Addendum #9 to
Field Sampling Plan for Part 2 of the Supplemental Groundwater Remedial Investigation
Former York Naval Ordnance Plant
1425 Eden Road, Springettsbury Township
York, Pennsylvania

Prepared for Harley-Davidson Motor Company Operations, Inc.
April 29, 2013

Prepared by:

Groundwater Sciences Corporation
2601 Market Place Street, Suite 310
Harrisburg, PA 17110-9340

Location of Wells South of Site

Subsection 4.1.4 of the Field Sampling Plan for Part 2 of the Supplemental Groundwater Remedial Investigation (FSP) (GSC, April 2012) describes a staged investigation to establish the locations of wells on properties to the south of the former York Naval Ordnance Plant (fYNOP) and U.S. Route 30 (Arsenal Road). Addendum #3 described changes to the preliminary investigation methods used to collect data to position wells to the south due to property access limitations. Specifically, a large property owner, Associated Wholesalers (area designated on Figure 1) would not allow access to their property. The access limitations, combined with the locations of underground utilities that would interfere with the results, eliminated the practical use of Electrical Imaging to assist in locating wells that would intersect deep karst conduits. This addendum (#9) presents the results of the data collected and proposes well locations.

The proposed well sites south of the Site were selected using water levels in existing wells to establish the groundwater gradient, groundwater chemistry, and fracture trace analysis as specified in Addendum #3.

Components of Addendum #3 that were not accomplished at this time:

- Water levels in Mill Creek and the abandoned quarry south of Mill Creek owned by Standard Concrete Products Company were not collected. This information was to be

used in combination with water levels from the existing wells on the Former Cole Steel and North Sherman properties to define the groundwater gradient through this area. Previous studies (REWEI, 1995) have indicated that Mill Creek is perched above the water table, and is a losing stream much of the year. Access to the quarry was not approved until after water levels and sampling of existing wells was completed, and access to the Former Cole Steel and North Sherman properties has now lapsed until proposed well locations are selected and approved. After proposed wells are constructed, benchmarks will be established by survey to monitor the water level in the quarry and Mill Creek water levels.

- Dye receptors were not deployed because of contract problems with the laboratory, which have now been resolved. The dye receptor study described in Addendum #3 will be completed after proposed wells are installed.

Groundwater Gradient

Water levels were measured in on-Site and off-Site wells on December 7, 2012 by SAIC, and are included as Table 1. The water levels were converted to elevation in feet above mean sea level (amsl), and water elevations at shallow wells were contoured to determine the groundwater table gradient. Figure 1 displays the water table contours, showing a southward gradient from the southeast corner of the fYNOP Site, then turning westward on the former Cole Steel property.

Bedrock Surface Contours

Bedrock surface contours were constructed for the area south of the Site using depth to rock recorded in well logs. Bedrock surface contours can indicate zones of increased weathering and karst development, and therefore are being considered in selecting the proposed well locations. Not much data is available to the south, and because of this, the degree to which the data influenced the well positioning will be minimized.

As a result of an unusually deep bedrock surface elevation recorded at Cole E deep (294.36 ft amsl), two ten-foot contours indicating closed depressions were constructed covering a majority of the area in which wells have been drilled. Figure 2 shows bedrock contours that were generated for the fYNOP property to the north, in addition to contouring under the K.G. Whiteford property.

Groundwater Chemistry

On September 25, 2012, the following wells were sampled:

MW-12 (Cole Steel)

MW-2[Cole (Flush)]

MW-8 [Cole B]

GMW-1D

On November 9, 2012, Ru-MW-5 and Ru-MW-6 were sampled by United Environmental Services, Inc. and samples were provided to GSC.

Samples were sent to TestAmerica – Pittsburgh for laboratory analysis using method SW-8260B for parameters listed on Table A-6 of the Quality Assurance Project Plan (QAPP), June 2012.

Table 2 displays the results of laboratory analyses for these wells sampled. Figure 3 displays the TCE and PCE values posted for the above recently sampled wells. In addition, TCE and PCE water quality results from past sampling events (2007 through 2009) are posted for adjacent wells not sampled during this sampling event. TCE concentration contours from the Groundwater RI (Part 1) report are also included.

Cross section F-F' (Figure 4) traverses in a northeast-southwest direction from the southeast corner of the fYNOP property. At the well cluster composed of MW-64S, MW-64D and MW-141A, water level measurements posted on the section indicate an upward gradient between deep well MW-141A and shallower well MW-64D. While the water levels in epikarst wells such as MW-64D can fluctuate by large amounts. Water levels in MW-64D have fluctuated from a maximum elevation of 364.15 ft amsl (12/23/2003) to a minimum of 351.33 ft amsl (12/21/2007). Fully equilibrated water levels have been recorded in MW-141A twice, since it is a recently installed well. Those levels are 367.35 ft msl (11/30/2012) and 367.99 ft amsl (12/7/2012). Comparing the water level elevations in MW-141A to water level elevations in down-gradient wells MW-116 (353.88 ft amsl on 12/7/2012) and Cole F (352.22 ft amsl on

12/7/2012) indicates an upward gradient may be persistent in the portion of the aquifer observed by MW-141A.

In addition, very low concentrations of Site-related COCs were detected in MW-141A. Drilling conditions indicate no solutioning or karst activity encountered in MW-141A below 103'.
The distribution of TCE and PCE was used as an indication of potential groundwater pathways from the Site. Following are observations:

- TCE and PCE were not detected in MW-109S&D, Ru-MW-5 and Ru-MW-6, suggesting that migration of TCE from the southeast corner of the Site (MW-64S&D area) does not migrate due south, but more likely in a southwesterly direction.
- Further to the west, TCE concentrations in MW-110, Cole F and Cole D suggest groundwater migration, at least in the shallow portion of the aquifer may pass from the Site through these wells, migrating in a southwesterly direction.
- TCE and PCE concentrations were detected in MW-4 (Cole), GMW-1D and Cole Steel MW-12, but not further south in MW-2[Cole(Flush)] or MW-8[Cole B]. This suggests that groundwater originating from the Site continues to migrate westward.
- TCE and PCE concentrations were detected in RW-5, possibly indicating continued westward migration of groundwater originating from the southeast corner of the Site.

Fracture Trace Analysis

An aerial photograph fracture trace analysis was completed a number of years ago for the fYNOP Site to identify likely fracture zone locations and their orientation in the carbonate limestone aquifer, and to correlate them, where possible, with karst weathering features in the bedrock. The results were reported in the Groundwater Remedial Investigation Report (Part 1). This methodology was revisited, concentrating on the area to the south of current U.S. Rt. 30 and to the west of the Site to identify possible fracture locations and fracture orientation in the carbonate bedrock. A photogeologic fracture trace is defined by Lattman (1958) as a "natural linear feature consisting of topographic (including straight stream segments), vegetal, or soil tonal alignments, visible primarily on aerial photographs, and expressed continuously for less

than one mile. Only natural linear features not obviously related to outcrop pattern or tilted beds, lineation and foliation, and stratigraphic contacts are classified as fracture traces."

