June 15, 2018

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         Kristina Miller, United States Environmental Protection Agency
         James Mitchell, United States Environmental Protection Agency
         Jacob Hassan, United States Environmental Protection Agency
         Robert Thiboldeau, Wisconsin Department of Health Services
         John Sager, Wisconsin Department of Natural Resources
         Pat Schanen, Douglas County
         Kathy Ronchi, Douglas County
         Dave Longsdorf, Douglas County

Ref. No.: 11156937

From:  GHD/dh/191

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CC:  Dyron Hamlin, MS, PE, CIH; Bradley Free

Subject:  Summary of Perimeter Air Monitoring Results: June 14, 2018 – Between 00:00 and 23:59

The purpose of this memorandum is to provide Superior Refining Company LLC (SRC) site management and local, state and federal regulators a summary of GHD’s site perimeter air monitoring activities and results at the Husky Superior Refinery conducted from June 14, 2018 between 00:00 and 23:59 Central Daylight Time (CDT). Air monitoring activities were conducted in accordance with the Air Monitoring Plan, as amended, developed in consultation with the United States Environmental Protection Agency, Wisconsin Department of Natural Resources, Wisconsin Department of Health Services, Douglas County Emergency Management Agency, and Douglas County Health and Human Services.

GHD continued to monitor air quality with 15 AreaRAE monitors located at the refinery site perimeter. Monitor maintenance was conducted by GHD following the Site protocols. The AreaRAE monitors were equipped with a photo ionization detector (PID) (10.6 eV lamp) for monitoring volatile organic compounds (VOCs) and electrochemical sensors specific for carbon monoxide (CO), hydrogen sulfide (H\textsubscript{2}S), sulfur dioxide (SO\textsubscript{2}) and flammability (LEL). GHD monitored meter status and continuous air quality monitoring results via telemetry from the refinery control room. Results were documented through data logging.

H\textsubscript{2}S detections were logged above the community action level at one monitor on June 14, 2018. The detections were not sustained above the community action level. Therefore, the detections do not constitute as an exceedance of community action levels.
Perimeter monitoring locations and status with respect to community action levels over the period of June 13, 2018 between 00:00 and 23:59 are presented on Figure 1.

Perimeter air monitoring results for VOCs, H₂S, and SO₂ over this period are presented on Figures 2 through 4, respectively.

The information contained in this memorandum will be considered preliminary until a final Quality Assurance/Quality Control (QA/QC) review of the data is completed. At the completion of the project, all data collected through real-time monitoring will be compiled, summarized, and reported to SRC. Data contained in the final report will go through GHD’s final QA/QC process, including review by a GHD Certified Industrial Hygienist (CIH).
SUMMARY OF PERIMETER ZONE AIR MONITORING RESULTS
JUNE 14, 2018 - 00:00 TO 23:59

HUSKY ENERGY – SUPERIOR REFINERY FIRE
SUPERIOR, WISCONSIN

RICHARD I BONG AP (W) Wind Rose
June 14, 2018 - June 14, 2018
Sub-Area: Jun 14 - Jun 14, 0 - 23

Wind Speed (mph)
- 3 - 6
- 6 - 9
- 9 - 13
- 13 - 19
- 19 - 25
- 25 - 32
- 32 - 47
- 47 -


Legend
Perimeter Monitoring Locations
- COIs Above Community Action Levels
- COIs Below Community Action Levels

GIS File: Q:\GIS\PROJECTS\11156000s\11156937\Layouts\PRES007\11156937-00(PRES007)GIS-WA180.mxd

Coordinate System:
NAD 1983 HARN StatePlane Wisconsin North FIPS 4801 Feet

FIGURE 1

Coordinate System: NAD 1983 HARN StatePlane Wisconsin North FIPS 4801 Feet

**Legend**
- **Perimeter Monitoring Locations**
- **COIs Above Community Action Levels**
- **COIs Below Community Action Levels**

**HUSSY ENERGY – SUPERIOR REFINERY FIRE**
**SUPERIOR, WISCONSIN**

**PERIMETER ZONE AIR MONITORING RESULTS - H2S (PPM)**
**JUNE 14, 2018 - 00:00 TO 23:59**

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**FIGURE 3**

**HOUSKY ENERGY SUPERIOR REFINERY FIRE**
**SUPERIOR, WISCONSIN**

**PERIMETER ZONE AIR MONITORING RESULTS - H2S (PPM)**
**JUNE 14, 2018 - 00:00 TO 23:59**

**GIS File:** Q:\GIS\PROJECTS\11156000s\11156937\Layouts\PRES007\11156937-00(PRES007)GIS-WA178.mxd
PERIMETER ZONE AIR MONITORING RESULTS - SO2 (PPM)
JUNE 14, 2018 - 00:00 TO 23:59


Legend
Perimeter Monitoring Locations
- COIs Above Community Action Levels
- COIs Below Community Action Levels

HUSKY ENERGY – SUPERIOR REFINERY FIRE
SUPERIOR, WISCONSIN

FIGURE 4