Addendum #3 to
Field Sample 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.
July, 2012

Prepared by:

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Investigate Southward Off-Site Groundwater Migration

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). Figure 4.1-4 of the FSP is included with this Addendum as **Figure 1**, and has been modified to include the approximate property lines and ownership of the parcels south of fYNOP. Harley-Davidson is having difficulty in obtaining access for the proposed EI work in some of the properties along the proposed traverse. In addition, it is believed that the long continuous Electrical Imaging (EI) lines planned for this area are underlain by underground utilities in critical areas of their routes where there are no other options to reroute the lines.

These findings have resulted in the need for a modification to this plan relative to the investigation of groundwater conditions south of fYNOP.

This addendum eliminates the lengthy EI survey to assist in locating the wells. A fracture trace analysis will be conducted as the primary means of detecting karst features. Well locations selected in this way may be further refined using short EI traverses, if it is logistically possible.

Section 4.1.4.2 of the FSP provided a preliminary list of wells to be sampled and analyzed for VOCs. A number of wells on that preliminary list have been sampled numerous times, and have shown relatively consistent results for VOCs. The list of wells to be sampled has been reduced

to include only wells for which VOC analyses have not been analyzed. Groundwater chemistry and flow path analysis will be conducted by sampling for VOCs in the following wells (refer to **Figure 1**):

MW-12 (Cole Steel)
MW-2[Cole (Flush)]
MW-8 [Cole B]
GM-1D
Ru-MW-5
Ru-MW-6

Samples will be analyzed using method SW-8260B for parameters listed on Table A-6 of the Quality Assurance Project Plan (QAPP), June 2012.

In addition, prior to sampling, dye receptors will be placed in the above wells and the following wells (refer to **Figure 1**):

MW-64S
MW-64D
MW-110
Cole F
Cole D
MW-4 (Cole)
MW-43S
MW-43D
MW-22 (up-gradient of injection point)
MW-92 (up-gradient of injection point)

The receptors will be positioned at a depth in the well corresponding to the largest water bearing zone if known. If not known, the receptor will be positioned mid-way between the bottom of the well and the top of the water surface in the well. The receptors will be retrieved in approximately 2 weeks and analyzed for fluorescent dyes, specifically D&C Red #28.

A round of water levels will be collected when the dye receptors are deployed. If available, the water level elevation in the abandoned quarry south of Mill Creek (see **Figure 1**) will be measured. Mill Creek and the surrounding area will be inspected for karst features.

The locations of the proposed wells south of the Site will be determined based on an analysis of this data. Groundwater contours, groundwater chemistry, dye detections and the fracture trace analysis will be compiled and recommendations will be presented in a future addendum.