Black and white 10- by 10-inch prints of aerial photographs taken in September 1937 and April 1938 were obtained at a scale of 1:20,000. The historical aerial photographs were used to map fracture traces and lineaments to allow these features to be observed with minimal disturbance by Site development. The photographs were viewed obliquely and in stereo at various magnifications. Fracture traces were mapped and marked directly on the photographs. The photographs were digitally scanned, imported into the Arcview®, and superimposed on the Site topographic base map, rotated, and scaled for best-fit. Straight line segments were aligned with the mapped fractures on the photographs and saved as an Arcview® shape file. Forty (40) fracture trace features were mapped by this most recent effort, 18 of which intersect the area to the south.

Figure 5 shows the results of the mapping process. A set of fractures are shown oriented approximately north 25-45° west. A second set of fractures are shown with an orientation of approximately north 20-40° east. One fracture trace passes in close proximity to Cole E deep, where the depth to bedrock was found to be unusually deep, providing an additional; layer of credibility to that mapped feature.

Proposed Locations

Figure 6 shows ground surface contours, bedrock surface contours, water table contours, groundwater chemistry (TCE and PCE), and fracture traces. Four proposed locations for wells to the south of the Site are also shown.

- Two locations (MW-150 and MW-151S,D) are shown on Former Cole Steel Property, and it is the intent to locate a well in both locations. These locations were selected to intersect fracture traces. MW-150 is located on the fracture trace that passes through the Cole E deep location, where depth to bedrock was found to be unusually deep. MW-151S,D is located on a northeast-southwest tranding fracture trace. Based on known

groundwater chemistry and gradient, these locations appear to be in the potential pathway of the migrating COCs from the fYNOP Site.

- Two proposed sites are also shown on Giambalvo property (MW-152S,D), however it is intended that a well be placed in only one of these locations. Due to the proximity of these sites to overhead and underground utilities, the option was left open to determine the more practical of these two locations. Both locations are positioned to intersect fracture traces, and are proximal to the likely southern limit of the potential pathway of the migrating COCs from the fYNOP Site.

Well Construction

Well site MW-150 is located in close proximity to existing Cole Steel wells MW-10 S & D that have total depths of 36' and 78' respectively. Therefore, a single well will be constructed to a depth of approximately 200'. The intent is to construct the open interval of this well in a solution feature in the range of depth of 150' to 200' below ground surface (bgs).

Well sites MW-151 S,D and MW-152 S,D will be constructed to a depth of approximately 200'. The intent is to construct open intervals at approximately 100' and 200' in the same boring. Solution features would be targeted.

If solution features are penetrated, and if formation conditions allow, groundwater quality profiling and point-dilution testing of flow velocity, as described in Addendum 2, will be conducted on the borehole or constructed well.

The intent is to drill these wells using HQ coring. This is proposed primarily to avoid the addition investigation-derived waste (IDW) and to minimize the potential to trigger latent sink holes on these properties. A 2" diameter standard-construction well would be built in single well MW-150. In MW-151S,D and MW-152S,D, Waterloo multilevel samplers would be constructed.

Groundwater Sampling

After well construction, well development and sampling will be conducted in accordance with the FSP and addendums 1 and 3.

Prepared by:

Stephen M. Snyder, PG
Senior Associate and Hydrogeologist

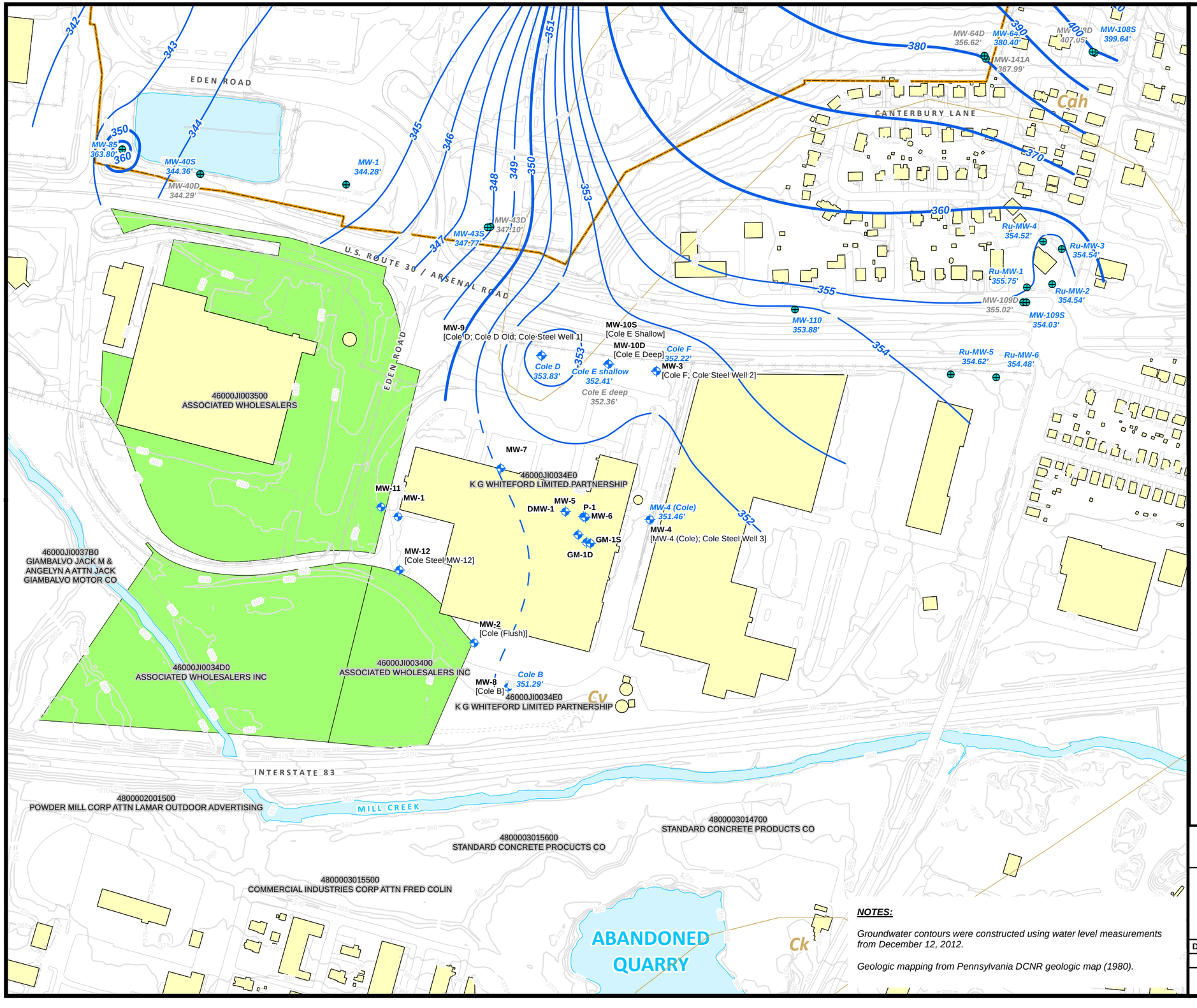
References

GSC, 2011. Supplemental Remedial Investigation Groundwater Report (Part 1) Former York Naval Ordnance Plant, September.

GSC, 2012. Field Sampling Plan (FSP) for Part 2 of the Supplemental Groundwater Remedial Investigation, April.

Lattman, L.H., 1958. Technique of Mapping Geologic Fracture Traces and Lineaments on Aerial Photographs, Photogrammetric Engineering, Vol. 84, pp.568-576.

