public Supply Well-DM02b	Public Supply Well-DM03a	Public Supply Well-DM03a	Trip Blank	Equipment Blank
Matrix:			Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Units:			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Date Sampled:			8/25/2015	8/25/2015	8/25/2015	8/25/2015	8/24/2015	8/25/2015
Time Sampled:			12:40	13:05	11:08	11:08	14:00	15:00
Location Description:	Supply Well 2 - Top of screen	Supply Well 2 - Bottom of screen	Supply Well 3A	Duplicate Sample	Trip Blank	Equipment Blank		
<b>Volatile Organic Compounds</b>								
Acetone	No MCL	No RSL	--	--	--	--	8.7	7.1
Benzene	5	0.46	--	--	0.23 J	0.27 J	--	--
Carbon disulfide	No MCL	81	--	--	--	--	--	--
Chloroform	80 <sup>#</sup>	0.22	--	--	--	--	--	--
Chloromethane	No MCL	19	--	--	1.6	0.52	0.37 J	0.44 J-
Dibromochloromethane	80 <sup>#</sup>	0.87	--	--	--	--	--	--
Ethylbenzene	700	1.5	--	--	--	--	--	--
Isopropylbenzene (Cumene)	No MCL	No RSL	--	--	--	--	--	--
m,p-Xylene	10,000*	19	--	--	--	--	0.77	0.68
Methylene chloride	5	11	0.38 J	--	--	--	--	--
o-Xylene	10,000*	19	--	--	--	--	0.22 J	--
Styrene	100	120	--	--	--	--	--	--
Methyl tert-Butyl Ether (MTBE)	No MCL	14	--	--	0.46 J	0.48 J	--	--
Tetrachloroethene	5	4.1	--	--	0.57	0.5	--	--
Toluene	1,000	120	--	--	--	--	--	--
Trichloroethene	5	0.28	--	--	--	--	--	--
Vinyl chloride	2	0.019	--	--	--	--	--	--

Notes:

- CLP = Contract Laboratory Program
- MCL = Maximum Contaminant Level *National Primary and Secondary Drinking Water Regulations* (U.S. Environmental Protection Agency [EPA], May 2009)
- RSL = regional screening level, based on hazard index of 0.1
- MW = Monitoring Well
- DEP = Department of Environmental Protection
- DM = Delmar Municipal
- EB = Equipment Blank
- TB = Trip Blank
- µg/L = micrograms per liter
- \* MCL for total Xylene
- <sup>#</sup> MCL for Total Trihalomethanes
- Indicates analyte not detected
- J = Analyte present, result value is estimated
- J - = Analyte present, result value is estimated, but may be biased low
- R = Rejected data

**Table 3 Groundwater Elevations – Delmar Water Well Site**

Well ID	TOC Elevation (ft. MSL)	Depth to Water (ft. from TOC)	Groundwater Elev. (ft. MSL)
MW-1	49.3	9.5	39.8
MW-2	50.68	10.17	40.51
MW-3	49.88	9.69	40.19
MW-4	51.44	11.32	40.12

**Note:**

DTWs collected on 08/24/15 and 08/25/15

Surveyed Top of Casing elevations provided by F.D. Jones Surveying Assoc. based on NAVD 88

Acronyms:

ft.: Feet

MSL: Mean-Sea Level

MW: Monitoring Well

TOC: Top of Outer Casing

As shown on **Figure 1**, the inferred groundwater flow direction at the Site is generally towards the south-southwest. A slight cone of depression is also indicated on the groundwater surface, centered primarily in the vicinity of EPA monitoring well MW-1. This inferred cone of depression is likely the result of one or more of the Delmar Utility Commission’s public supply wells actively pumping at the time the water levels were collected. The initial water level round collected in October 2014, approximately 2 weeks following the installation of the 4 new monitoring wells, indicated a uniform groundwater contour surface. The horizontal hydraulic gradient at the Site was very gradual, estimated at approximately 0.00029 ft./ft. This is consistent with the generally low hydraulic gradients observed in the very transmissive, coastal plain aquifers in this area of Delaware and Maryland.

During two subsequent static water level rounds, conducted in February and March 2015, a localized pumping influence was also evident on the groundwater surface. The groundwater levels in monitoring well MW-1, located approximately 500 ft. west of the Delmar City Supply Well(s), was lowered by 0.4 ft. in February and by as much as 1.25 ft. in March 2015. The inferred cones of depression depicted on the groundwater contour maps for February and March 2015 (WESTON, 2015a) also suggested that the Delmar City Supply Well(s) may have been actively pumping at the time these static water levels were collected. The larger cone of depression shown on the March 2015 water level map (WESTON, 2015a) may indicate either an additional nearby pumping influence (i.e., the private supply well at Atlantic Coastal Well Drilling), or a later stage in the pumping cycle of a Delmar City Supply Well. The depicted cone of depression on **Figure 1** for August 2015 is interpretive and based primarily on the apparent drawdown observed in well MW-1, as compared to MW-2, MW-3, and MW-4.

## 5. SUPPLY WELL PUMPING INFLUENCE STUDY

Weston temporarily installed electronic pressure transducers/data-loggers in monitoring wells MW-1 and MW-2 on August 24, 2015, following groundwater sample collection from these wells. Transducers were subsequently placed in EPA monitoring wells MW-3 and MW-4, as well as in Delmar Supply Well PSW-2 on August 25, 2015 following groundwater sample collection from those wells.

The transducers were removed from the wells on September 1, 2015, and the data downloaded to a portable computer for processing. The transducers/data-loggers had collected electronic pressure readings (which were converted to water column heights/groundwater elevations) at 1 minute intervals throughout the 8-9 day monitoring period. Continuous measurements of water levels in each of the monitoring wells were recorded to evaluate the area of influence or inferred capture zone of the nearby Delmar Public Supply well PSW-3A. It should be noted that the transducer/data-logger deployed in Delmar Supply Well PSW-2 malfunctioned shortly after installation, rendering the data for that well un-usable. To assist in the evaluation of the Delmar Supply Well PSW-3A, the Delmar Utility Commission supplied copies of their strip chart records for well PSW-3A, which provided information about the on/off cycles for the well during a typical week. The strip charts were provided for the weeks of August 8, September 9 and September 16, 2015, and are included in **Appendix C**.

The water level elevations of monitoring wells MW-1 through MW-4 are shown in graphical form on **Figures 2 through 5**, respectively. As depicted on these graphs, a fairly consistent pumping influence was exhibited by the saw tooth pattern of alternating drawdown and recovery influence at each of the four monitoring wells. MW-1, located closest to the primary Delmar Supply Well (PSW-3A) of the 4 EPA monitoring wells, consistently exhibited the greatest amount of drawdown throughout the week-long monitoring period. In general, the maximum drawdown observed in MW-1 ranged between 0.6 ft. and 0.8 ft. during most of the pumping cycles. In contrast, the general magnitude of the drawdown observed in wells MW-2 through MW-4 ranged from only 0.14 ft. to 0.22 ft. throughout the week.

According to the strip charts supplied by the Delmar Utility Commission for PSW-3A, their supply well cycled on/off four to five times per 24 hour period throughout the weeks for which the charts were provided. This coincides with the cyclic saw tooth pattern of drawdown and recovery observed on the data-logger graphs for MW-1 through MW-4. While there were three instances where evidence of an additional outside pumping influence registered at each of the monitoring wells at roughly the same time period during the week, in general, the consistent pattern of drawdown and recovery coincided with the on/off cycles of PSW-3A.

**Figure 6** depicts groundwater contours during the maximum average peak drawdown registered at each of the monitoring wells during the week of August 24 to September 1, 2015. This composite cone of depression would have repeated itself consistently throughout the week as shown by the data-logger graphs.

