



Memorandum

May 11, 2018

To: David Morrison, United States Environmental Protection Agency Ref. No.: 11156937
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

From: GHD/dh/47 Tel: 501-224-1926

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

Subject: Summary of Perimeter Air Monitoring Results: May 10, 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 May 10, 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 (H₂S), and flammability (LEL). As of May 10, 2018, 4 of the 15 AreaRAE monitors are equipped with sulfur dioxide (SO₂) electrochemical sensors. The remaining 11 AreaRAE monitors will be equipped with SO₂ sensors in the following days. GHD monitored meter status and continuous air quality monitoring results via telemetry from the refinery control room. Results were documented through data logging.

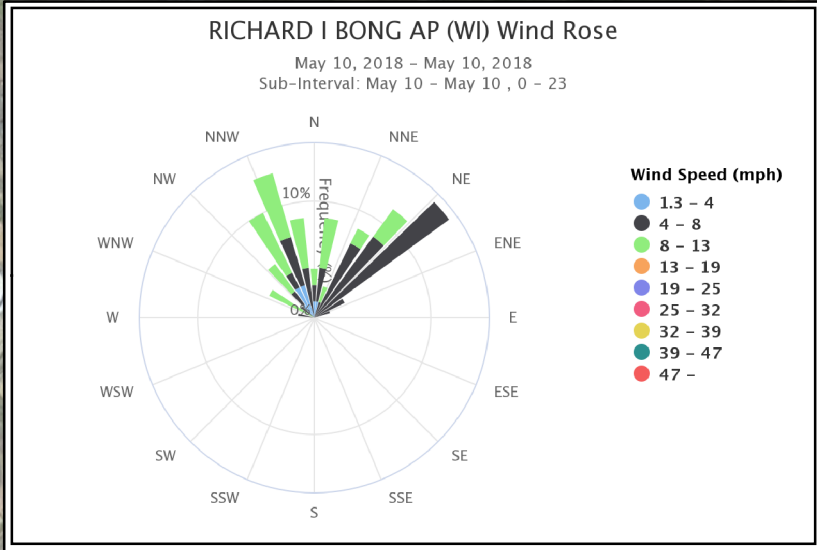


VOC detections were logged above the community action levels at some monitors on May 10, 2018. The detections were not sustained readings above the community action levels. Therefore, the detections do not constitute as exceedances of community action levels.

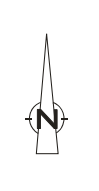
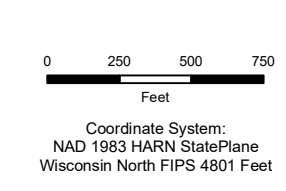
Perimeter monitoring locations and status with respect to community action levels over the period of May 10, 2018 between 00:00 and 23:59 are presented on Figure 1.

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).



Sources: 2015 TIGER/Line Shapefiles, prepared by the U.S. Census Bureau, 2015; U.S. Geological Survey, National Geospatial Technical Operations Center - National Elevation Dataset, 2015; Imagery © Google.