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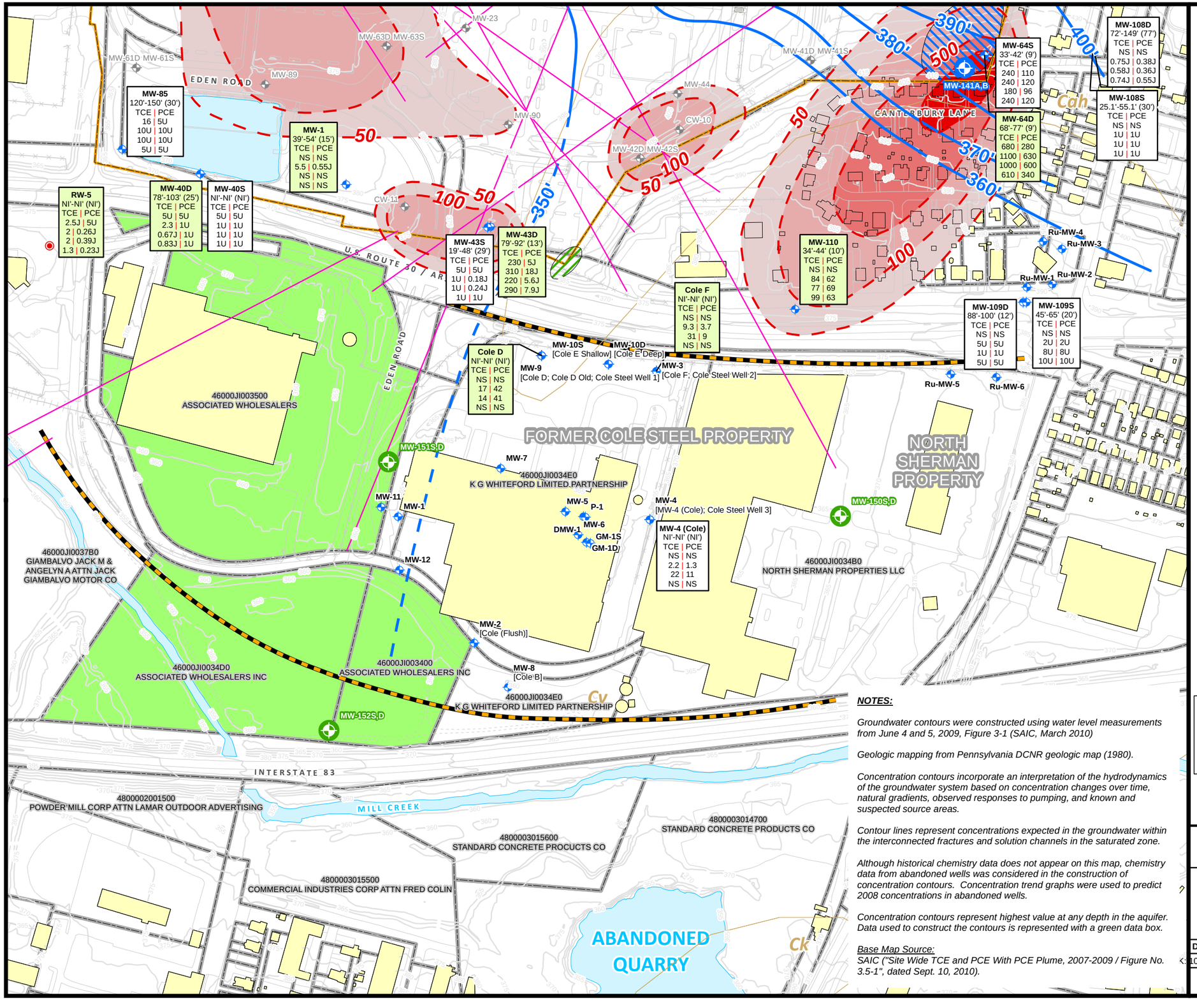

LEGEND

- Proposed Vertical Extent Wells
- Proposed Shallow & Deep Pairs
- Residential Well,
- Monitoring Well
- Abandoned Well
- Inferred TCE Concentration Contour (ppb)
- PCE, Known Source Area
- PCE, Suspected Source Area
- Fracture Trace
- June 2009 Groundwater Contour (Feet)
- June 2009 Inferred Groundwater Contour (Feet)
- Contact
- Antietam & Harpers Formation, undiv.
- Vintage Formation
- Kinzers Formation
- Ledger Formation
- Proposed Electrical Imaging Survey
- Site Property Boundary
- Railroad
- Cah — Road (Paved)
- Cv — Road Curb
- Ck — Road (Unpaved)
- Cl — 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
- Parcel Boundary
- Associated Wholesalers Inc Parcel Boundary

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 Rl Rnd 1 (April-May 2008)
3. 2008 Sup Rl Rnd 2 (September-October 2008)
4. 2009 Key Well (June-July 2009)

Scale (feet)
0 75 150 300

Figure 1

NOTES:

Groundwater contours were constructed using water level measurements from June 4 and 5, 2009, Figure 3-1 (SAIC, March 2010)

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.

Base Map Source:
SAIC ("Site Wide TCE and PCE With PCE Plume, 2007-2009 / Figure No. 3.5-1", dated Sept. 10, 2010).

Former York Naval Ordnance Plant

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Addendum 3
Study Area South of Site

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

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