As shown on **Figure 6**, the magnitude of the drawdown at the monitoring wells MW-1 through MW-4 was greatest at MW-1, which is the closest in proximity of the 4 wells to PSW-3A (approximately 470 ft.). This drawdown map would roughly approximate the maximum capture zone area of the primary Delmar City Supply well PSW-3A under its normal cyclic operation of the well. However, the actual capture zone of the well is likely somewhat smaller than depicted by the 0.1 ft. contour, due to the highly transmissive nature of this sand and gravel aquifer. Using a more conservative estimate of the actual capture zone (i.e., the width of the 0.5 ft. drawdown contour), the PSW-3A capture zone would be approximately 1500 ft. wide. However, wells MW-1, MW-2, and MW-3 (which would all fall within the

capture zone depicted by the 0.5 ft. contour) all have been non-detect for PCE over the course of multiple sampling rounds. In addition, several samples have been collected from Delmar's backup supply wells PSW-2A and PSW-2 over the past year, and they have all been non-detect for PCE. Unlike monitoring wells MW-1 through MW-4, which were all screened across the same interval as well PSW-3A, backup supply wells PSW-2A and PSW-2 are screened roughly 50 to 60 ft. deeper than PSW-3A. However, there is no distinct confining unit separating these shallow/deep supply wells (according to the geophysical log records). These observations suggest that the source of the PCE detections in PSW-3A is a small and very narrow plume or source area, likely located almost directly upgradient (north-northeast) of well PSW-3A. In a highly transmissive aquifer, such as the one underlying the Site, the amount of lateral plume dispersion emanating from a source zone would be rather narrow as a result of the low hydraulic gradient ( $2.8 \times 10^{-4}$  ft./ft.) and high hydraulic conductivity. This observation is generally supported by the lack of PCE detections in nearby wells both on and off the Site.

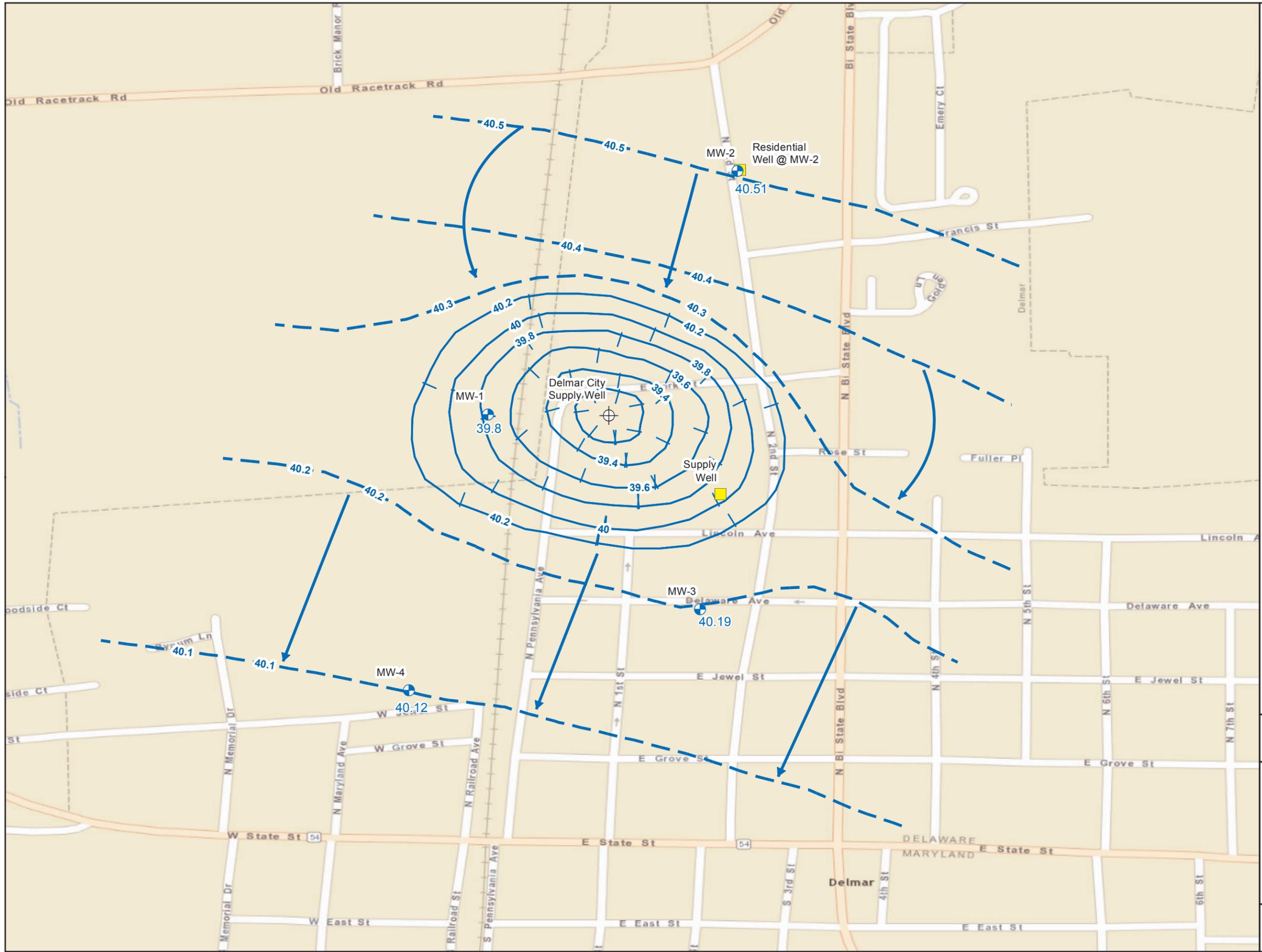
## 6. REFERENCES

- EPA (U.S. Environmental Protection Agency). 2008. National Functional Guidelines for Validation of Organic Data.
- EPA (U.S. Environmental Protection Agency). 2015. EPA Regional Screening Levels. [http://www.epa.gov/reg3hwmd/risk/human/rb-concentration\\_table/Generic\\_Tables/docs/master\\_sl\\_table\\_run\\_JAN2015.pdf](http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/docs/master_sl_table_run_JAN2015.pdf). January 2015.
- WESTON (Weston Solutions, Inc.). 2011a. SOP No. 201, Groundwater Well Sampling
- WESTON (Weston Solutions, Inc.). 2011b. SOP No. 207, Sampling with a Submersible Pump.
- WESTON (Weston Solutions, Inc.). 2014. Field Sampling Plan-Monitoring Well Installation and Groundwater Sampling at the Delmar Water Well Site. September 2014.
- WESTON (Weston Solutions, Inc.). 2015a. Final Trip Report for Monitoring Well Installation and Groundwater Sampling-Delmar Water Well Groundwater Sampling Plan. March 2015.
- WESTON (Weston Solutions, Inc.). 2015b. Field Sampling Plan Addendum-Delmar Water Well Groundwater Sampling Plan. February 2015.

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## FIGURES

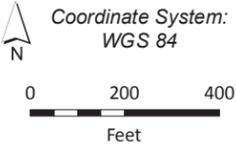
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**Legend**

- MW-1 39.8 Monitoring Wells showing groundwater elevation
- Delmar City Supply Well
- Private Supply Wells
- Groundwater contour in feet above mean sea level (M&L)
- Inferred groundwater flow direction

