State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
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May 25, 2017

JOE DONOVAN
AHLMAN/STEEL YARD LLC
C/O R SABEE CO LLC
1718 W EIGHTH ST
APPLETON WI 54914

Subject: Response to Other Technical Assistance Request for
Ahlman/Steel Yard LLC, 303 S. Linwood Ave., Appleton, WI
DNR BRRTS Activity #: 02-45-526385

Dear Mr. Donovan:

On February 6, 2017, the Department of Natural Resources (DNR) received the *Annual Groundwater Monitoring Report-2016* dated February 1, 2017 (the "2016 Report") submitted by Terracon on behalf of Ahlman/Steel Yard, LLC. The 2016 Report included groundwater data collected during 2016 for the property described above. A Request for Other Technical Assistance (the "OTA Request") accompanied the 2016 Report along with the associated $700 fee in accordance with ch. NR 749, Wis. Adm. Code.

The OTA Request included a request for DNR review of the 2016 Report and response to five specific questions. The questions are reiterated below with the associated DNR response. The DNR reviewed the 2016 Report, OTA Request and associated site file and assembled a committee of internal peers that reviewed the materials together on May 10, 2017 to provide the following responses. Reference attached Figure 3, *Boring and Monitoring Well Location Map*, dated 2/14/13 for boring and well locations discussed in this letter.

Q1. *What are the implications for closure regarding the concentration trends in MW-5, which has had slowly increasing vinyl chloride concentrations, given that there has been source removal from the vicinity of MW-5 in 2008, there is not a large mass of PCE/TCE* (tetrachloroethylene/trichloroethylene) *remaining that may be degraded to vinyl chloride, and the WOW* (Logistics) *property to the west* (BRRTS #02-45-560485) *is a separate site that has documented vinyl chloride in the groundwater?*

A1. Groundwater data and natural attenuation groundwater monitoring need to show that vinyl chloride is continuing to break down (i.e., not accumulating) in order for the closure criteria under ss. NR 726.05(6)(a) and (b), Wis. Adm. Code to be met.

Q2. *What are the implications for closure regarding the chlorinated volatile organic compound (CVOC) trends at piezometer PZ-5 given that it is in the center of the property, groundwater near the screen of PZ-5A (screened above PZ-5) was the subject of the "deep" injection in 2015 (see Terracon's Remedial Action Documentation Report dated September 18, 2015), and decreasing CVOC contaminant concentration trends at PZ-5A?*

A2. If the plume is expanding vertically (i.e. sinking) as indicated by sustained enforcement standard exceedances at PZ-5, the site does not meet the criteria for a complete site investigation under s. NR 716.11(3)(a), Wis. Adm. Code or the closure criteria under s. NR 726.05(6)(c), Wis. Adm. Code.

Additional delineation and monitoring will be necessary to locate the plume margins and establish a trend.

Q3. *If groundwater results remain similar to November 2016 results, is closure possible following two more semi-annual (May and November) groundwater sampling rounds in 2017?*

A3. In addition to the concerns identified in answers A1 and A2 above, in general, two years of groundwater monitoring under steady state conditions is necessary after a remedial action to verify the plume remains stable to receding and the criteria for closure under s. NR 726.05(6), Wis. Adm. Code are met. At a site where injection takes place, the "steady state" begins when the injected product is consumed or exhausted per the manufacturer. Additional clarification is necessary to understand when the material injected in 2015 is expected to be (or was) consumed and that adequate monitoring has taken place to show the plume is, and will remain stable, to decreasing in the long term as required under s. NR 726.05(6), Wis. Adm. Code.

Q4. *Ahlman Steelyard LLC is looking to expand and is planning a potential building on the Ahlman Steelyard site. Although building size, location, and orientation have not yet been determined, what implications will this have for closure? What potential closure pitfalls or problems should be evaluated or addressed in regards to this building prior to construction and/or prior to closure?*

A4. The environmental case can close prior to or after construction of a building. Regardless of when the construction moves forward, the DNR will require that any construction is protective for occupancy:

- Vapor sample ports need to be placed in a new structure and vapor sampling conducted to determine sub-slab concentrations after construction.
- An appropriate vapor mitigation system will need to be designed prior to construction and include the ability to evaluate the effectiveness of the system to assure it is protective.
- Slab-on-grade construction is recommended due to shallow water table and residual contamination.
- Any below grade construction that requires dewatering of contaminated groundwater (e.g., drain tile and sump pump operation) will require a discharge permit to be obtained from the city of Appleton for discharge to the sanitary sewer.
- Utility lateral plugs will also be needed.