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

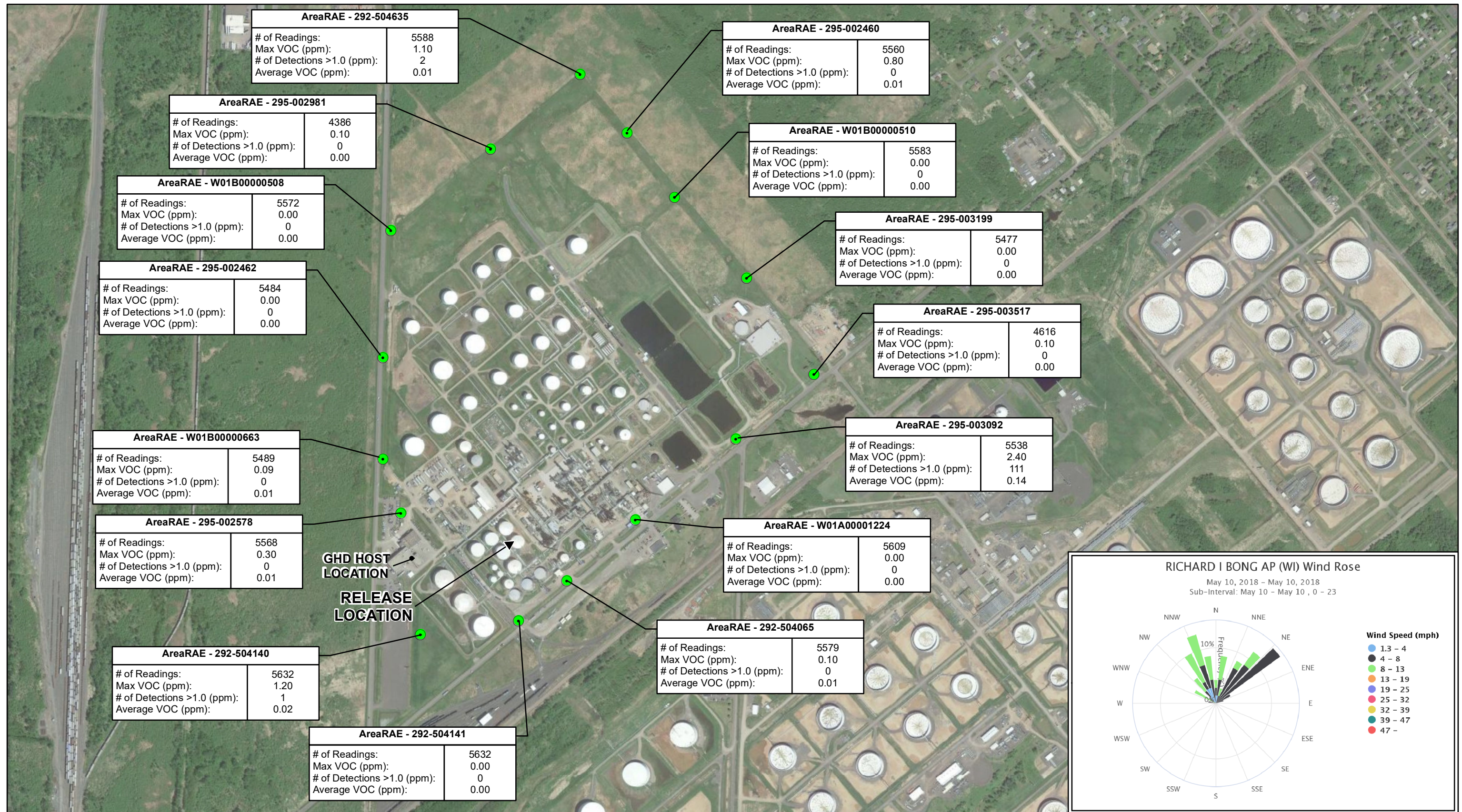


HUSKY ENERGY – SUPERIOR REFINERY FIRE
SUPERIOR, WISCONSIN

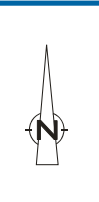
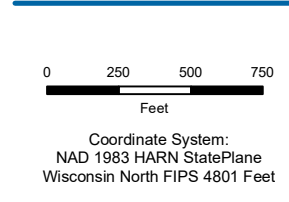
**SUMMARY OF PERIMETER ZONE AIR MONITORING RESULTS
MAY 10, 2018 - 00:00 TO 23:59**

11156937-00
May 11, 2018

FIGURE 1



Sources: 2015 TIGER/Line Shapefiles, prepared by the U.S. Census Bureau, 2015; U.S. Geological Survey, National Geospatial Technical Operations Center - National Elevation Dataset, 2015; Imagery © Google.