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, ©



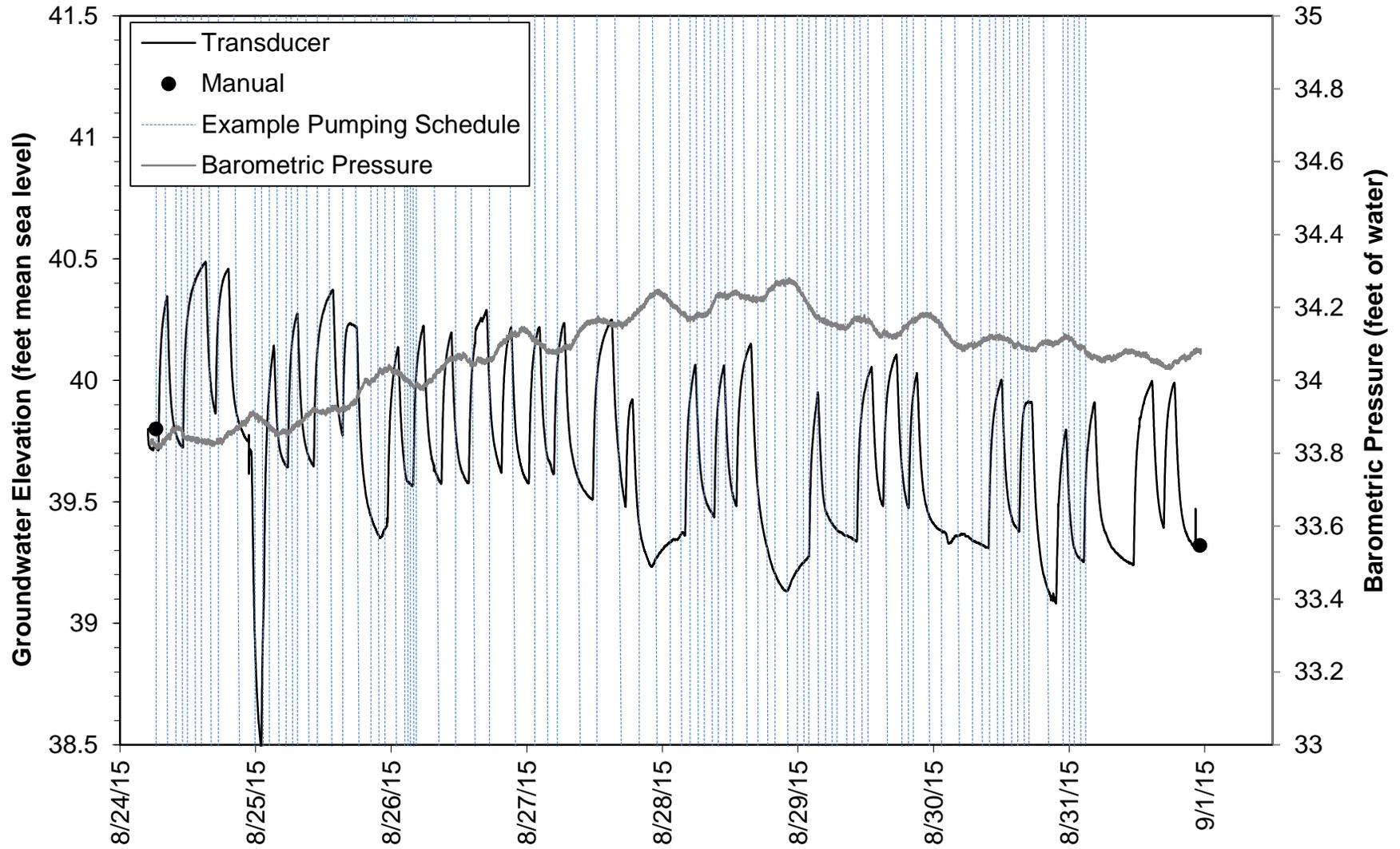
Delmar Water Well  
Delmar, DE

Figure 1  
Groundwater Elevation  
Contour Map  
August 25, 2015

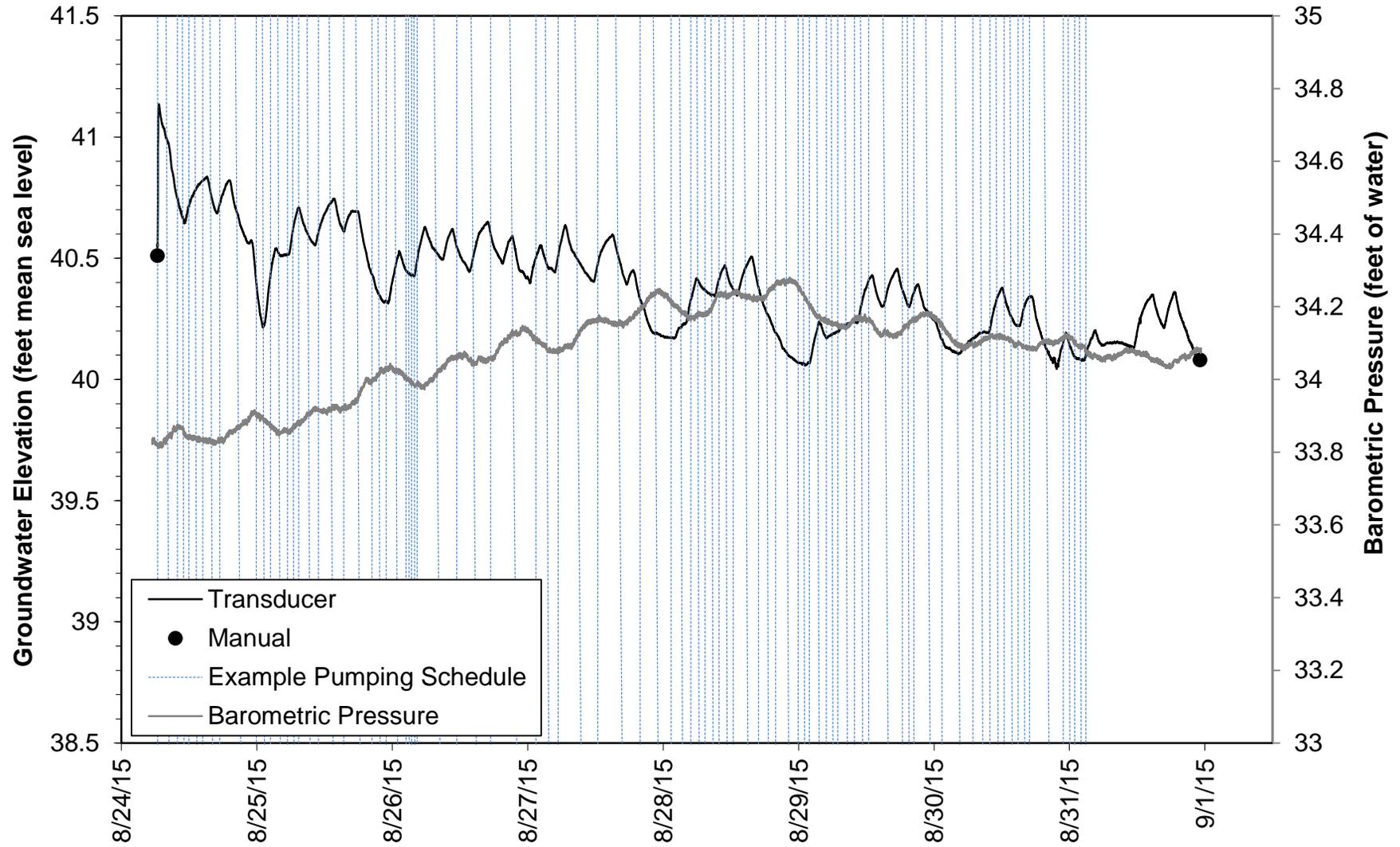
TDD#: WS01-15-07-014  
Contract: EP-S3-15-02