R. E. Wright Environmental, Inc. (REWEI), September 1995, Final Technical Work Plan Southern Property Boundary Area Interim Study, Prepared for Harley-Davidson Motor Company, York, PA.



LEGEND

- Bridge Surface Gauging Point
- Monitoring Well
- Active Collection Well
- Groundwater Contour Depression (Feet AMSL)
- Groundwater Contour (Feet AMSL)
- Contact
- Cah — Antietam & Harpers Formation, undiv.
- Cv — Vintage Formation
- Ck — Kinzers Formation
- Cl — Ledger Formation
- Site Property Boundary
- Railroad
- Road (Paved)
- Road Curb
- Road (Unpaved)
- Walkway
- Fenceline
- Topography
- Existing Building
- Associated Wholesalers Inc Parcel Boundary

N W E S

Scale (feet)
0 75 150 300

Figure 1

NOTES:

Groundwater contours were constructed using water level measurements from December 12, 2012.

Geologic mapping from Pennsylvania DCNR geologic map (1980).

Former York Naval Ordnance Plant
1425 Eden Road, York, PA 17402

Field Sampling Plan for Groundwater RI (Part 2)
Addendum 9
Study Area South of Site
Groundwater Table Contours

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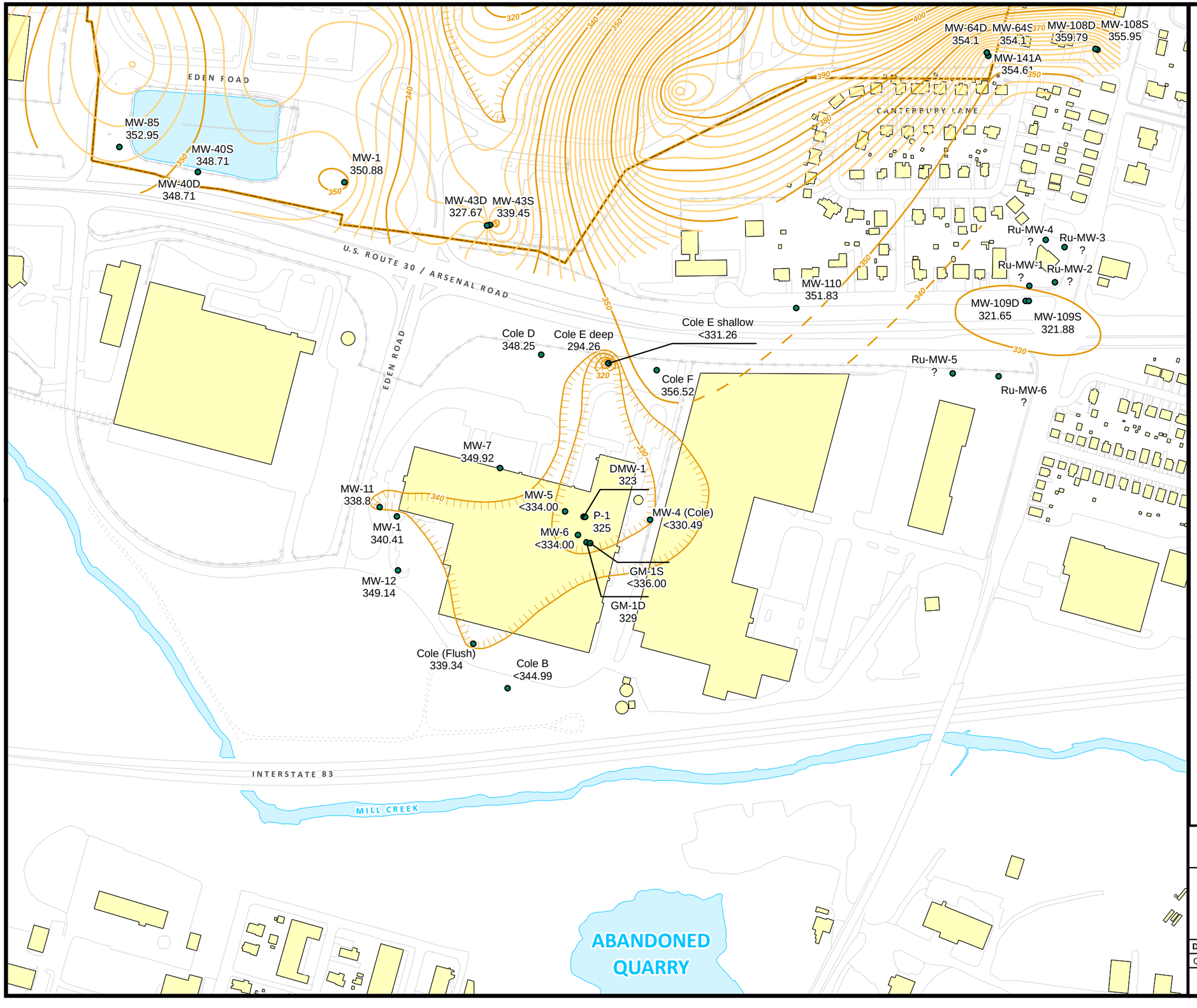

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LEGEND

- Bedrock Surface Elevation
- Major Bedrock Contour Closed Depression
- Major Bedrock Contour
- Major Bedrock Contour Inferred
- Minor Bedrock Contour
- West Campus Property Line
- Harley-Davidson Property Boundary
- Railroad
- Road (Paved)
- Road Curb
- Road (Unpaved)
- Walkway
- Fenceline
- Existing Building to Remain

Scale (feet)

0 75 150 300

Figure 2

Former York Naval Ordnance Plant

1425 Eden Road, York, PA 17402

Field Sampling Plan for Groundwater RI (Part 2)
Addendum 9
Study Area South of Site
Bedrock Surface Contours

