



Memorandum

May 1, 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/14 Tel: 501-224-1926

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

Subject: Summary of Perimeter Air Monitoring Results for April 29, 2018 23:30 – April 30, 2018 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 April 29, 2018 23:30 Central Daylight Time (CDT) through April 30, 2018 23:59 CDT. Air monitoring activities were conducted in accordance with the Air Monitoring Plan 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.

During this shift, GHD placed five additional AreaRAE monitors at the refinery site perimeter for a total of 15 continuous AreaRAE monitoring locations at the refinery perimeter. Monitor placement and 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). GHD monitored meter status and continuous air quality monitoring results via telemetry from the refinery control room. Results were documented through data logging. Low level VOC concentrations were logged above the community action levels at some monitors in the morning of May 1, 2018 during a period of high relative humidity. These readings were investigated with handheld air monitoring equipment and confirmed

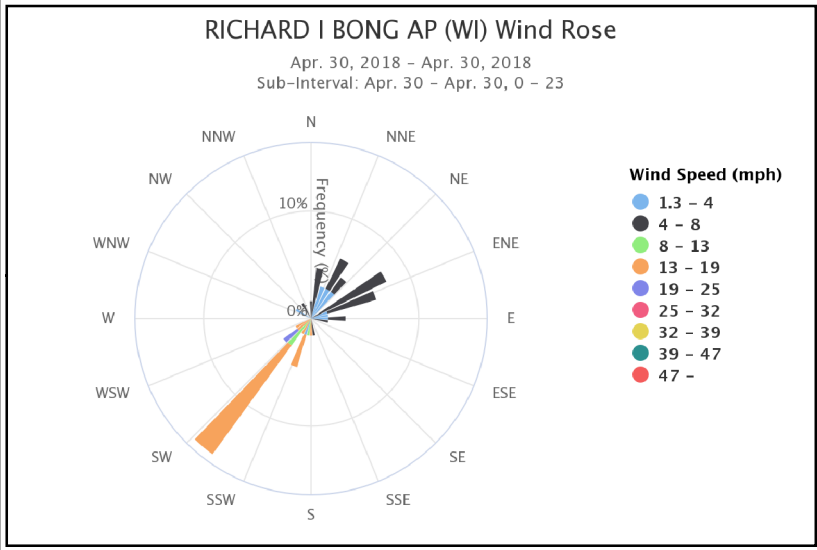


to be caused by moisture in the air rather than VOC concentrations and therefore they do not constitute exceedances of community action levels.

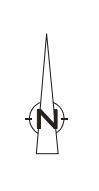
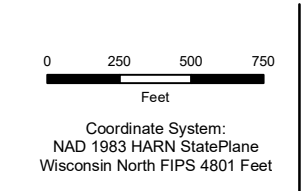
Perimeter monitoring locations and status with respect to community action levels over the period of April 29, 2018 23:30 to April 30, 2018 23:59 are presented on Figure 1.

Perimeter air monitoring results for VOCs and H₂S over this period are presented on Figures 2 and 3.

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 Below Community Action Levels
 - COIs Above Community Action Levels