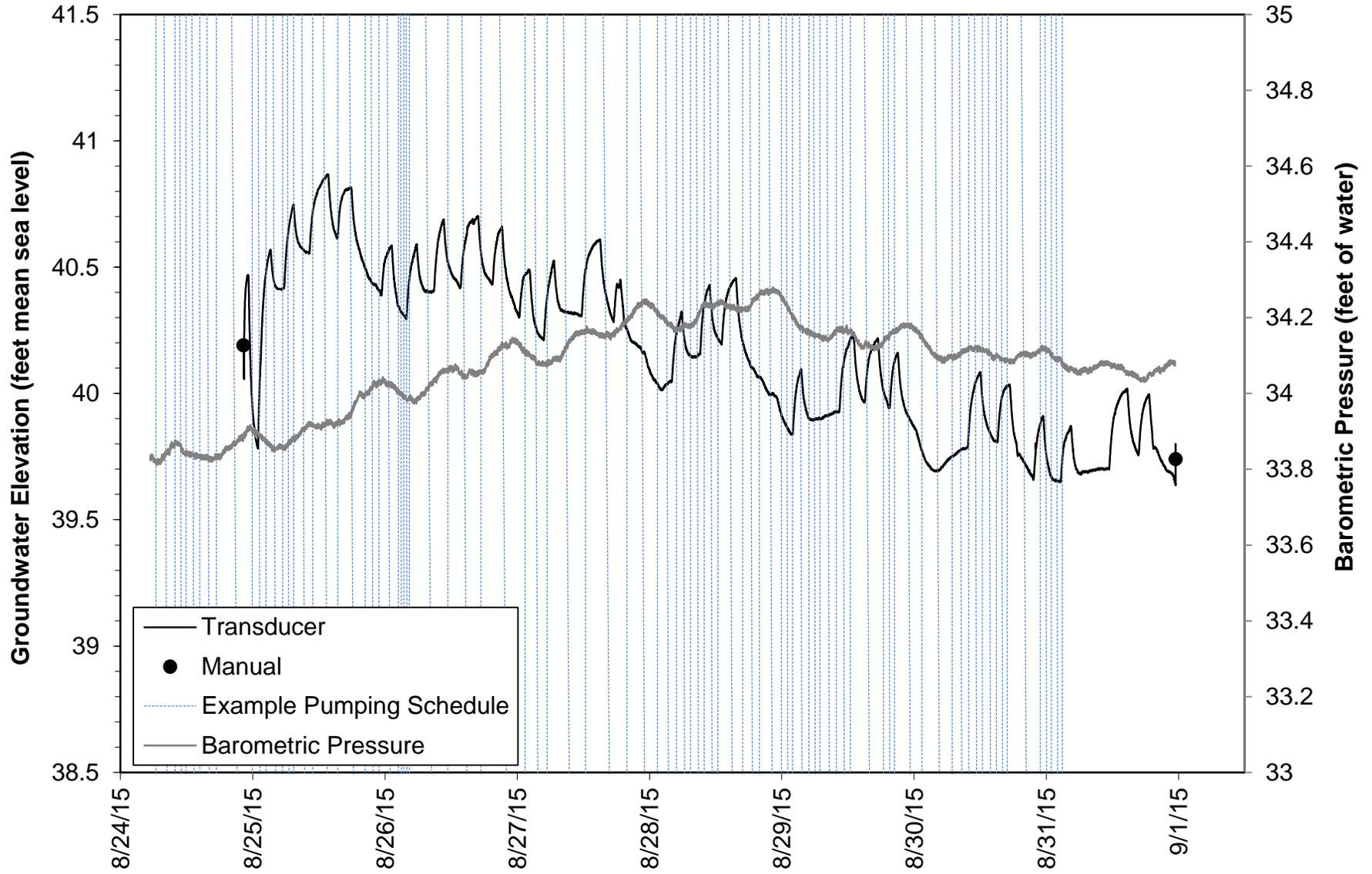
**Figure 2**  
**MW-01 Groundwater Elevation**



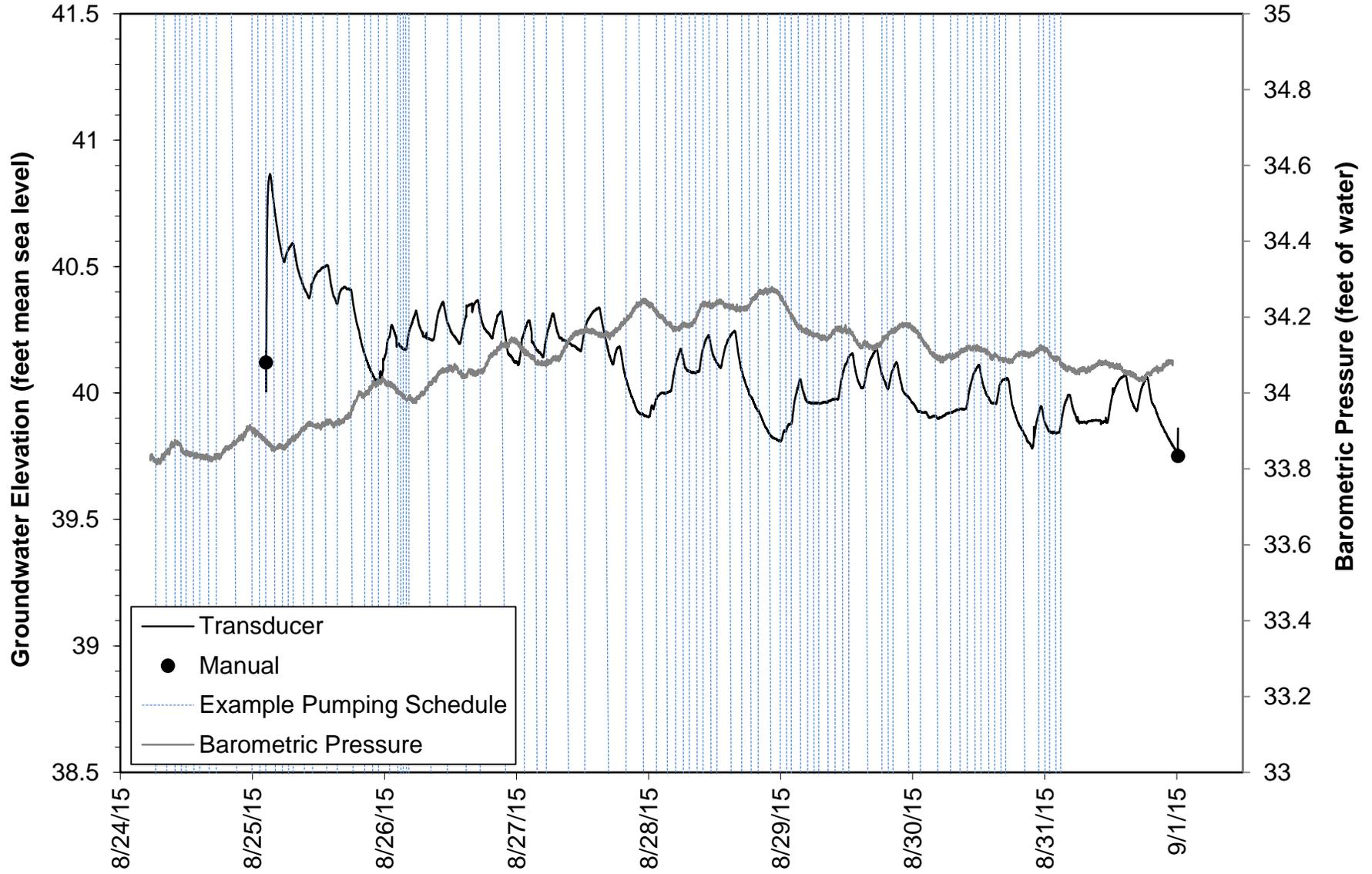
**Figure 3**  
**MW-02 Groundwater Elevation**