Option 1. If closing the environmental case prior to construction, a continuing obligation regarding future construction will be assigned at the time of closure. In accordance with ch. NR 727, Wis. Adm. Code, the post closure modification process will need to be followed with submittal of appropriate fees prior to construction. The process is laid out in the fact sheet, *Post-Closure Modifications: Changes to Property Conditions after a State-Approved Cleanup,* RR-987.

Option 2. If closing the environmental case after construction, continuing obligations will be assigned, as applicable (e.g., operation, maintenance and monitoring of a vapor mitigation system, maintain wastewater discharge permit, obtain written DNR approval prior to modification of the system, building or additional construction).

The DNR guidance, *Addressing Vapor Intrusion at Remediation and Redevelopment Sites in Wisconsin,* RR-800, is currently being revised and expanded to include additional guidance on vapor mitigation systems and operation, maintenance and monitoring. This revised guidance is expected to go out for public comment in June 2017.

Q5. *Are there any other potential problems or concerns for closure?*

A5. The DNR performed a detailed technical review of the 2016 Report as well as several key documents in the site file in order to respond to this question. Additional items reviewed include:

- *Additional Site Investigation Report and Off-Site Soil Remedial Action Plan*, dated April 2011 (Nov 2010 – Mar 2011 investigation activities),
- *NR 716 Site Investigation Report No. 4 and Remedial Action Documentation Report,* dated June 2013 (Mar 2011 – Nov 2012 investigation activities),
- *Supplemental Remedial Action Plan-2014*, dated November 26, 2014,
- *Infiltration/Injection Temporary Exemption Request Approval* issued by the DNR*,* dated December 10, 2014,
- *Response to Supplemental Remedial Action Plan-2014* issued by the DNR*,* dated December 15, 2014, and
- *Remedial Action Documentation Report,* dated September 18, 2015.

The review reveals the following concerns for closure, in addition to the information described above, where it appears requirements of the NR 700 Rule Series are not yet met:

1. Delineation of unsaturated soil contamination is needed east of former P-42 and, if applicable, along the abandoned 12-inch storm lateral located southeast of MW-7 to complete delineation of unsaturated contaminated soil.

2. The vertical extent of groundwater contamination at MW-5 is not defined and PCE in saturated soil at 10 feet below ground surface suggests a piezometer is needed in this location.

3. If the enforcement standards remain exceeded at PZ-5 as seen in November 2016, continued vertical delineation is needed to define the plume margin. Also, based on the potentiometric contour map on Figure 7A, *Groundwater Potentiometric Surface Contour Map (5/18/2016)*, dated 6/28/2016, it appears a piezometer nested at MW-16 *may* be necessary if enforcement standard exceedances persist at PZ-5. However, updated cross sections and potentiometric contour maps combined with review of porosity and hydraulic conductivity at the site may reveal an additional piezometer is not justified in this location. This needs to be evaluated.

4. The CVOCs at MW-6 and the groundwater contour map, Figure 7, *Groundwater Table Contour Map (5/18/2016)*, dated 6/29/2016, indicate there is potential for migration of groundwater contamination along utility lines in Spencer Street. While groundwater was collected from lysimeters within utility backfill in 2014, the limits of detection (LOD) are extremely high. The DNR understands from discussion with Scott Hodgson of Terracon on May 24, 2017 that the high LODs are due to other interference in the water samples that are independent of the Ahlman/Steel Yard LLC site. In addition, it is understood that the western-most lysimeter was dry due to a divide in the utilities and groundwater flow to the southwest is against the pitch of utilities. If Terracon is unable to achieve lower LODs, an argument supporting no migration via utilities needs to be clearly documented in the request for closure.