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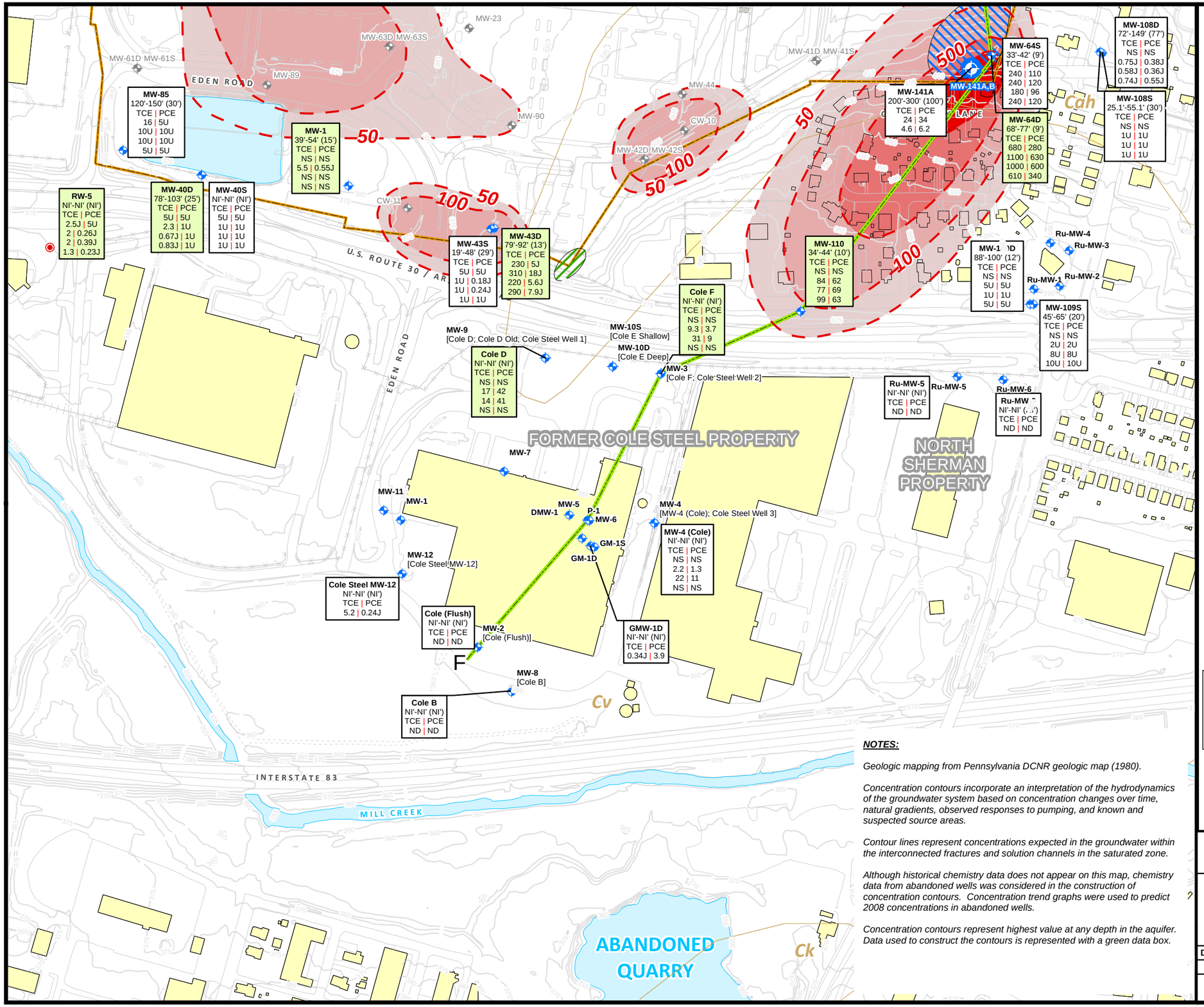

NOTES:

Geologic mapping from Pennsylvania DCNR geologic map (1980).

Concentration contours incorporate an interpretation of the hydrodynamics of the groundwater system based on concentration changes over time, natural gradients, observed responses to pumping, and known and suspected source areas.

Contour lines represent concentrations expected in the groundwater within the interconnected fractures and solution channels in the saturated zone.

Although historical chemistry data does not appear on this map, chemistry data from abandoned wells was considered in the construction of concentration contours. Concentration trend graphs were used to predict 2008 concentrations in abandoned wells.

Concentration contours represent highest value at any depth in the aquifer. Data used to construct the contours is represented with a green data box.

LEGEND

N
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- Vertical Extent Wells
- Residential Well,
- Monitoring Well
- Abandoned Well
- Inferred TCE Concentration Contour (ppb)
- Cross Section Transect
- PCE, Known Source Area
- PCE, Suspected Source Area
- Contact
- Cah — Antietam & Harpers Formation, undiv.
- Cv — Vintage Formation
- Ck — Kinzers Formation
- Cl — Ledger Formation
- Site Property Boundary
- Railroad
- Road (Paved)
- Road Curb
- Road (Unpaved)
- Walkway
- Fenceline
- Topography
- TCE Concentration 50 ppb
- TCE Concentration 100 ppb
- TCE Concentration 500 ppb
- TCE Concentration 1000 ppb
- Existing Building to Remain
- Demolished
- Demolished/Slab Removed

Location ID
Top of Open Interval FtBGS - Bottom of Open Interval FtBGS (Open Interval Thickness)
Trichloroethene and Tetrachloroethylene
1. 2007 Key Well (May-June 2007)
2. 2008 Sup RI Rnd 1 (April-May 2008)
3. 2008 Sup RI Rnd 2 (September-October 2008)
4. 2009 Key Well (June-July 2009)

The chemistry results for MW-141A, Cole B, Cole Steel MW-12, Cole (Flush), GM-1D are from September and November of 2012 and January 2013.

Scale (feet)
0 75 150 300

Figure 3

Former York Naval Ordnance Plant
1425 Eden Road, York, PA 17402

Field Sampling Plan for Groundwater RI (Part 2)
Addendum 9
Study Area South of Site
Groundwater Chemistry

DRAWN BY: JPB	CHECKED AND APPROVED BY: JR/SS	DATE: 4/3/2012

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F South — **F' North**

Former Cole Steel Building

Rqute 30

Cole (Flush) (MW-2)

Cole (Flush)
12'-25' (13')
TCE | PCE
1 U | 1 U

DMW-1

Cole F (MW-3)

352.22'

Cole F
17'-37' (20')
TCE | PCE
B: 9.3 | 3.7
C: 31 | 9
D: NS | NS
E: 33 | 14
F: 7.5 | 2.6

MW-110

353.88'

MW-110
31.5'-44' (12.5')
TCE | PCE
B: 84 | 62
C: 77 | 69
D: 99 | 63
E: 66 | 50
F: 56 | 45

MW-141A

MW-64S

MW-64D

380.40'

356.62'

MW-64S
33'-42' (9')
TCE | PCE
B: 240 | 120
C: 180 | 96
D: 240 | 120
E: 140 | 74
F: 120 | 64

MW-64D
68'-77' (9')
TCE | PCE
B: 1100 | 630
C: 1000 | 600
D: 610 | 340
E: 910 | 680
F: 810 | 560

367.99'

MW-141A
200'-300' (100')
TCE | PCE
24 | 34
4.6 | 6.2

MW-92

393.75'

MW-92
50'-100.5' (50.5')
TCE | PCE
A: 53 | 160 J
B: 21 | 140
C: 45 | 190
D: 44 | 240

MW-91

445.88'

MW-91
50'-75' (25')
TCE | PCE
A: 21 | 130
B: 21 | 130
C: 22 | 210
D: 20 | 120

MW-2

444.93'

MW-2
46'-121' (75')
TCE | PCE
B: 19 | 120
C: 14 | 110
D: 16 | 94
E: 10 | 73
F: 8.4 | 59

Elevation in Feet Relative to Mean Seal Level

Scale: 1-Inch =25 feet (Vertical) and 1-inch=100 feet (Horizontal) and Vertical Exaggeration 4x

Location ID (Wells Installed 2012)
Top of Open Interval FtBGS - Bottom of Open Interval FtBGS (Open Interval Thickness)
Trichloroethene and Tetrachloroethylene
Event #1
Event #2
Event #3

Location ID
Top of Open Interval FtBGS - Bottom of Open Interval FtBGS (Open Interval Thickness)
Trichloroethene and Tetrachloroethylene
A. 2007 Key Well (May-June 2007)
B. 2008 Sup Rl Rnd 1 (April-May 2008)
C. 2008 Sup Rl Rnd 2 (September-October 2008)
D. 2009 Key Well (June-July 2009)
E. 2010 Key Well (June-July 2010)
F. 2011 Key Well (June 2011)

