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## MEMORANDUM

TO: Randy Sanford, SEH

FROM: Ryan Sauter, SEH

DATE: November 15, 2018

RE: Riverside North Residual Contamination  
SEH No. WIRRN 148437 14.00

The purpose of this memorandum is to provide a preliminary review of the current conditions of the Riverside North property as it pertains to past industrial activities and associated residual contamination. All of the sites referenced in this memo have received regulatory closure, however residual contamination remains. This memorandum will serve as a reference point for the engineers, architects, and planners and will provide guidance regarding development consideration due to the presence of said residual contamination.

### Former Patros Property

The former Patros property consists of a roughly 300 foot wide piece of land along the Black River that makes up the western perimeter of the proposed development. The property was operated as a scrap yard for several decades. Over this time period various pieces of equipment that were collected on site for the purpose of recycling leaked or otherwise impacted the property. This, combined with the property's long history of rail activity, resulted in soil contamination including lead, arsenic, polynuclear aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and polychlorinated biphenyls (PCBs). Soil remediation consisted of excavating 1,594 tons of the most significantly impacted soils and encapsulating widespread moderate PAH and arsenic contamination in the shallow soils. Impacted soils were encapsulated by placing a 2 ft layer of clean fill on top of the impacted soils. Figure 1 shows the portion of the property that has been encapsulated.

Groundwater contamination at the site consists of chlorinated hydrocarbons. No specific source of contamination has been identified; however, it is speculated that a leaky piece of equipment was the source. The highest concentrations are recorded on the northern portion of the property near the location of the former buildings. No active groundwater remediation was conducted at the site; however, the Wisconsin Department of Natural Resources (WDNR) determined that natural attenuation is adequately addressing the contamination. The vapor pathway has not been evaluated at the site and the potential for vapor migration associated with groundwater impacts has not been established.

### Considerations for Development:

- Residual PAH, arsenic, and lead contaminated soils have been capped at the site.
  - 2 feet of clean fill has been placed on top of the impacted soil to prevent contact with residual contamination.
    - This cap or an equally protective cap needs to remain in place. If the cap or a portion of the cap is removed, soils below the 2 ft of clean fill need to be segregated and managed accordingly.

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- A replacement cap can consist of the following
  - Pavement
  - Building foundation
  - Landscaped area
  - Anything that prevents contact with the contaminated soil below and is durable or can be maintained to assure it provides long term protection.

SEH Note: In essence, residual soil contamination is not anticipated to pose any restrictions to development as long as the soils are managed properly.

- Groundwater contamination remains. The contamination is volatile and has the potential to create soil vapors that can migrate into buildings and impact air quality. The vapor pathway can be addressed through either of the following.
  - Incorporate vapor mitigation systems and/or a vapor barrier into the design of any structures constructed on the former Patros property.
  - Conduct further investigation regarding the vapor pathway in attempt to rule out vapor migration.

SEH Note: A vapor mitigation system is relatively inexpensive and easy to incorporate into new construction. Further investigation of the vapor pathway will take additional time and may result in the same outcome as presuming the vapor pathway exists and incorporating a mitigation system.

### **Mobil Property**

The Mobil property was the location of a petroleum terminal from the 1940's through the late 1980's. In March 1990 two feet of free product was found in an observation well near the former loading rack. Although the site is large and contained large bulk petroleum tanks, the majority of the contamination is shown to have occurred at or near the loading rack on the eastern portion of the property. However, given the age of the site and the nature of the material handled there, the potential for encountering isolated minor spills anywhere on the site cannot be ruled out.

Active remediation at the site consisted of two separate soil vapor extraction systems, air sparging, and groundwater extraction. In 2012 approximately 4,121 tons of petroleum impacted soil were excavated from the most highly contaminated areas and disposed of off site. The excavations were backfilled with clean fill.

Figure 1 shows the approximate extent of residual soil contamination above NR 720 RCLs in effect at the time of closure.

As of 2013 residual groundwater contamination remained at the site. Figure 1 shows the estimated extent of groundwater contamination remaining above NR 140 enforcement standards. While it is likely that the degree and extent of petroleum impacts to both soil and groundwater have changed since 2013, it is anticipated that residual impacts remain and will persist for some time.

### Considerations for Development:

- Residual soil contamination remains at the site; however, the direct contact threat was addressed via the 2012 excavations and the majority of remaining soil impacts are below the ground surface.
  - During site development, soils excavated should be field screened and, if impacted, should be segregated. Petroleum impacted soils can likely be reused however, they should be placed below the surface as not to create any direct contact threat.

- Groundwater contamination remains. The residual soil and groundwater contamination is volatile and has the potential to create soil vapors that can migrate into structures and impact air quality. The vapor pathway can be addressed through either of the following.
  - Incorporate vapor mitigation systems and/or a vapor barrier into the design of any structures constructed on the former Mobil property.
  - Conduct further investigation regarding the vapor pathway in attempt to rule out vapor migration.

SEH Note: A vapor mitigation system is relatively inexpensive and easy to incorporate into new construction. Further investigation of the vapor pathway will take additional time and may result in the same outcome as presuming the vapor pathway exists and incorporating a mitigation system.