The following additional comments are presented for your consideration:

5. All isoconcentration lines should be omitted from the WOW Logistics property on each figure as that data is being handled under BRRTS #02-45-560485.

6. "BRRTS #02-45-560485" should be added to the WOW Logistics property on all figures.

7. Soil, groundwater or air data collected from WOW Logistics property should be clearly labeled as addressed under BRRTS #02-45-560485 on the data tables or omitted.

8. Clarify that vapor migration via utilities is not a concern (e.g., based on the groundwater elevation with respect to the utility backfill elevations) in subsequent submittals and the request for closure.

Additional Actions Needed

A work plan for additional investigation should be submitted prior to installation of soil borings or monitoring wells. A review fee of $700 in accordance with ch. NR 749, Wis. Adm. Code should accompany the submittal if a detailed review and written response is requested.

A supplemental site investigation update needs to be submitted after additional investigation is performed that includes the following:

- revised and updated soil data tables,
- revised figures with updated soil and groundwater isoconcentration lines,
- detailed pre and post-remedial action cross sections that cut through high contaminant areas,
- analytical lab sheets not previously submitted, and
- soil boring logs, monitoring well construction and development forms and abandonment forms not previously submitted.

A review fee of $1,050 in accordance with ch. NR 749, Wis. Adm. Code should accompany the submittal if a detailed review and written response is requested.

Thank you for the opportunity to review the 2016 Report and for your specific questions in the OTA Request. Please contact me with any questions in Oshkosh by phone at 920-424-7887 or by email at jennifer.borski@wisconsin.gov.

Sincerely,

Jennifer Borski

Jennifer Borski
Hydrogeologist
Remediation & Redevelopment Program

Attachments:

Figure 3, *Boring and Monitoring Well Location Map*, dated 2/14/13
Figure 7, *Groundwater Table Contour Map (5/18/2016)*, dated 6/29/2016
Figure 7A, *Groundwater Potentiometric Surface Contour Map (5/18/2016)*, dated 6/28/2016

cc: Joe Donovan, Ahlman/Steel Yard, LLC – jdonovan@rsabeecompany.com
Scott Hodgson, Terracon – scott.hodgson@terracon.com

LEGEND

- TEST PIT
- FINAL SIDEWALL
- TEMPORARY SIDEWALL
- OBSERVATION WELL
- PIEZOMETER
- PUSH-PROBE BORING
- SUB-SLAB VAPOR POINT
- VAPOR POINT
- FENCELINE
- APPROXIMATE PROPERTY / SITE BOUNDARY
- FIRE HYDRANT
- MANHOLE
- OVERHEAD ELECTRIC
- ELECTRIC LINE
- SANITARY SEWER LINE
- WATER LINE
- NATURAL GAS LINE
- PHONE/CABLE LINE
- STORM SEWER LINE

DRIVE ENTRANCE
GROUND LEVEL OVERHEAD DOOR
GROUND LEVEL OVERHEAD DOOR
ASPHALT
SHOP BUILDING
AHLMAN STEEL YARD
(303 SOUTH LINWOOD AVENUE)
STORAGE CUBES
CONCRETE
CATCH BASIN
LOADING DOCKS
STORAGE CUBES
STORAGE CUBES
STORAGE CUBES
WOW LOGISTICS WAREHOUSE
(1840 WEST SPENCER STREET)
ASPHALT DRIVE ENTRANCE
EXCAVATION A
EXCAVATION B
EXCAVATION C
EXCAVATION D
ABANDONED SEWER LINE
GRAVEL
LYSIMETER LINWOOD
LYSIMETER WEST
LYSIMETER EAST
8-INCH SANITARY (CAPPED)
8-INCH SANITARY (CAPPED)
12-INCH STORM (CAPPED)
ELECTRIC METER
GAS METER
WISCONSIN CENTRAL LTD. RAILROAD RIGHT-OF-WAY
RAILROAD SPUR
SOUTH LINWOOD AVENUE
400 SOUTH LINWOOD AVE
SOUTH WHITMAN AVENUE
WEST SPENCER STREET
FOREMOST FARMS
(1815 WEST SPENCER STREET)

MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-16
WOW-MW1, WOW-MW2, WOW-MW3, WOW-MW4
PZ-1, PZ-2, PZ-3, PZ-4, PZ-5A, PZ-6
P-1 … P-90
GP-1 / P-18, GP-1 / P-19, GP-1 / P-20, GP-2, GP-4 / P-18, GP-5
B-1, B-2, B-3, B-4, B-5, B-6, B-7
D-TP1
P-57/VP2, P-59/VP3, P-60/VP4, P-61/VP5, VP (WOW)

50 0 50
APPROXIMATE SCALE: 1" = 50'

DIAGRAM IS FOR GENERAL LOCATION ONLY AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mngr:	SAH
Drawn By:	AGC
Checked By:	SAH
Approved By:	SAH
Project No.	38047004
Scale:	AS SHOWN
File No.	38047004 BL2
Date:	2/14/13

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BORING AND MONITORING WELL LOCATION MAP
AHLMAN STEEL YARD
R. SABEE COMPANY LLC
303 SOUTH LINWOOD AVENUE
APPLETON WISCONSIN

FIG. No. 3 (Layout1)

LEGEND

- TEST PIT
- FINAL SIDEWALL
- TEMPORARY SIDEWALL
- OBSERVATION WELL
- PIEZOMETER
- GROUNDWATER TABLE CONTOUR
- 800.61 GROUNDWATER ELEVATION (MW)
- GROUNDWATER FLOW DIRECTION
- NM NOT MEASURED
- FENCELINE
- APPROXIMATE PROPERTY / SITE BOUNDARY
- FIRE HYDRANT
- MANHOLE
- OHE OVERHEAD ELECTRIC
- E ELECTRIC LINE
- S SANITARY SEWER LINE
- W WATER LINE
- GAS NATURAL GAS LINE
- T/C PHONE/CABLE LINE
- ST STORM SEWER LINE

GROUND LEVEL OVERHEAD DOOR

GROUND LEVEL OVERHEAD DOOR

ASPHALT

DRIVE ENTRANCE

MW-1
804.38

SHOP BUILDING

AHLMAN STEEL YARD
(303 SOUTH LINWOOD AVENUE)

STORAGE CUBES

MW-15
801.07

CONCRETE

801.98
WOW-MW4

CATCH BASIN

LOADING DOCKS

MAY 2012 EXCAVATION

MW-14
800.94

MW-13
802.09

WOW-MW3
802.38

ASPHALT DRIVE ENTRANCE

806.01
MW-16

EXCAVATION B

EXCAVATION A

806

OHE OHE OHE

805

802.74
MW-5

MW-4
804.37

PZ-5A

PZ-5

GRAVEL

804

MW-2
803.87

SOUTH LINWOOD AVENUE

803

MW-8
802.34

400 SOUTH LINWOOD AVE

EXCAVATION C

ABANDONED SEWER LINE

PZ-6

802.59
MW-3

PZ-1

EXCAVATION D

D-TP1

WISCONSIN CENTRAL LTD. RAILROAD RIGHT-OF-WAY

RAILROAD SPUR

STORAGE CUBES

800.63
MW-12

STORAGE CUBES

803.04
WOW-MW2

WOW LOGISTICS WAREHOUSE
(1840 WEST SPENCER STREET)

803

801

STORAGE CUBES

800.74
MW-10

PZ-4

801.63
MW-11

ELECTRIC METER

GAS METER

WOW-MW1
799.90

802.19
MW-6

PZ-2

6-INCH SANITARY (CAPPED)

8-INCH SANITARY (CAPPED)

803.87
MW-7

12-INCH STORM (CAPPED)

WEST SPENCER STREET

SOUTH WHITMAN AVENUE

FOREMOST FARMS
(1815 WEST SPENCER STREET)

MW-9
801.25

PZ-3

N

50 0 50

APPROXIMATE SCALE: 1" = 50'

NOTE: THE CONTOUR LINES DEPICTED ARE BASED ON INTERPOLATION AND EXTRAPOLATION OF GROUNDWATER ELEVATION MEASUREMENTS FOR THE DATE SHOWN. ACTUAL CONDITIONS MAY VARY.