Legend

- Tetrachloroethene (PCE)
- Trichloroethene (TCE)
- cis-1,2-Dichloroethene (cis-12DCE)
- Vinyl Chloride (VC)
- 1,1-Dichloroethene (11DCE)
- 1,1-Dichloroethane (11DCA)
- 1,1,1-Trichloroethane (TCA)
- Overburden
- Limestone/Dolostone
- Sandstone/Quartzite
- Void
- Water Level
- Open Interval
- Well

Notes:

1.79 Groundwater Elevation Measured on December 7, 2012

NM Groundwater Elevation Not Measured

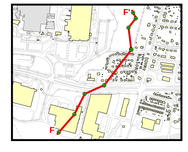

Figure 4

Former York Naval Ordnance Plant
1425 Eden Road, York, PA 17402

Cross Section F-F'

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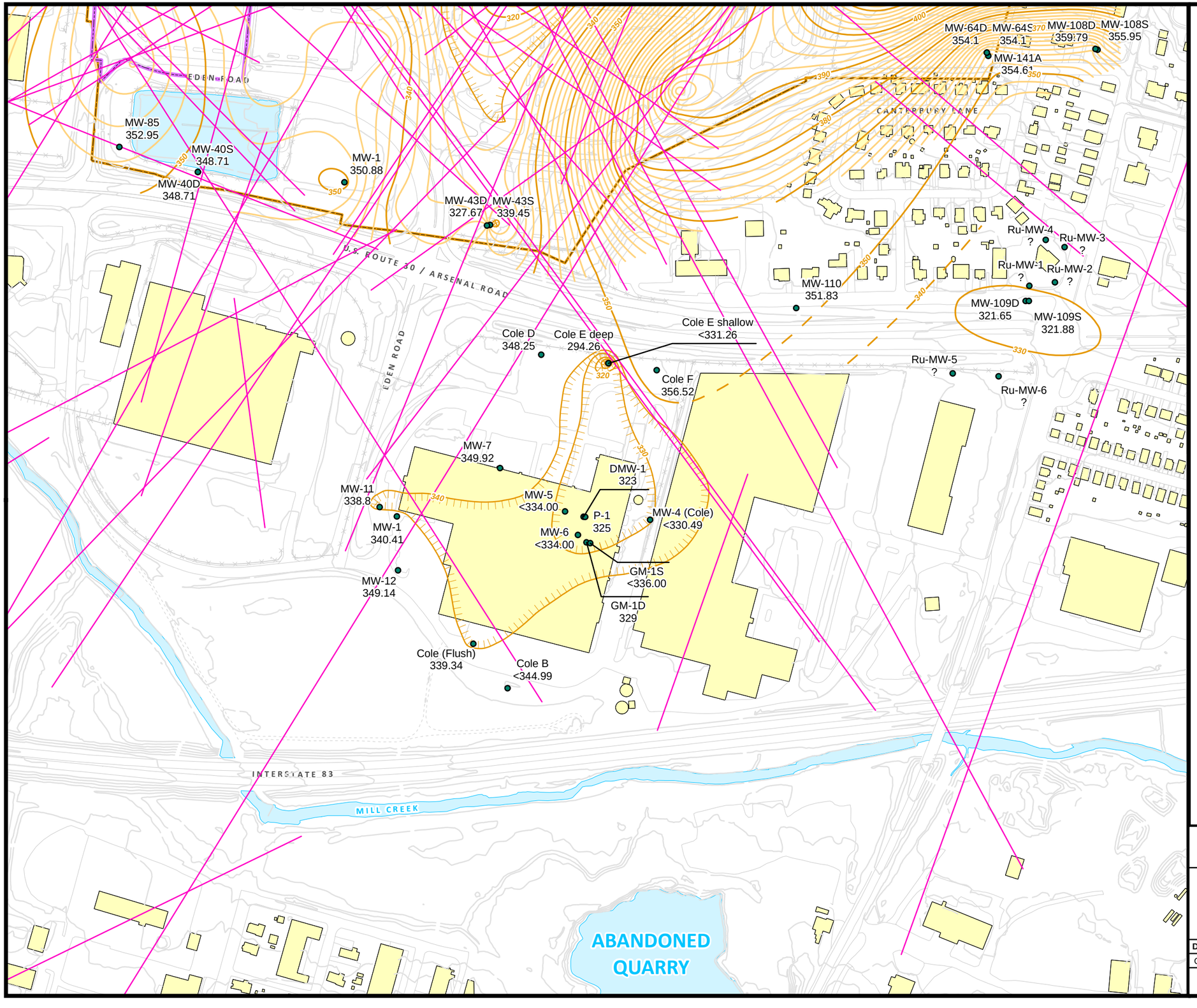

N
W E
S

LEGEND

- Bedrock Surface Elevation
- Fracture Trace
- Major Bedrock Contour Closed Depression
- Major Bedrock Contour
- Major Bedrock Contour Inferred
- Minor Bedrock Contour
- West Campus Property Line
- Harley-Davidson Property Boundary
- Topography
- Railroad
- Road (Paved)
- Road Curb
- Road (Unpaved)
- Walkway
- Fenceline
- Existing Building to Remain

Scale (feet)

0 75 150 300

Figure 5

Former York Naval Ordnance Plant

1425 Eden Road, York, PA 17402

Field Sampling Plan for Groundwater RI (Part 2)
Addendum 9
Study Area South of Site
Fracture Trace Analysis

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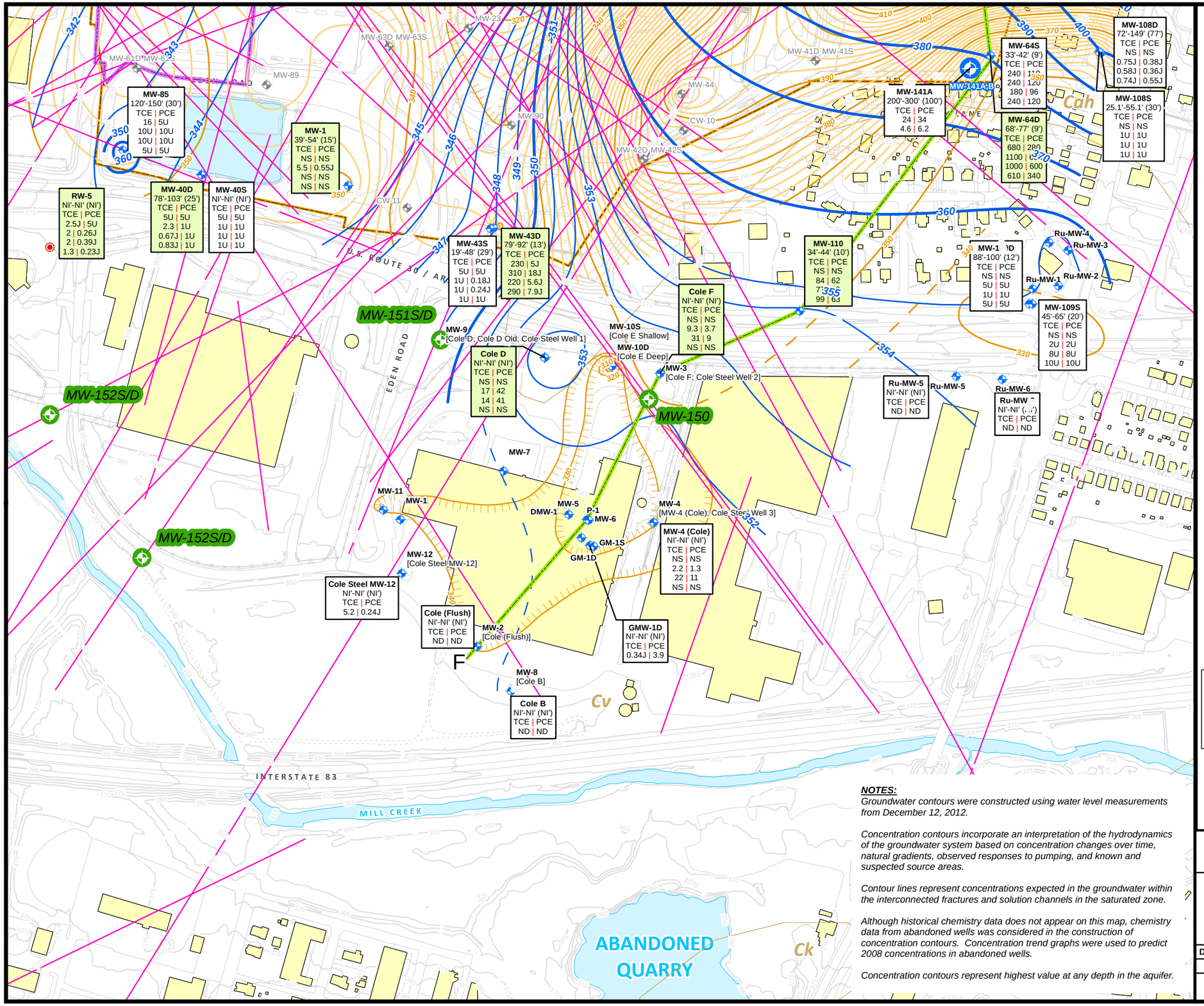