Legend
Perimeter Monitoring Locations

- COIs Above Community Action Levels
- COIs Below Community Action Levels

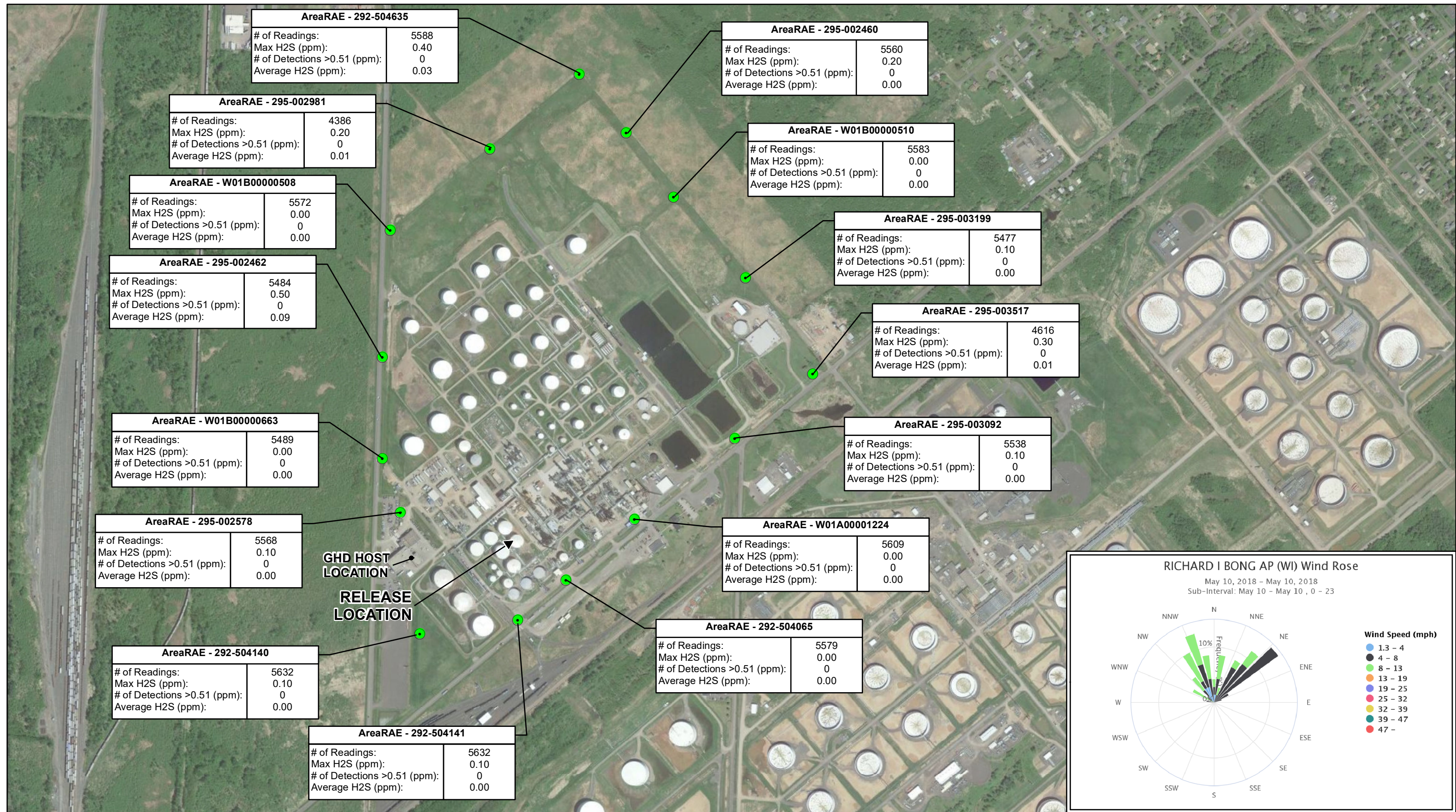


HUSKY ENERGY – SUPERIOR REFINERY FIRE
 SUPERIOR, WISCONSIN

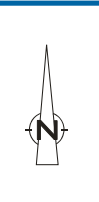
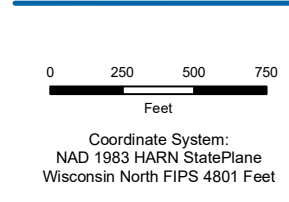
PERIMETER ZONE AIR MONITORING RESULTS - VOCS (PPM)
 MAY 10, 2018 - 00:00 TO 23:59

11156937-00
 May 11, 2018

FIGURE 2



Sources: 2015 TIGER/Line Shapefiles, prepared by the U.S. Census Bureau, 2015; U.S. Geological Survey, National Geospatial Technical Operations Center - National Elevation Dataset, 2015; Imagery © Google.