### **Bob Johnson Oil (North)**

Soil contamination was discovered at this site in the late 1990's. The impacts were predominantly limited to the area surrounding dispensers associated with several underground storage tanks (USTs) onsite. According to closure documentation, soil impacts did not pose a direct contact threat and it was determined that natural attenuation was the best course of action to address the impacts. Data indicate that residual contamination from this site extends to the former Mobil Oil property.

#### Considerations for Development:

Soils excavated in this area should be field screened and segregated if contamination is detected. It is also recommended that vapor mitigation be incorporated into structures constructed on site.

### **Bob Johnson Oil (South)**

Correspondence from the WNDR indicate that a release occurred near dispensers on the BJO south property. However the correspondence indicates that impacted soils were removed and the site was granted closure. There are no known development restrictions on this site.

#### Considerations for Development:

It is recommended that soils excavated in this area be field screened and segregated if contamination is detected. Due to the proximity of the site to the former Mobil Oil property, it is recommended that vapor mitigation is incorporated into structures constructed on site.

### **Western Wisconsin Redimix**

In 1989 a 4,000 gallon diesel UST and 500 gallon gasoline UST were removed from the site. An assessment of the USTs determined that a petroleum release had occurred. Contaminated soils were reportedly removed from the release area. No further action was taken or required by WDNR. It was determined that contamination from the Mobil Oil property had migrated onto the Redimix property and Mobil Oil took responsibility for that contamination.

The site was also investigated in relation to metals contamination resulting from concrete disposal at the site. As a result of the investigation, an area along the border with the BJO south property was identified as having elevated lead concentrations and a one foot cap was required to provide protection from direct contact. Unsubstantiated reports indicate that the City of La Crosse removed the cap and the underlying lead-contaminated soils so that cap maintenance would not be needed. However publicly available data does not mention this excavation and this assertion cannot be confirmed without a file review.

According to conversations with Doug Joseph, Western Wisconsin Redimix disposed of unset concrete in a pond towards the back of their property for several decades and eventually filled a large portion of the pond in with

unset concrete. Over time some of the concrete set and hardened into a continuous concrete deposit. Mr. Joseph called the deposit a “concrete monolith” and indicated it was several feet thick in some areas. He indicated there is a report with more information on the “concrete monolith” in the WDNR project files.

#### Considerations for Development:

- Soils excavated onsite should be field screened for impacts and segregated if impacts are detected.
- If the one foot cap and underlying lead contaminated soils remain at the site, the cap will either need to be maintained, replaced with an equally protective cap, or the impacted soils will need to be removed from the property and properly handled and disposed of.
- Vapor mitigation should be incorporated into buildings constructed on the property or a vapor assessment should be done to rule out the presence of soil vapors.
- While not a traditional “contaminant” the “concrete monolith” will impact the development. The thickness and extent is not well known, however it may be better documented in WDNR files. Geotechnical study of the area will be necessary to assess its extent and suitability for development.

#### **Conclusion**

Residual contamination is present on several portions of the property, however the known residual contamination does not necessarily restrict development of the property. Soils that are required to be placed under a protective cover as a requirement of closure need to be remain under a cover; however, pavement, building foundations, or landscaping can be used in place of current existing covers as long as the WDNR has approved of the cap alterations. Additionally underlying impacted soils can likely be reused onsite as long as they are placed under an equally protective cover, the location of placement is documented with the WDNR, a maintenance plan is put in place, and the WDNR has approved of the plan.

As indicated above, several areas of the development property have been impacted with volatile compounds such as petroleum products and chlorinated hydrocarbons. These constituents do pose a threat to indoor air quality in constructed buildings if vapors migrate from the subsurface into the structure. The presence of soil vapor emanating from residual contamination has not been investigated at any of the sites of concern for the development so the degree of potential threat from vapor intrusion has not been substantiated. However it is fairly inexpensive to integrate vapor barriers/mitigation systems into new construction. It is likely equally as cost effective to integrate this type of system into the buildings constructed as part of the development as it would be to investigate the degree and extent of vapor present in the soil.

Some residual groundwater contamination remains at the former Patros property, the former Mobil Oil site, and the Western Wisconsin Readimix site. If dewatering is necessary for construction, discharge from dewatering may need to be routed into the City of La Crosse sanitary sewer system. Consultation with the WDNR and City of La Crosse is recommended prior to initiating dewatering.

Close coordination with the WDNR is recommended during all phases of this project. This site has a long history of industrial use and it is possible that previously unknown contamination may be encountered during construction. Additionally, the WDNR reserves the right to reopen closed sites if conditions warrant reopening.

Note: This memorandum was prepared using data obtained from the WDNR Bureau of Remediation and Redevelopment Tracking Site (BRRTS: <https://dnr.wi.gov/botw>) and the Remediation and Redevelopment Sites Map (RR Sites Map: <https://dnr.wi.gov/topic/brownfields/rasm.html>).

RPS

Attachments:

Figure 1: Residual Contamination Distribution

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**Legend**

- Wells
- ▲ Soil Borings
- WI Redimix Encapsulated Soil Impacts
- ▭ Patros Encapsulated Soil Impacts
- ▨ Patros GW Impacts
- ▨ WI Redimix Concrete Monolith
- ▭ Former Mobil Property GW Impacts
- ▭ Former Mobil Property Soil Impacts
- ▭ Former Bob Johnson North Soil Impacts

\*All locations and boundaries are approximate

Path: E:\LACS\Figure 1 Residual Contaminant Distribution.mxd

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.