LEGEND

- Proposed Well Location
- Vertical Extent Wells
- Residential Well,
- Monitoring Well
- Abandoned Well
- Fracture Trace
- Cross Section Transect
- Groundwater Contour Depression (Feet AMSL)
- Groundwater Contour (Feet AMSL)
- Major Bedrock Contour Closed Depression
- Major Bedrock Contour
- Major Bedrock Contour Inferred
- Minor Bedrock Contour
- West Campus Property Line
- Contact
- Cah — Antietam & Harpers Formation, undiv.
- Cv — Vintage Formation
- Ck — Kinzers Formation
- Cl — Ledger Formation
- Site Property Boundary
- Railroad
- Road (Paved)
- Road Curb
- Road (Unpaved)
- Walkway
- Fenceline
- Topography
- Existing Building to Remain
- Demolished
- Demolished/Slab Removed

N W E S

Location ID
Top of Open Interval FtBGS - Bottom of Open Interval FtBGS (Open Interval Thickness)
Trichloroethene and Tetrachloroethylene
1. 2007 Key Well (May-June 2007)
2. 2008 Sup RI Rnd 1 (April-May 2008)
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4. 2009 Key Well (June-July 2009)

The chemistry results for MW-141A, Cole B, Cole Steel MW-12, Cole (Flush), GM-1D are from September and November of 2012 and January 2013.

Scale (feet)
0 75 150 300

Figure 6

NOTES:

Groundwater contours were constructed using water level measurements from December 12, 2012.

Concentration contours incorporate an interpretation of the hydrodynamics of the groundwater system based on concentration changes over time, natural gradients, observed responses to pumping, and known and suspected source areas.

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Concentration contours represent highest value at any depth in the aquifer.

Former York Naval Ordnance Plant

1425 Eden Road, York, PA 17402

Field Sampling Plan for Groundwater RI (Part 2)
Addendum 9
Study Area South of Site
Proposed Well Locations

DRAWN BY: JPB	CHECKED AND APPROVED BY: JR/SS	DATE: 4/3/2012

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TABLE 1

(Prepared and Provided by SAIC)

SITE-WIDE GROUNDWATER LEVELS AND ELEVATION DATA

FORMER YORK NAVAL ORDNANCE PLANT

1425 Eden Road, York PA 17402

Monitoring Location	Date	Time	Reference Elevation (ft.AMSL)	Depth (ft.)	Water Level (ft.AMSL)
CODORUS 1	12/7/2012	9:41	379.69	40.31	339.38
CODORUS 2	12/7/2012	9:16	341.5485		D
Cole B	12/7/2012	12:25	363.75	12.46	351.29
Cole D	12/7/2012	12:35	370.15	16.32	353.83
Cole E deep	12/7/2012	12:33	369.17	16.81	352.36
Cole E shallow	12/7/2012	12:32	369.54	17.13	352.41
Cole F	12/7/2012	12:30	370.39	18.17	352.22
Cole Steel MW-12	12/7/2012	12:20		18.23	
Flush - Cole	12/7/2012	12:22	361.92	10.94	350.98
MW-4 (Cole)	12/7/2012	12:26	367.21	15.75	351.46
CW-1	12/7/2012	11:42	570.07	76.87	493.2
CW-1A	12/7/2012	12:47	568.28	63.15	505.13
CW-2	12/7/2012	11:52	556.95	77	479.95
CW-3	12/7/2012	12:02	518.66	83.96	434.7
CW-4	12/7/2012	11:59	541.55	86.62	454.93
CW-5	12/7/2012	12:20	470.34	30.36	439.98
CW-6	12/7/2012	12:18	484.67	75.12	409.55
CW-7	12/7/2012	11:33	573.78	87.4	486.38
CW-7A	12/7/2012	11:34	573.91	48.64	525.27
CW-8	12/7/2012	7:21	362.7	23.54	339.16
CW-9	12/7/2012	4:13	356.82	25.2	331.62
CW-13	12/7/2012	4:03	358.85	34.61	324.24
CW-14	12/7/2012	3:47	358.92	24.83	334.09
CW-15	12/7/2012	8:09	361.48	20.53	340.95
CW-15A	12/7/2012	8:13	361.4	35.64	325.76
CW-16	12/7/2012	8:20	365.1139	22.44	342.67
CW-17	12/7/2012	3:49	358.7	24.82	333.88
CW-18	12/7/2012	8:53	368.9835	23.98	345
CW-19	12/7/2012	16:14	384.94		D
CW-20	12/7/2012	4:55	361.49	23.08	338.41
Kinsley Well	12/7/2012	13:37	465.83		D
MW-1	12/7/2012	13:00	380.73	36.45	344.28
MW-2	12/7/2012	10:53	508.88	63.95	444.93
MW-3	12/7/2012	12:12	541.1	63.94	477.16
MW-5	12/7/2012	7:00	369.71	24.22	345.49
MW-6	12/7/2012	3:45	359.62	19.84	339.78
MW-7	12/7/2012	4:23	359.48	26.46	333.02
MW-8	12/7/2012	4:15	358.09	19.86	338.23
MW-9	12/7/2012	11:50	558.78	46.53	512.25