Legend

Perimeter Monitoring Locations

- COIs Above Community Action Levels
- COIs Below Community Action Levels

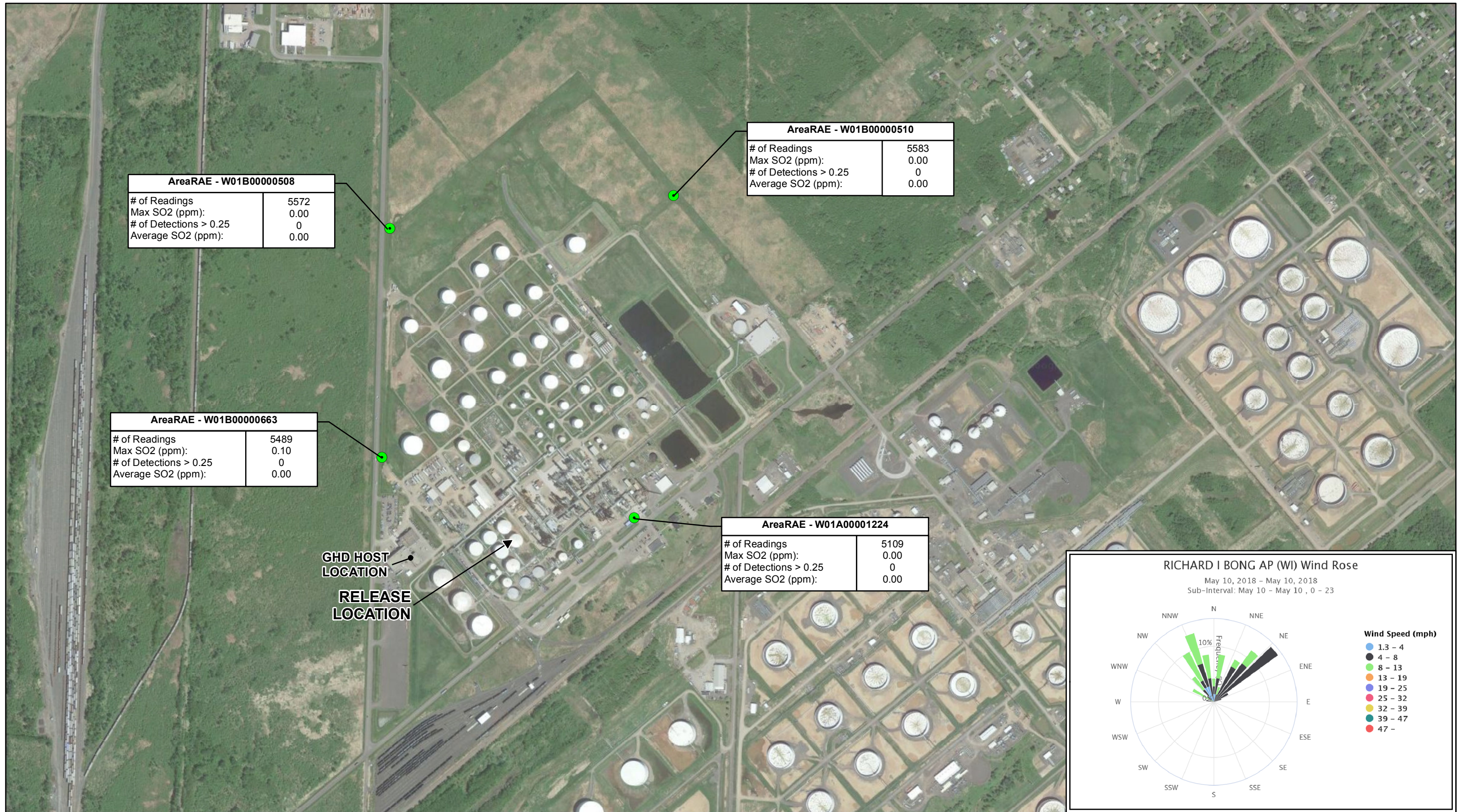


HUSKY ENERGY – SUPERIOR REFINERY FIRE
 SUPERIOR, WISCONSIN

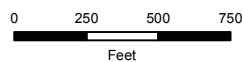
PERIMETER ZONE AIR MONITORING RESULTS - H2S (PPM)
 MAY 10, 2018 - 00:00 TO 23:59

11156937-00
 May 11, 2018

FIGURE 3



Sources: 2015 TIGER/Line Shapefiles, prepared by the U.S. Census Bureau, 2015; U.S. Geological Survey, National Geospatial Technical Operations Center - National Elevation Dataset, 2015; Imagery © Google.



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



HUSKY ENERGY – SUPERIOR REFINERY FIRE
 SUPERIOR, WISCONSIN

PERIMETER ZONE AIR MONITORING RESULTS - SO2 (PPM)
 MAY 10, 2018 - 00:00 TO 23:59

11156937-00
 May 11, 2018

FIGURE 4