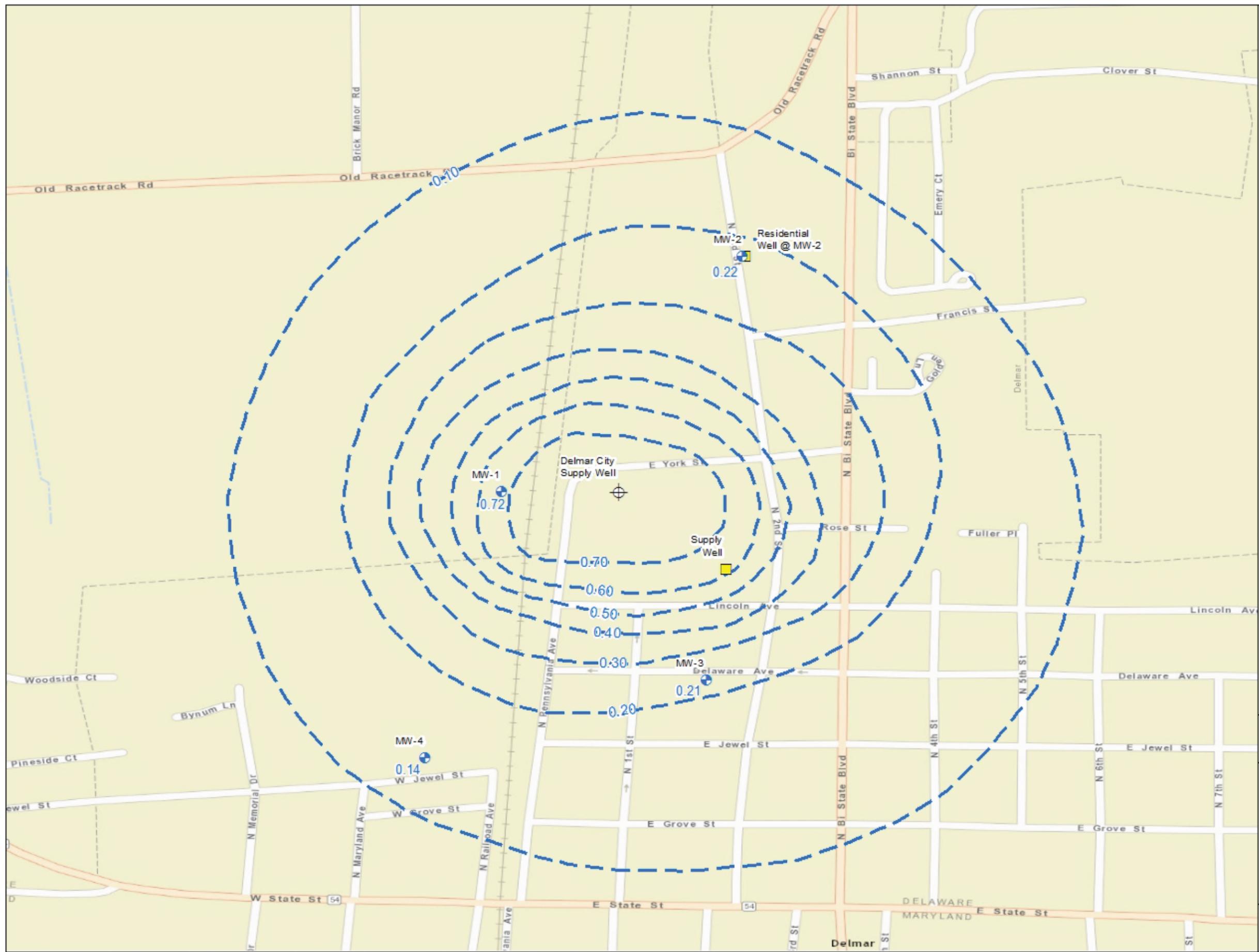


**Figure 4**  
**MW-03 Groundwater Elevation**



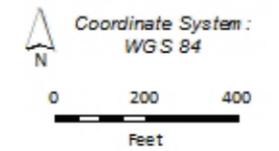
**Figure 5**  
**MW-04 Groundwater Elevation**





- Legend**
- MW-1 0.72 EPA Monitoring Well showing Drawdown in feet
  - Delmar City Supply Well
  - Supply Wells

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, ©



Delmar Water Well  
Delmar, DE

Figure 6  
Peak Drawdown Observed  
at EPA Monitoring Wells  
During Typical Pumping Cycle  
of Delmar City Supply Well  
August 27-28, 2015

TDD#: W501-15-07-014  
Contract: EP-S3-15-02



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**APPENDIX A**

**FIELD SAMPLING FORMS**

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# Well Purging Form

Company: <u>Weston Solutions, Inc.</u>	Location ID: <u>MW-01</u>
Client/Project: <u>EPA Region 3 – START-5</u>	Sample ID: _____
Site/Area: <u>Delmar Water Well</u>	Date: <u>08/24/2015</u>
Sampler: <u>P. Landry/ C. Rapone</u>	Time: <u>1630</u>
Signature: _____	Pump ID: _____

Time	Depth to Water (ft BMP)	Purge Rate or Volume (GPM-Gal)	Total Purge Volume (gallon)	Field Measurements and Units						Comments
				MTP	MPH	MSC	MDO	MEH	PID	
				°C		µg/cm	mg/L	ORP		
15:12	9.42									Static DTW
15:30		Pump on @ 2.2 gpm								91 gallons = 1 well volume.
15:34	13.0	2.2								Pump set at 135 ft TOC
15:36	12.92	2.2								Mid screen
15:42	12.56	2.0	24							Water is clear
15:45	-	3.0		Increased flow rate to 3.1 gpm						
15:48	13.21									
15:55	13.04	3.0								Nearby well may be pumping
16:01	12.92	3.0	84							Recovering again.
16:05	12.87	3.0	96 gallons – reduced flow rate flow ~ 500 mL/min for readings							
16:08	10.65	500 mL/min		15.90	6.92	94	1.27	156		Water is clear
16:12	10.57	500 mL/min		15.61	5.63	105	2.56	183.6		
16:16	10.57	400 mL/min		15.59	5.49	103	2.72	198		Clear
16:20	10.55	400 mL/min		15.61	5.45	104	2.73	207.7		
16:24	10.52	400 mL/min		15.65	5.43	104	2.70	213.7		
16:28	10.54	400 mL/min		15.63	5.41	105	2.71	217.5		
** Collected samples for VOCs @ 16:30 hours										

Total Purge Time: <u>60</u> Min	Total Purge Volume: <u>~102</u> Gal	Recovery: <u>Fast</u>
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Field Measurement Codes			
MTP – Temperature (C)	MCL – Color	MDO – Dissolved Oxygen (mg/L)	MD1 – DTW in Well _____
MSC – Specific Conductance (mS/cm)	MPH – pH	MO1 – Other: _____	MD2 – DTW in Well _____
MPD – Photoionizer (e.g., HNu)	MEH – Eh	MO2 – Other: _____	MD3 – DTW in Well _____
MFD – Flame Ionizer (e.g. OVA)	MAL – Alkalinity	MO3 – Other: _____	MD4 – DTW in Well _____

# Well Purging Form

Company: <u>Weston Solutions, Inc.</u>	Location ID: <u>MW-02</u>
Client/Project: <u>EPA Region 3 – START-5</u>	Sample ID: _____
Site/Area: <u>Delmar Water Well</u>	Date: <u>08/24/2015</u>
Sampler: <u>P. Landry/ C. Rapone</u>	Time: <u>1820</u>
Signature: _____	Pump ID: _____

Time	Depth to Water (ft BMP)	Purge Rate or Volume (GPM-Gal)	Total Purge Volume (gallon)	Field Measurements and Units						Comments
				MTP	MPH	MSC	MDO	MEH	PID	
				°C		µg/cm	mg/L	ORP		
17:10	10.16									Static DTW
17:14		3.7 gpm								Pump on @15:14
17:19	10.38	3.7 gpm								91 gallons = 1 well volume.
17:24	10.38	3.7 gpm	64 gallons							Clear
17:35	10.37	3.7 gpm								
17:42	10.38	3.7 gpm		** Reduced flow rate to ~ 250 mL/min @ 17:43						
17:45		250 mL/min		16.1	5.82	74	0.94	192.8		
17:48	10.24	250 mL/min								
18:00	10.22	250 mL/min		15.80	5.48	75.1	1.09	233.2		
18:04		250 mL/min		15.74	5.48	73.1	1.04	229.1		
18:09	10.24	250 mL/min		15.79	5.50	72.0	1.05	236.6		
18:14	10.24	250 mL/min		15.82	5.51	73	1.07	230.4		
18:18	10.24	250 mL/min		15.78	5.52	73	1.03	223.6		
18:20		250 mL/min		15.78	5.50	73	1.01	226.2		

\*\* Collected samples for VOCs @ 18:20 hours

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Total Purge Time: 66 Min      Total Purge Volume: ~90 Gal      Recovery: Fast

**Field Measurement Codes**

- |                                    |                  |                               |                         |
|------------------------------------|------------------|-------------------------------|-------------------------|
| MTP – Temperature (C)              | MCL – Color      | MDO – Dissolved Oxygen (mg/L) | MD1 – DTW in Well _____ |
| MSC – Specific Conductance (mS/cm) | MPH – pH         | MO1 – Other: _____            | MD2 – DTW in Well _____ |
| MPD – Photoionizer (e.g., HNu)     | MEH – Eh         | MO2 – Other: _____            | MD3 – DTW in Well _____ |
| MFD – Flame Ionizer (e.g. OVA)     | MAL – Alkalinity | MO3 – Other: _____            | MD4 – DTW in Well _____ |

# Well Purging Form

Company: <u>Weston Solutions, Inc.</u>	Location ID: <u>MW-03</u>
Client/Project: <u>EPA Region 3 – START-5</u>	Sample ID: _____
Site/Area: <u>Delmar Water Well</u>	Date: <u>08/25/2015</u>
Sampler: <u>P. Landry/ C. Rapone</u>	Time: <u>1015</u>
Signature: _____	Pump ID: _____