MW-10	12/7/2012	11:38	567.8	51.76	516.04
MW-11	12/7/2012	11:48	563.08	26.87	536.21
MW-12	12/7/2012	11:55	535.93	40.58	495.35
MW-14	12/7/2012	11:05	519.54	31.71	487.83
MW-15	12/7/2012	11:00	523.9516	61.02	462.93
MW-16D	12/7/2012	12:05	516.51	7.02	509.49
MW-16S	12/7/2012	12:04	516.6	38.03	478.57
MW-17	12/7/2012	10:24	456.86	12.47	444.39
MW-18D	12/7/2012	12:23	464.19	16.21	447.98
MW-18S	12/7/2012	12:22	464.12	16.01	448.11
MW-19	12/7/2012	10:08	427.36	22.79	404.57
MW-20D	12/7/2012	11:30	573.85	37.02	536.83
MW-20M	12/7/2012	11:31	574.19	45.2	528.99
MW-20S	12/7/2012	11:32	574.05	45.66	528.39
MW-22	12/7/2012	10:53	447.57	58.13	389.44
MW-26	12/7/2012	9:06	379.44	25.6	353.84
MW-27	12/7/2012	7:50	361.29	16.72	344.57
MW-28	12/7/2012	7:33	362.91	20.28	342.63
MW-29	12/7/2012	4:45	364.77	13.64	351.13
MW-30	12/7/2012	6:50	362.26	16.74	345.52
MW-31D	12/7/2012	7:12	369.3	17.13	352.17
MW-31S	12/7/2012	7:10	369.28	16.89	352.39
MW-32D	12/7/2012	7:22	362.57	19.53	343.04
MW-32S	12/7/2012	7:23	362.44	19.83	342.61
MW-33	12/7/2012	7:53	363.8808	20.97	342.91
MW-34D	12/7/2012	7:48	361	18.35	342.65
MW-34S	12/7/2012	7:47	361	18.41	342.59
MW-35D	12/7/2012	7:38	360.6	17.95	342.65
MW-35S	12/7/2012	7:41	360.49	17.57	342.92
MW-36D	12/7/2012	7:07	370.96	25.8	345.16
MW-36S	12/7/2012	7:05	370.95	25.43	345.52
MW-37D	12/7/2012	4:57	359.11	20.72	338.39
MW-37S	12/7/2012	4:59	359.13	20.53	338.6
MW-38D	12/7/2012	4:10	358.62	21.99	336.63
MW-39D	12/7/2012	3:56	360.21	22.15	338.06
MW-39S	12/7/2012	3:55	360.14	22.64	337.5
MW-40D	12/7/2012	13:11	374.65	30.36	344.29
MW-40S	12/7/2012	13:10	374.69	30.33	344.36
MW-43D	12/7/2012	12:47	380.08	32.98	347.1
MW-43S	12/7/2012	12:48	379.76	31.99	347.77
MW-45	12/7/2012	11:56	359.91	17.03	342.88
MW-46	12/7/2012	12:00	359.19	16.83	342.36
MW-47	12/7/2012	8:18	360.57	20.28	340.29
MW-49D	12/7/2012	8:12	361.44	17.26	344.18
MW-49S	12/7/2012	8:10	361.45	17.22	344.23
MW-50D	12/7/2012	4:30	360.41	21.2	339.21
MW-50S	12/7/2012	4:28	360.4	21.02	339.38

MW-51D	12/7/2012	4:36	360.43	22.55	337.88
MW-51S	12/7/2012	4:35	360.19	23.63	336.56
MW-52	12/7/2012	0:00	367.39		AB
MW-53	12/7/2012	0:00	367.15		AB
MW-54	12/7/2012	8:15	365.2664	22.62	342.65
MW-55	12/7/2012	8:17	365.1704	22.54	342.63
MW-56	12/7/2012	0:00	371.83		AB
MW-57	12/7/2012	8:45	364.54	19.87	344.67
MW-64D	12/7/2012	10:41	416.43	59.81	356.62
MW-64S	12/7/2012	10:40	416.34	35.94	380.4
MW-65D	12/7/2012	11:23	546.8	47.59	499.21
MW-65S	12/7/2012	11:22	546.82	48.73	498.09
MW-66D	12/7/2012	11:08	506.92	38.67	468.25
MW-66S	12/7/2012	11:10	506.73	37.57	469.16
MW-67D	12/7/2012	10:31	446.26	1.54	444.72A
MW-67S	12/7/2012	10:30	446.26	10	436.26
MW-68	12/7/2012	10:26	458.06	6.3	451.76
MW-69	12/7/2012	10:15	411.9	8.43	403.47
MW-70D	12/7/2012	10:05	416.31	22.88	393.43
MW-70S	12/7/2012	10:06	416.21	22.69	393.52
MW-74D	12/7/2012	3:59	359.79	20.22	339.57
MW-74S	12/7/2012	3:58	359.85	20.74	339.11
MW-75D	12/7/2012	5:01	359.85	21.49	338.36
MW-75S	12/7/2012	5:04	359.03	20.45	338.58
MW-77	12/7/2012	8:25	379.48	24.94	354.54
MW-78	12/7/2012	7:19	375.32	21.72	353.6
MW-79	12/7/2012	9:22	375.84	22.91	352.93
MW-80	12/7/2012	11:20	370.29		NM
MW-81D	12/7/2012	7:59	359.89	16.28	343.61
MW-81S	12/7/2012	7:58	360.12	16.96	343.16
MW-82	12/7/2012	13:50	382.1759	36.39	345.79
MW-83	12/7/2012	7:45	363.69	8.83	354.86
MW-84	12/7/2012	7:20	376.53	23.75	352.78
MW-85	12/7/2012	13:15	371.54	7.74	363.8
MW-86D	12/7/2012	10:17	406.56	8.72	397.84
MW-86S	12/7/2012	10:18	406.5	10.51	395.99
MW-87	12/7/2012	11:26	370.64	25.55	345.09
MW-88	12/7/2012	10:41	367.93	23.83	344.1
MW-91	12/7/2012	10:51	501.18	55.3	445.88
MW-92	12/7/2012	10:47	476.87	83.12	393.75
MW-93D	12/7/2012	5:08	360.14	21.16	338.98
MW-93S	12/7/2012	5:06	360.76	21.86	338.9
MW-94	12/7/2012	9:39	365.03	10.09	354.94
MW-95	12/7/2012	5:11	358.72	19.51	339.21
MW-96D	12/7/2012	5:16	361	22.21	338.79
MW-96S	12/7/2012	5:17	361.21	22.48	338.73
MW-97	12/7/2012	4:08	357.39	21.01	336.38