*WOW-MW-1 ELEVATION NOT USED IN CALCULATION OF CONTOURS BECAUSE THE ELEVATION IS ANOMALOUSLY LOW

DIAGRAM IS FOR GENERAL LOCATION ONLY AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Mngr:	SAH
Drawn By:	JMN
Checked By:	SAH
Approved By:	SAH

Project No.	38047004
Scale:	AS SHOWN
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Date:	6/29/2016

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GROUNDWATER TABLE CONTOUR MAP (5/18/2016)

AHLMAN STEEL YARD
R. SABEE COMPANY LLC
303 SOUTH LINWOOD AVENUE
APPLETON WISCONSIN

FIGURE 7

LEGEND

- TEST PIT
- FINAL SIDEWALL
- TEMPORARY SIDEWALL
- OBSERVATION WELL / PIEZOMETER
- POTENTIOMETRIC SURFACE CONTOUR
- 790.21 GROUNDWATER ELEVATION (PZ)
- GROUNDWATER FLOW DIRECTION
- NM NOT MEASURED
- FENCELINE
- APPROXIMATE PROPERTY / SITE BOUNDARY
- FIRE HYDRANT / MANHOLE
- OHE OVERHEAD ELECTRIC / E ELECTRIC LINE
- S SANITARY SEWER LINE / W WATER LINE
- GAS NATURAL GAS LINE / T/C PHONE/CABLE LINE
- ST STORM SEWER LINE

WISCONSIN CENTRAL LTD. RAILROAD RIGHT-OF-WAY

RAILROAD SPUR

SOUTH WHITMAN AVENUE

SOUTH LINWOOD AVENUE

400 SOUTH LINWOOD AVE

WEST SPENCER STREET

DRIVE ENTRANCE

GROUND LEVEL OVERHEAD DOOR

GROUND LEVEL OVERHEAD DOOR

ASPHALT

AHLMAN STEEL YARD
(303 SOUTH LINWOOD AVENUE)

SHOP BUILDING

STORAGE CUBES

STORAGE CUBES

STORAGE CUBES

STORAGE CUBES

CONCRETE

LOADING DOCKS

CATCH BASIN

MAY 2012 EXCAVATION

ASPHALT DRIVE ENTRANCE

EXCAVATION A

EXCAVATION B

EXCAVATION C

EXCAVATION D

GRAVEL

WOW LOGISTICS WAREHOUSE
(1840 WEST SPENCER STREET)

FOREMOST FARMS
(1815 WEST SPENCER STREET)

ELECTRIC METER

GAS METER

6-INCH SANITARY (CAPPED)

8-INCH SANITARY (CAPPED)

12-INCH STORM (CAPPED)

ABANDONED SEWER LINE

MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
MW-12
MW-13
MW-14
MW-15
MW-16
WOW-MW1
WOW-MW2
WOW-MW3
WOW-MW4
D-TP1

PZ-1 785.30
PZ-2 792.91
PZ-3 787.02
PZ-4 790.65
PZ-5 787.48
PZ-5A 804.56
PZ-6 788.71

788
790
792

NOTE: THE CONTOUR LINES DEPICTED ARE BASED ON INTERPOLATION AND EXTRAPOLATION OF GROUNDWATER ELEVATION MEASUREMENTS FOR THE DATE SHOWN. ACTUAL CONDITIONS MAY VARY.

PIEZOMETER PZ-1 IS A DEEP PIEZOMETER AND PZ-5A IS A SHALLOW PIEZOMETER AND THEREFORE WATER LEVELS IN THESE TWO PIEZOMETERS WERE NOT USED TO DEVELOP THE POTENTIOMETRIC SURFACE CONTOURS

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50 0 50
APPROXIMATE SCALE: 1" = 50'

Project Mngr:	SAH
Drawn By:	JMN
Checked By:	SAH
Approved By:	SAH
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GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR MAP (5/18/2016)
AHLMAN STEEL YARD
R. SABEE COMPANY LLC
303 SOUTH LINWOOD AVENUE
APPLETON WISCONSIN

FIGURE 7A