Time	Depth to Water (ft BMP)	Purge Rate or Volume (GPM-Gal)	Total Purge Volume (gallon)	Field Measurements and Units						Comments
				MTP	MPH	MSC	MDO	MEH	PID	
				°C		µg/cm	mg/L	ORP		
09:12	9.68									Static DTW
09:14		2.1								Clear; Pump on @ 2.1 gpm
09:17	9.75	2.1								91 gallons = 1 well volume.
09:23	9.74	2.1								
09:25		3.75		Increased flow rate to 3.75 gpm.						
09:27	9.76	3.75								
09:34	9.76									Clear
09:40	9.78	3.75	80 gallons							
09:45	9.79									
09:48	9.80		100 gallons	** Reduced flow rate to 200 mL/min for readings.						
09:52		200 mL/min		16.55	6.1	56	3.83	192.5		
09:56	9.72	200 mL/min		16.3	5.51	54	4.04	208.5		
09:59		200 mL/min		16.2	5.28	60	4.18	221.3		Clear
10:04		200 mL/min		16.1	5.21	55	4.17	228.7		
10:09	9.71	200 mL/min		16.2	5.15	55	4.22	237.0		
10:14	9.71	200 mL/min		16.18	5.17	60	4.23	238.4		

\*\* Collected samples for VOCs @ 10:15 hours

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Total Purge Time: 62 Min      Total Purge Volume: ~105 Gal      Recovery: Fast

**Field Measurement Codes**

MTP – Temperature (C)	MCL – Color	MDO – Dissolved Oxygen (mg/L)	MD1 – DTW in Well _____
MSC – Specific Conductance (mS/cm)	MPH – pH	MO1 – Other: _____	MD2 – DTW in Well _____
MPD – Photoionizer (e.g., HNu)	MEH – Eh	MO2 – Other: _____	MD3 – DTW in Well _____
MFD – Flame Ionizer (e.g. OVA)	MAL – Alkalinity	MO3 – Other: _____	MD4 – DTW in Well _____

# Well Purging Form

Company: <u>Weston Solutions, Inc.</u>	Location ID: <u>MW-04</u>
Client/Project: <u>EPA Region 3 – START-5</u>	Sample ID: _____
Site/Area: <u>Delmar Water Well</u>	Date: <u>08/25/2015</u>
Sampler: <u>P. Landry/ C. Rapone</u>	Time: <u>1430</u>
Signature: _____	Pump ID: _____

Time	Depth to Water (ft BMP)	Purge Rate or Volume (GPM-Gal)	Total Purge Volume (gallon)	Field Measurements and Units						Comments
				MTP	MPH	MSC	MDO	MEH	PID	
				°C		µg/cm	mg/L	ORP		
13:46		3.1								Static DTW
13:48	11.64	3.1								91-92 gallons = 1 well volume.
13:52	11.62	3.1								Pump set @ 135 ft turned on @ 13:46
14:02	11.57	3.1	51							Clear
14:06	11.57	3.1								
14:10	11.57	3.1								
14:16	11.57	3.1	93							
14:18	11.57	3.1		15.43	5.79	71	1.66	194.2		Reduced flow rate to 250 mL per minute.
14:22				15.40	5.51	65	1.45	205.9		
14:25				15:32	5.37	64	1.50	211.1		
14:28				15:13	5.34	63	2.28	214.5		
14:30				15:09	5.31	64	2.18	220.3		

\*\* Collected samples for VOCs @ 14:30 hours

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Total Purge Time: 52 Min      Total Purge Volume: ~100 Gal      Recovery: Fast

**Field Measurement Codes**

- |                                    |                  |                               |                         |
|------------------------------------|------------------|-------------------------------|-------------------------|
| MTP – Temperature (C)              | MCL – Color      | MDO – Dissolved Oxygen (mg/L) | MD1 – DTW in Well _____ |
| MSC – Specific Conductance (mS/cm) | MPH – pH         | MO1 – Other: _____            | MD2 – DTW in Well _____ |
| MPD – Photoionizer (e.g., HNu)     | MEH – Eh         | MO2 – Other: _____            | MD3 – DTW in Well _____ |
| MFD – Flame Ionizer (e.g. OVA)     | MAL – Alkalinity | MO3 – Other: _____            | MD4 – DTW in Well _____ |

# Well Purging Form

Company: <u>Weston Solutions, Inc.</u>	Location ID: <u>PSW-02</u>
Client/Project: <u>EPA Region 3 – START-5</u>	Sample ID: _____
Site/Area: <u>Delmar Water Well</u>	Date: <u>08/25/2015</u>
Sampler: <u>P. Landry/ C. Rapone</u>	Time: _____
Signature: _____	Pump ID: <u>1305</u>

Time	Depth to Water (ft BMP)	Purge Rate or Volume (GPM-Gal)	Total Purge Volume (gallon)	Field Measurements and Units						Comments
				MTP	MPH	MSC	MDO	MEH	PID	
				°C		µg/cm	mg/L	ORP		
11:55	15.70									Static DTW
12:03	15.92									Pump set @ 157 feet
12:07										Increased flow rate to 3.8 gpm
12:09	16.11		~ 60 gallons							Adjusted pump rate to 2.5 gpm
12:13			~ 70 gallons							
12:16	16.06									
12:20		250 mL/min		17.16	6.95	107	0.25	-59.2		** Reduced flow rate to low flow 250 mL/min
12:24		250 mL/min		16.92	6.70	114	0.00	-102.2		
12:28		250 mL/min		16.67	6.61	104	-0.01	-98.2		
12:32		250 mL/min		16.69	6.58	105	-0.01	-121.6		
12:35		250 mL/min		16.67	6.61	105	-0.03	-114.6		
12:39		250 mL/min		16.80	6.62	105	-0.02	-101.6		Collected VOC sample @ 12:40
12:43		Moved pump to 200 feet								
12:45		250 mL/min		15.49	6.37	103	0.23	-65.9		
12:48	16.09	250 mL/min		15.5	6.29	104	0.10	-68.1		
12:52		250 mL/min		15.51	6.29	105	0.07	-76.6		
12:55	16.12	250 mL/min		15.56	6.31	106	0.04	-87.6		
13:00	14.27	Recovering		15.53	6.33	105	0.02	-90.9		Collected VOC sample @ 13:05

Total Purge Time: 55 Min      Total Purge Volume: ~85 Gal      Recovery: Fast

**Field Measurement Codes**

MTP – Temperature (C)	MCL – Color	MDO – Dissolved Oxygen (mg/L)	MD1 – DTW in Well _____
MSC – Specific Conductance (mS/cm)	MPH – pH	MO1 – Other: _____	MD2 – DTW in Well _____
MPD – Photoionizer (e.g., HNu)	MEH – Eh	MO2 – Other: _____	MD3 – DTW in Well _____
MFD – Flame Ionizer (e.g. OVA)	MAL – Alkalinity	MO3 – Other: _____	MD4 – DTW in Well _____

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**APPENDIX B**

**VALIDATED ANALYTICAL RESULTS**

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
Environmental Sciences Center  
701 Mapes Road  
Fort Meade, Maryland 20755-5350

DATE: October 15, 2015

SUBJECT: Region III Data QA Review

FROM: Brandon McDonald   
Region III ESAT RPO (3EA20)

TO: Richard Rupert  
OSC (3HS31)

Attached is the organic data validation report for the Delmar Water well site for Case #45538; SDG # C0AJ0 completed by the Region III Environmental Services Assistance Team (ESAT) contractor, ICF International, under the direction of Region III EAID.

If you have any questions regarding this review, please call me at (410) 305-2607.

Attachment

cc: Laura Mathew (Weston)  
Charles Rapone (Weston)

TO: #0002 TDF: #0915077

OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE





ICF International  
ESAT Region 3  
US Environmental Protection Agency Environmental Science Center  
701 Mapes Road Ft. Meade, MD 20755-5350  
Phone 410-305-3011

**DATE:** October 13, 2015

**TO:** Brandon McDonald  
ESAT Region 3 Project Officer

**FROM:** Cecelia Minch  
Data Reviewer

Kurt Roby  
Oversight Chemist

**SUBJECT:** Organic Data Validation (Level S4VEM)  
Site: DelMar Water Well  
Case: 45538, SDG: C0AJ0

## **OVERVIEW**

Case 45538, Sample Delivery Group (SDG) C0AJ0, consisted of ten (10) aqueous samples, including one (1) trip blank, one (1) equipment blank, and one (1) field duplicate analyzed for trace volatile compounds. The samples were analyzed by Spectrum Analytical, Inc., (SAR) according to Contract Laboratory Program (CLP) Statement of Work (SOW) SOM02.2 through the Routine Analytical Services (RAS) program.