MW-98D	12/7/2012	9:06	361.41	20.9	340.51
MW-98I	12/7/2012	9:05	360.78	21.4	339.38
MW-98S	12/7/2012	9:04	360.77	21.28	339.49
MW-99D	12/7/2012	9:18	359.91	19.62	340.29
MW-99S	12/7/2012	9:15	360.37	20.09	340.28
MW-100D	12/7/2012	9:26	362.14	21.44	340.7
MW-100I	12/7/2012	9:29	361.81	21.22	340.59
MW-100S	12/7/2012	9:28	362.28	21.75	340.53
MW-101D	12/7/2012	8:45	356.22	16.45	339.77
MW-101S	12/7/2012	8:46	356.54	16.92	339.62
MW-102D	12/7/2012	10:02	405.23	12.17	393.06
MW-102S	12/7/2012	10:03	405.41	37.94	367.47
MW-103D	12/7/2012	9:56	401.61	18.86	382.75
MW-103S	12/7/2012	10:00	402	16.86	385.14
MW-104	12/7/2012	10:01	428.72	28.43	400.29
MW-105	12/7/2012	5:13	362.05	23.22	338.83
MW-106	12/7/2012	4:05	360.15	25.5	334.65
MW-107	12/7/2012	4:56	363.56	23.31	340.25
MW-108D	12/7/2012	12:57	426.35	19.3	407.05
MW-108S	12/7/2012	12:58	425.46	25.82	399.64
MW-109D	12/7/2012	13:05	389.12	34.1	355.02
MW-109S	12/7/2012	13:06	388.39	34.36	354.03
MW-110	12/7/2012	13:00	378.36	24.48	353.88
MW-111	12/7/2012	9:46	433.63	19.92	413.71
MW-112	12/7/2012	9:40	393.52	48.59	344.93
MW-113	12/7/2012	11:28	371.02	25.92	345.1
MW-114	12/7/2012	7:53	360.71	17.03	343.68
MW-115	12/7/2012	9:15	373.3	22.15	351.15
MW-116	12/7/2012	6:55	364.59	19.25	345.34
MW-117	12/7/2012	7:43	365.0005	12.96	352.04
MW-118	12/7/2012	8:53	377.4371	7.5	369.94
MW-119	12/7/2012	8:35	377.0293	15.93	361.1
MW-120	12/7/2012	8:30	377.6316	8.77	368.86
MW-121	12/7/2012	8:28	376.3118	17.12	359.19
MW-122	12/7/2012	9:00	377.6086	8.63	368.98
MW-123	12/7/2012	8:48	379.6406	12.49	367.15
MW-124	12/7/2012	8:57	376.368	14.24	362.13
MW-125	12/7/2012	8:15	366.5564	11.89	354.67
MW-126	12/7/2012	11:12	371.4202	25.95	345.47
MW-127	12/7/2012	11:00	371.549	26.47	345.08
MW-128	12/7/2012	10:54	370.5761	25.46	345.12
MW-129	12/7/2012	9:00	365.4081	20.38	345.03
MW-130	12/7/2012	9:47	362.1467	19.04	343.11
MW-131	12/7/2012	9:20	365.3489	21.13	344.22
MW-132	12/7/2012	9:26	365.3011	20.74	344.56
MW-133	12/7/2012	9:35	365.3126	20.5	344.81
MW-134	12/7/2012	10:21	361.2118	17.18	344.03

MW-135	12/7/2012	10:09	361.5747	17.32	344.25
MW-137A	12/7/2012	8:30	365.4	22.39	343.01
MW-138A	12/7/2012	11:10	370.82	43.61	327.21
MW-139A	12/7/2012	10:27	361.81	16.71	345.1
MW-140A	12/7/2012	9:57	361.2	17.73	343.47
MW-141A	12/7/2012	10:43	416.96	48.97	367.99
MW-142D	12/7/2012	12:28	437.78	17.75	420.03
MW-142S	12/7/2012	12:29	437.44	5.54	431.9
MW-143D	12/7/2012	12:30	403.71	8.55	395.16
MW-143S	12/7/2012	12:31	403.56	30.55	373.01
MW-144	12/7/2012	9:09	361.52	21.61	339.91
MW-145A	12/7/2012	9:21	362.67	22	340.67
MW-146	12/7/2012	9:24	362.39	21.9	340.49
MW-147A	12/7/2012	9:32	361.25	19.34	341.91
MW-160	12/7/2012	8:20	374.710728	20.08	354.63
Ru-MW-1	12/7/2012	13:10	389.69	33.94	355.75
Ru-MW-2	12/7/2012	13:11	391.5	36.96	354.54
Ru-MW-3	12/7/2012	13:13	395.86	41.32	354.54
Ru-MW-4	12/7/2012	13:12	394.17	39.65	354.52
Ru-MW-5	12/7/2012	13:36	378.8	24.18	354.62
Ru-MW-6	12/7/2012	13:35	383.28	28.8	354.48
Ru-MW-7	12/7/2012	0:00			NM
Ru-MW-8	12/7/2012	13:30		29.91	
RW-2	12/7/2012	0:00	548.27		
RW-5	12/7/2012	12:15	375.54		NM
SOFTAIL LIFT STATION	12/7/2012	9:52	396.6243	27.08	369.54
WPL-SS-7	12/7/2012	4:20	357.78	22.33	335.45
WPL-SS-8	12/7/2012	3:53	364.4	24.85	339.55

ALL MEASUREMENTS WERE MADE AND PROVIDED BY SAIC.

Table 2
Lab Results for Wells Sampled to the South
Former York Naval Ordnance Plant - York, PA

Location/ID Sample Date Parameter	MSC Used Aquifer R (ug/L)	MSC Used Aquifer NR (ug/L)	Federal MCL (ug/L)	EPA RSL Tap Water (ug/L)	Cole (Flush) [MW-2] 9/25/2012	Cole B [MW-8] 9/25/2012	Cole Steel [MW-12] 9/25/2012	GM-1D 9/25/2012	Ru-MW-5 11/9/2012	Ru-MW-6 11/9/2012
TOTAL VOC										
					0	0	7.74	4.24	0.17	0.58
Volatile Organic Compound										
1,1,1,2-Tetrachloroethane	70	70		0.52	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	200	200	200	9100	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	0.84	4.3		0.067	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	5	5	5	0.24	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	31	160		2.4	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	7	7	7	340	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	0.05	0.05	0.05	0.0065	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	5	5	5	0.15	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	5	5	5	0.39	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dioxane	6.4	32		0.67	200 U	200 U	200 U	200 U	200 U	200 U
2-Butanone	4000	4000		7100	5 U	5 U	5 U	5 U	5 U	5 U
2-Hexanone	11	44		47	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-Pentanone	2900	8200		2000	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	33000	92000		22000	5 U	5 U	5 U	5 U	5 U	5 U
Acrylonitrile	0.72	3.7		0.045	20 U	20 U	20 U	20 U	20 U	20 U
Benzene	5	5	5	0.41	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	90	90			1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	80	80		0.12	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	80	80		8.5	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	10	10		8.7	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	1500	6200		1000	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride	5	5	5	0.44	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	100	100	100	91	1 U	1 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	80	80		0.15	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	230	900		21000	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	80	80		0.19	1 U	1 U	1 U	1 U	1 U	0.18 J
Chloromethane	30	30		190	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	70	70	73	1 U	1 U	2.3	1 U	1 U	1 U
cis-1,3-Dichloropropene	6.6	26		0.43	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	700	700	1.5	1 U	1 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether	20	20		12	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	5	5		4.8	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	100	100	100	1600	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	5	5	0.11	1 U	1 U	0.24 J	3.9	1 U	1 U
Toluene	1000	1000	1000	2300	1 U	1 U	1 U	1 U	0.17 J	0.4 J
trans-1,2-Dichloroethene	100	100	100	110	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	6.6	26		0.43	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	5	5	2	1 U	1 U	5.2	0.34 J	1 U	1 U
Vinyl Chloride	2	2	2	0.016	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (Total)	10000	10000	10000	200	3 U	3 U	3 U	3 U	3 U	3 U

Blank results = analyte not analyzed. U = Not detected. J = Organics; estimated. Inorganics; blank contamination. B = Organics; blank contamination. Inorganics; estimated. E = Inorganics: matrix interference.