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January 9, 2019

File #34265.003

Mr. John Hunt

Wisconsin Department of Natural Resources

223 E Steinfest Rd

Antigo, WI 54409

JohnT.Hunt@wisconsin.gov

Re: Remediation Progress Report for the Murphy Marine Terminal Site
Superior, Wisconsin
WDNR BRRTS No. 03-16-000320

Dear John:

Gannett Fleming, Inc. (GF) is submitting this remediation progress report for the Murphy Marine Terminal (MMT) site (WDNR BRRTS# 03-16-000320) in Superior on behalf of Superior Refining Company LLC (SRC). The report provides background information on the site and “bullet-point” summaries of its investigation/remedial history and the site conceptual model for reference, although the report includes text only for brevity (i.e., there are no figures or tables).

Periodic reporting of remediation site progress to the Wisconsin Department of Natural Resources (WDNR) is required pursuant to ss. NR 700.11(1) and 724.13(3), Wisconsin Administrative Code. A completed certification page for the report is also attached.

Pertinent Site Background Information

The MMT site is located along the south shore of St. Louis Bay (to Lake Superior) at a ship loading slip, approximately 2,000 feet north of Winter Street in the City of Superior. The site and property adjacent to the site are currently vacant. However, property in the area is currently and has historically been used for industrial purposes.

Approximately 2,200 feet south of the MMT site is a former petroleum terminal that was operated by Amoco. This terminal and other nearby properties associated with the terminal are currently undergoing petroleum contamination remediation (e.g., BRRTS #02-16-000331, #02-16-117873, and #02-16-297979). Amoco has identified the presence of dissolved- and free-phase hydrocarbons in and on the groundwater approximately 300 feet east and 1,100 feet south of the MMT site. GF's August 2014 remediation progress report to the WDNR provided a historic

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map showing select monitoring wells and the estimated lateral extent of dissolved- and free-phase contamination associated with the Amoco sites.

The MMT site was home to the Berwind Fuel Company (BFC) facility during the first half of the 20th century. The facility stored coal in piles up to 40 feet high and manufactured coal briquettes. In addition, a 1942 Sanborn map on file with the WDNR documents that a 164,000-gallon "binding" oil storage tank used in the coal briquette manufacturing process was located on site.

Between circa 1972 and 1988, Murphy Oil leased the property from the C. Reiss Coal Company and used the site as a commercial terminal to load unleaded and possibly leaded gasoline, No. 1 fuel oil, and No. 2 fuel oil into ships. In addition, two underground storage tanks (USTs) and one aboveground storage tank (AST) were formerly located at the site. The two USTs consisted of an 8,500-gallon steel tank, which held ballast water released from ships loading at the slip, and a 1,000-gallon steel tank, which was part of the site's spill containment system that was used to contain spilled petroleum products. The AST was used to separate oil from the ballast water.

On October 1, 2011, Calumet Superior, LLC (Calumet) acquired the Murphy Superior Refinery, including the MMT site. Effective November 8, 2017, Husky Superior Refining Holding Corp (Husky Superior) purchased Calumet and changed its legal name to Superior Refining Company LLC. In addition, the site was administered by the Wisconsin Department of Commerce (Commerce) between August 2005 and June 2011 and by the Department of Safety and Professional Services between July 2011 and July 2013.

Summary of Site Investigation and Remedial Work

- From November 28 through December 4, 1990, excavations associated with the removal of the 1,000- and 8,500-gallon USTs extended about 5 feet and 10 feet below ground surface (bgs), respectively. Itasca Petroleum Tank Testing (Itasca) of Superior, the contractor, reported that there was not any underground piping associated with either of the two USTs.
- On December 3 and 4, 1990, following the removal each UST, Twin Ports Testing (TPT) collected confirmation soil samples for field screening with a photo-ionization detector (PID) and lab analysis and did not observe any holes in either of the USTs. However, based

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on the presence of elevated PID readings, TPT excavated approximately 36 cubic yards of soil that was adjacent to the former 8,500-gallon UST. The excavated soil was disposed of at the Moccasin Mike Landfill in Superior. In addition, two of the five soil samples submitted for laboratory analysis of select volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) identified the presence of petroleum-impacted soil.

- Between May 2005 and May 2010, a multiphase investigation was conducted by GF to determine the estimated extent of impacted soil and groundwater near the former USTs, and 23 soil and 2 groundwater samples were collected. Select samples were analyzed for petroleum volatile organic compounds (PVOCs), polycyclic aromatic hydrocarbons (PAHs), gasoline and diesel range organics (GRO/DRO), and lead.
- Commerce (the lead state agency in September 2005) determined that the MMT site could be conditionally closed, provided the site was included on the WDNR's Geographic Information System database of locations where residual soil contamination remains.
- Since Murphy did not own the property, Murphy attempted to remove residual benzene soil contamination around one sample location (GP-1) and possibly obtain an unconditional closure from Commerce. In July 2007, a small volume of soil/fill (less than 5 cubic yards) was excavated at the former location of GP-1 and disposed of offsite at a licensed landfill. However, follow-up soil samples contained benzene with concentrations above its applicable NR 720 residual contaminant level (RCL) for the soil to groundwater pathway.