## **SUMMARY**

Validation of data was performed according to the Organic National Functional Guidelines utilizing the Environmental Data Exchange and Evaluation System (EXES) and is assigned the Superfund Data Validation Label S4VEM (Stage\_4\_Validation\_Electronic\_Manual). Areas of concern with respect to data usability are listed below.

## **MINOR PROBLEM**

Recovery of Deuterated Monitoring Compound (DMC) chloroethane-d5 in samples C0AJ5, C0AJ8, C0AK0, and C0AK3 was below the lower control limit. Positive results reported for compounds associated with this DMC in these samples may be biased low and have been qualified "J-"; quantitation limits are estimated and have been qualified "UJ". None of the samples was reanalyzed.

## **NOTES**

Compounds detected below Contract Required Quantitation Limits (CRQLs) are qualified "J".

Detected concentrations of contaminants chloromethane and acetone less than the CRQL have been reported at the CRQL and qualified "U" for samples in which the associated equipment blank or trip blank had the same compounds present.

The equipment blank (C0AJ8) and trip blank (C0AJ9) contained m/p-xylene at concentrations greater than the CRQL. The trip blank also contained chloromethane and o-xylene at concentrations less than the CRQLs. No data were qualified based on these findings.

Results for field duplicate pair, C0AJ6 (in SDG C0AJ6) and C0AK1, exceeded precision criteria for chloromethane. No data were qualified based on this finding.

The internal standard identifications were reversed between 1,4-dichlorobenzene-d4 and chlorobenzene-d5 on Form 8A-OR. In addition, the retention time (RT) limits were incorrectly defined as  $\pm 0.5$  minutes. The area responses for all samples were associated with the correct internal standard on the summary forms. The internal standard RTs were compared to the proper windows by the reviewer.

The peak identified by the laboratory as an artifact from the DMC mix elutes at approximately 6.95 minutes and not 8.26 minutes as documented in the SDG Narrative.

Tentatively Identified Compounds (TICs) were not validated. The "NJ" qualifier is applied to all non-target compounds listed in the Sample Summary Report (SSR) and Electronic Data Deliverable (EDD) in addition to other laboratory qualifiers. This is a regional modification to the National Functional Guidelines (NFG) for reporting of Tentatively Identified Compounds (TICs). The SSR may not reflect the complete list of TICs included in the EDD. Additionally, the validation level "NV" (Not Validated) is applied to these data.

No manual integrations were noted in the laboratory case narrative.

**GLOSSARY OF DATA QUALIFIER CODES (ORGANIC)**

- U The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method.
- J The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).
- J+ The result is an estimated quantity, but may be biased high.
- J- The result is an estimated quantity, but may be biased low.
- NJ The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents its approximate concentration.
- UJ The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.
- R The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- C This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
- X This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
Environmental Sciences Center  
701 Mapes Road  
Fort Meade, Maryland 20755-5350

DATE: October 6, 2015

SUBJECT: Region III Data QA Review

FROM: Brandon McDonald   
Region III ESAT RPO (3EA20)

TO: Richard Rupert  
OSC (3HS31)

Attached is the organic data validation report for the Delmar Water well site for Case #45538; SDG # C0AJ6 completed by the Region III Environmental Services Assistance Team (ESAT) contractor, ICF International, under the direction of Region III EAID.

If you have any questions regarding this review, please call me at (410) 305-2607.

Attachment

cc: Laura Mathew (Weston)  
Charles Rapone (Weston)

TO: #0002 TDF: #0915015

OFFICE OF ANALYTICAL SERVICES AND QUALITY ASSURANCE





ICF International  
ESAT Region 3  
US Environmental Protection Agency Environmental Science Center  
701 Mapes Road Ft. Meade, MD 20755-5350  
Phone 410-305-3011

**DATE:** September 23, 2015

**TO:** Brandon McDonald  
ESAT Region 3 Project Officer

**FROM:** Cecelia Minch  
Data Reviewer

Kenneth W. Curry  
Oversight Chemist

**SUBJECT:** Organic Data Validation (Level S4VEM)  
Site: Delmar Water Well  
Case: 45538, SDG: C0AJ6

### **OVERVIEW**

Case 45538, Sample Delivery Group (SDG) C0AJ6, consisted of two (2) aqueous samples analyzed for trace volatile compounds. The samples were analyzed by Spectrum Analytical, Incorporated (SAR) according to Contract Laboratory Program (CLP) Statement of Work (SOW) SOM02.2 through the Routine Analytical Services (RAS) program.

### **SUMMARY**

Validation of data was performed based on the Organic National Functional Guidelines utilizing the Environmental Data Exchange and Evaluation System (EXES) and is assigned the Superfund Data Validation Label S4VEM (Stage\_4\_Validation\_Electronic\_Manual). Areas of concern with respect to data usability are listed below.

### **MAJOR PROBLEM**

Recoveries of Deuterated Monitoring Compounds (DMC) vinyl chloride-d3 and toluene-d8 were reported at less than 10% in sample C0AJ7. No positive results were reported for compounds associated with these DMCs in this sample. Quantitation limits for compounds associated with these DMCs in this sample were rejected and are qualified "R". The sample was reanalyzed by the laboratory and reported two (2) additional DMCs less than 10%. Results for these compounds were reported from the initial analysis of this sample.

### **MINOR PROBLEM**

Recoveries of DMCs 1,1-dichloroethene-d2 and trans-1,3-dichloropropene-d4 in sample C0AJ7 were outside the lower control limits. No positive results were reported for compounds associated with these DMCs in this sample. Quantitation limits for compounds associated with these DMCs in this sample have been qualified "UJ". The sample was reanalyzed by the laboratory and reported recovery as less than 10% for these two (2) DMCs and below the lower control limits for all other DMCs. Results were reported from the initial analysis by the reviewer.

### **NOTES**

Compounds detected below Contract Required Quantitation Limits (CRQLs) are qualified "J".

EXES reported sample results for C0AJ7 based on the initial analysis, but applied qualifications based on the DMC performance from the reanalysis of this sample. The qualifiers were corrected to reflect action based on the less severe DMC recoveries observed in the initial analysis by the reviewer.

The internal standard identifications were reversed between 1,4-dichlorobenzene-d4 and chlorobenzene-d5 on Form 8A-OR. In addition, the retention time (RT) limits were incorrectly defined as  $\pm 0.5$  minutes. The area responses for all samples were associated with the correct internal standard on the summary forms. The internal standard RTs were compared to the proper windows by the reviewer.

The peak identified by the laboratory as an artifact from the DMC mix elutes at approximately 6.95 minutes and not 8.26 minutes as documented in the SDG Narrative.

Tentatively Identified Compounds (TICs) were not validated. The "NJ" qualifier is applied to all non-target compounds in addition to other laboratory qualifiers. This is a regional modification to the National Functional Guidelines (NFG) for reporting of Tentatively Identified Compounds (TICs). Additionally, the validation level "NV" (Not Validated) is applied to these data.

Manual integrations noted in the laboratory case narrative were evaluated by the reviewer to be accurate and consistent. No action was taken by the reviewer based on manual integrations performed by the laboratory.

**GLOSSARY OF DATA QUALIFIER CODES (ORGANIC)**

- U The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method.
- J The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).
- J+ The result is an estimated quantity, but may be biased high.
- J- The result is an estimated quantity, but may be biased low.
- NJ The analysis indicates the presence of an analyte that has been “tentatively indentified” and the associated numerical value represents its approximate concentration.
- UJ The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.
- R The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- C This qualifier applies to pesticide and Aroclor results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
- X This qualifier applies to pesticide and Aroclor results when GC/MS analysis was attempted but was unsuccessful.

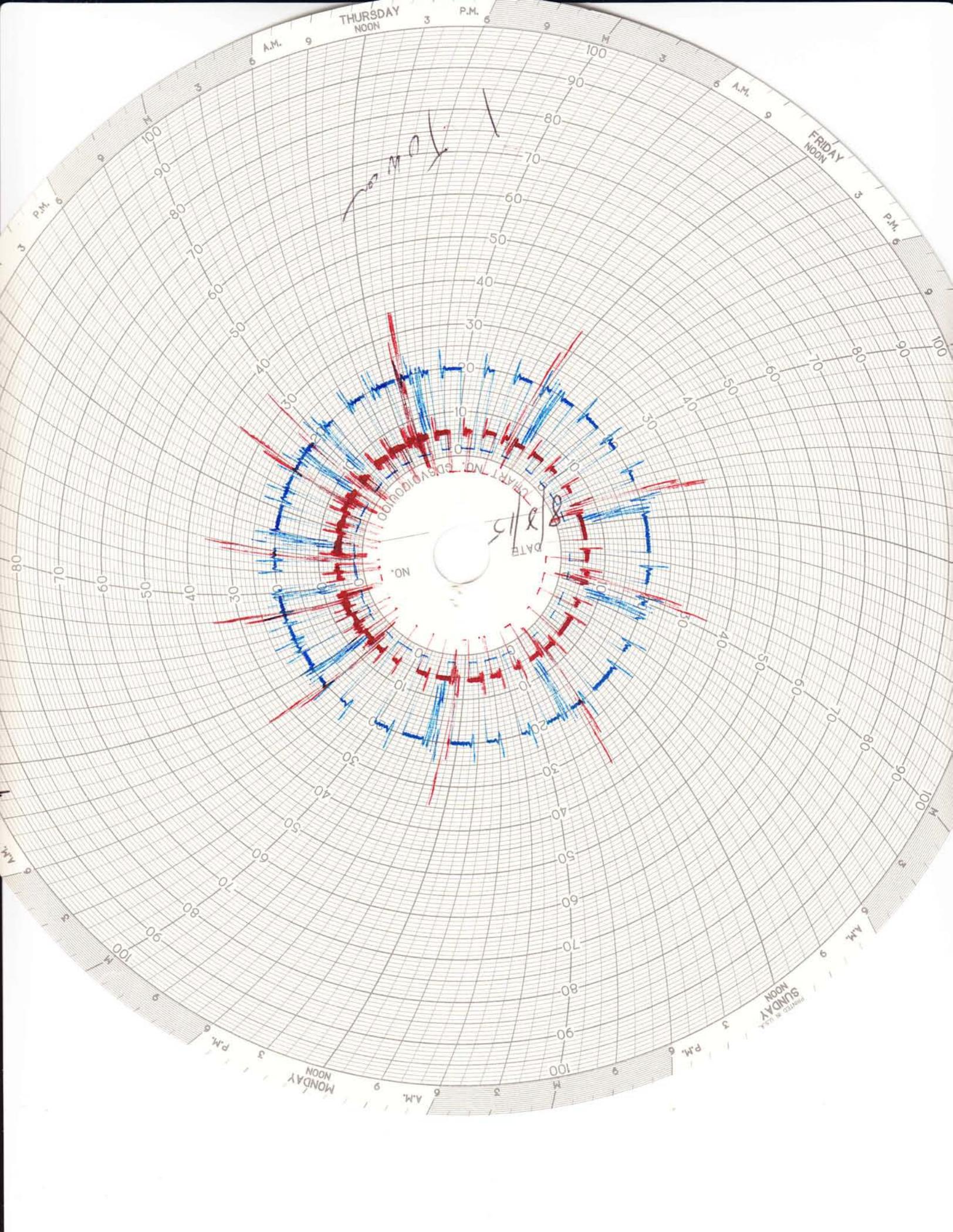
DCN: ESATR3-2015-V630

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**APPENDIX C**

**DELMAR CITY SUPPLY WELL PSW-3A STRIP CHARTS**

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THURSDAY  
NOON

FRIDAY  
NOON

SUNDAY  
NOON

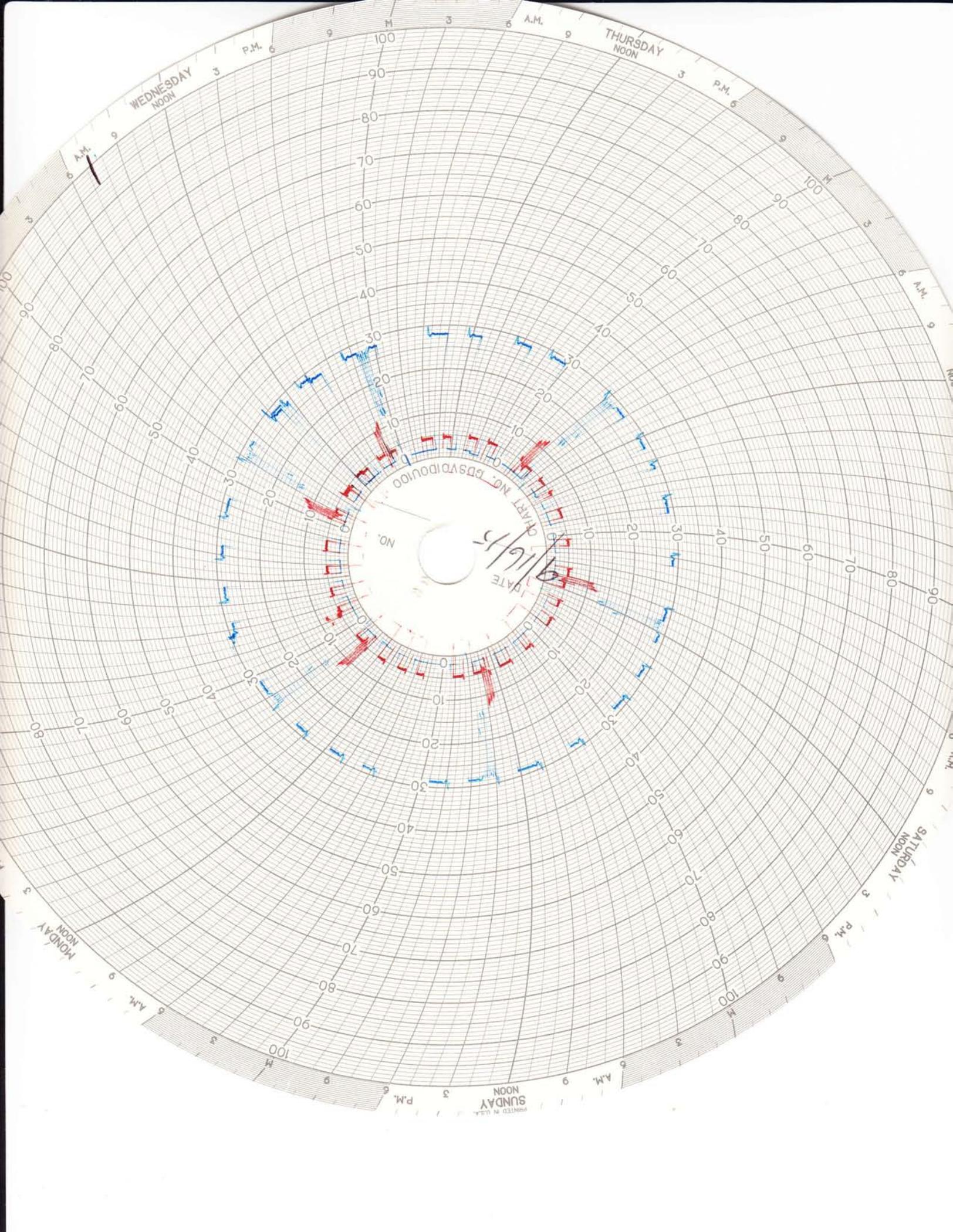
MONDAY  
NOON

THURSDAY  
NOON

CHART NO. 1000  
DATE 8/15

M. O. L.





WEDNESDAY  
NOON

THURSDAY  
NOON

SATURDAY  
NOON

SUNDAY  
NOON

MONDAY  
NOON

P.M. 6

A.M. 9

P.M. 6

A.M. 9

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

P.M. 6

M 3

A.M. 9

M 3

A.M. 9

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