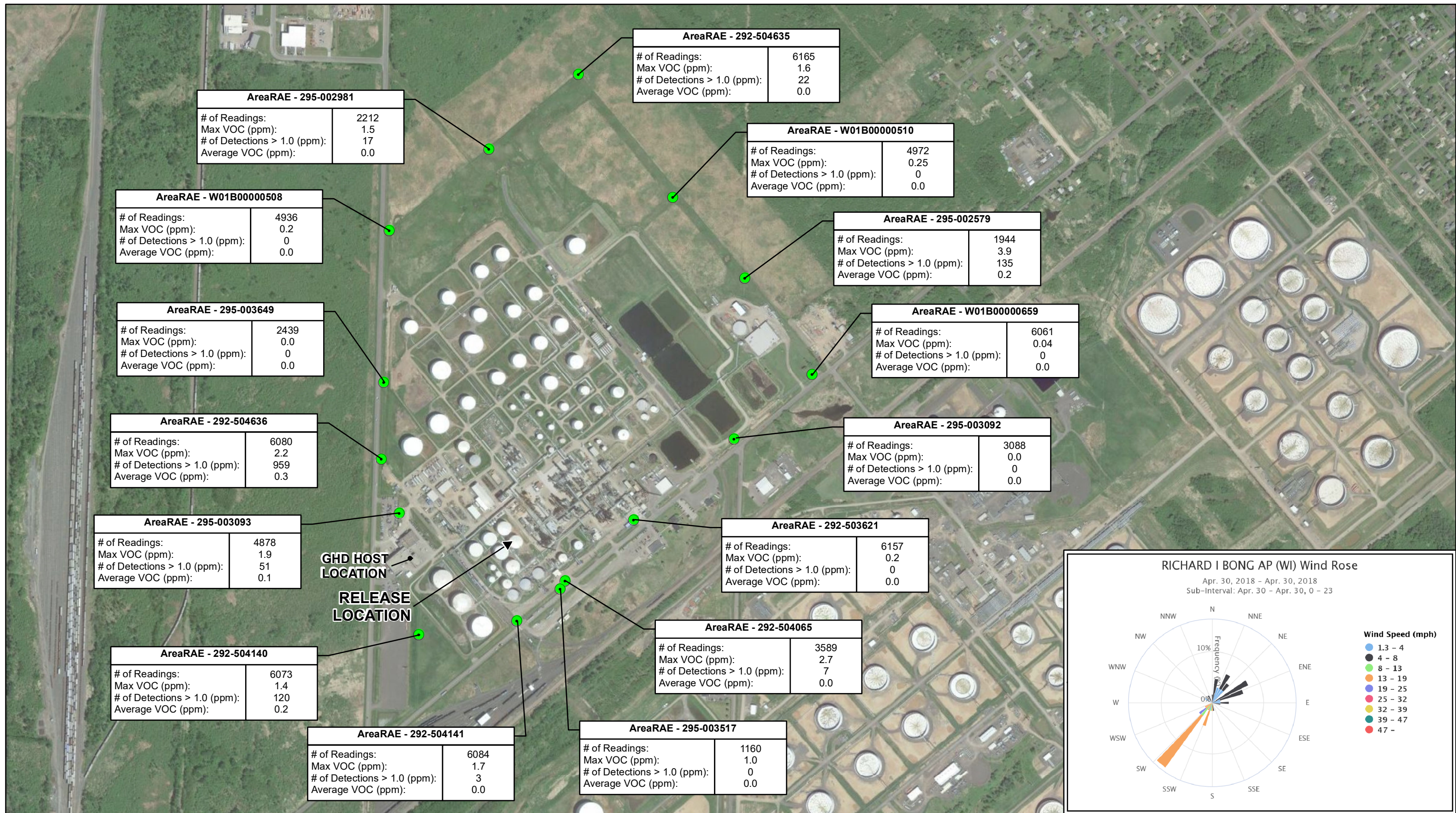


HUSKY ENERGY – SUPERIOR REFINERY FIRE
SUPERIOR, WISCONSIN

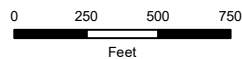
SUMMARY OF PERIMETER ZONE AIR MONITORING RESULTS
23:30 APRIL 29 TO 23:59 APRIL 30, 2018

11156937-00
May 1, 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.



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



Legend

Perimeter Monitoring Locations

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

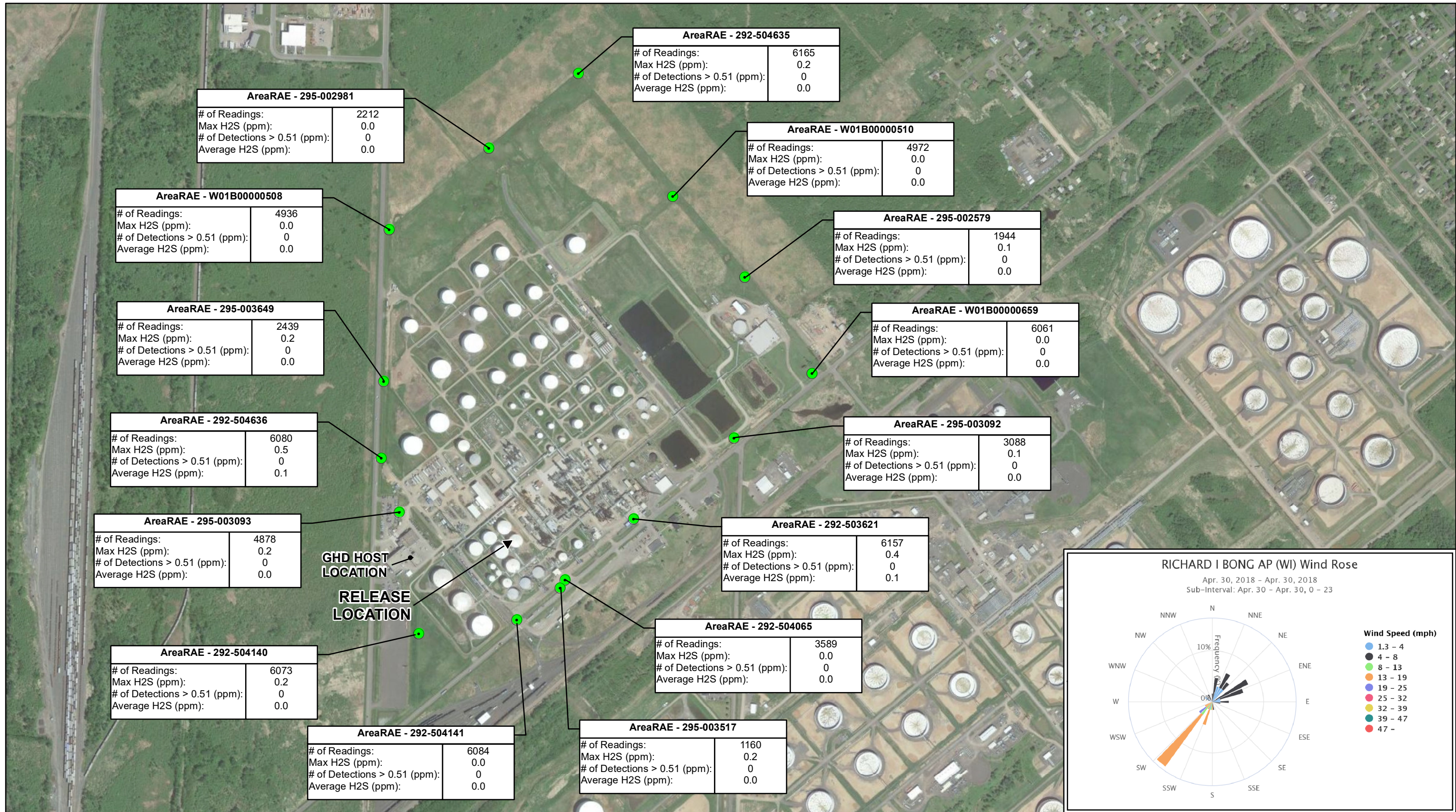


HUSKY ENERGY – SUPERIOR REFINERY FIRE
SUPERIOR, WISCONSIN

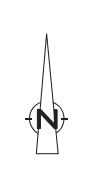
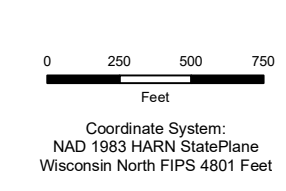
PERIMETER ZONE AIR MONITORING RESULTS - VOCS (PPM)
23:30 APRIL 29 TO 23:59 APRIL 30, 2018

11156937-00
May 1, 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 Below Community Action Levels
- COIs Above Community Action Levels



HUSKY ENERGY – SUPERIOR REFINERY FIRE
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PERIMETER ZONE AIR MONITORING RESULTS - H2S (PPM)
23:30 APRIL 29 TO 23:59 APRIL 30, 2018

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FIGURE 3