Reports submitted to the WDNR/Commerce with additional details include:

- *Tank Removal Report: Murphy West Marine Terminal Dock, Itasca, December 12, 1990.*
- *Tank Excavation Observation, TPT, March 15, 1991.*
- *Results of Site Investigation and Request for Site Closure, GF, Sept 2005.*
- *Remediation Progress Report for the Calumet Marine Terminal Release Site, GF, August 14, 2014.*

Conceptual Site Model Summary

- Based on the six Geoprobe borings (GP-2 thru GP-7) advanced outside of the two areas of excavation in November/December 1990, subsurface conditions at the site consist of:

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- At least 4 feet of industrial fill east of the former location of the 1,000-gallon UST (GP-2 and GP-3) and south of the former location of the 8,500-gallon UST (GP-4 and GP-5).
- Native red-brown clay east (GP-6) and north (GP-7) of the former location of the 8,500-gallon UST.
- Groundwater was encountered approximately 2 to 3 feet bgs in GP-1 thru GP-7 on May 26, 2005. In addition, Amoco installed a nested pair of monitoring wells (MWBD-1 and MWBD-1D) onsite approximately 200 feet north-northwest of the former location of the 8,500-gallon UST and less than 100 feet east-southeast of the former location of the 1,000-gallon UST. Water-table monitoring well MWBD-1 was installed in October 2013, and piezometer MWBD-1D was installed in October 2014. Based on data from Amoco's network of monitoring wells/piezometers:
 - Shallow groundwater flow beneath the MMT site is to the north-northwest.
 - The upward vertical gradient at MWBD-1/MWBD-1D ranged from 0.0038 to 0.0103 between October 2014 and October 2016.
 - Surficial geology in the area consists of dense, reddish brown clay that overlies a sequence of water-bearing silts and silty sands.
- PAHs are the primary type and PVOCs and lead are the secondary type of contamination at the MMT site. Suspected sources of PAHs include fragments of coal, coal dust, soot, and/or the pitch binder used in the Dutch Oil process during the manufacture of coal briquettes by BFC in the industrial fill. Suspected sources of PVOCs and lead include residual petroleum impacts from the industrial fill, Murphy Oil's fuel loading activities, and/or one or more of the Amoco sites.
- The one soil sample location at the MMT site with any contaminant above its industrial direct contact RCL is GP-7 at 0-2 feet bgs with benzo(a)pyrene at 7.24 milligrams per kilogram (mg/kg), which is above its generic NR 720 direct contact RCL of 2.11 mg/kg. Consequently, the estimated extent of unsaturated soil with one or more contaminant at or above its NR 720 industrial direct contact RCL is limited to benzo(a)pyrene at that one location.

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- Potential receptors for the PAH/direct contact pathway are restricted due to limited access and the site's remote location.
- The existing concrete pavement and cover vegetation will prevent/limit exposure to the residual soil contamination.
- Groundwater samples collected on May 26, 2005, were non-detect for PAHs and PVOCs in GP-1 and PVOCs in GP-4. In addition, groundwater samples collected from:
 - Water-table well MWBD-1 have all been non-detect for PVOCs.
 - Piezometer MWBD-1D have had benzene concentrations above its NR 140 enforcement standard of 5 micrograms per liter. However, the vertical gradient is up.

Based on the historical information and conceptual site model summarized above, SRC and GF believe that no further field work is necessary to characterize the MMT site and no active remediation is necessary. This no further action approach would have the added benefit of minimizing the project's environmental footprint. SRC is exploring its alternatives to achieve final site closure.

Please contact Matt Turner at Husky Superior and/or me if you have any comments, questions, or need additional information.

Sincerely,

GANNETT FLEMING, INC.



Clifford C. Wright, P.E., P.G.
Project Engineer

CCW/jec
Enc.

ecc: Matt Turner (Husky Superior)

CERTIFICATION

Only persons qualified to submit reports under ch. NR 712 Wis. Adm. Code are to sign this form for sites with any ongoing active remediation, monitoring, or an investigation. Other persons may sign this form for sites with no response activities during the six-month reporting period.

I hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Print Name Clifford C. Wright	Title Project Engineer
Signature <i>Clifford C. Wright</i>	Date 1-7-19

Professional Seal, if applicable:

