1 EXECUTIVE SUMMARY

In March 2019, the City of Evanston hired RHP Risk Management Inc. (RHP) to design and implement a 6-month duration air quality study. The objective of the study was to measure for ambient air pollutants that were expected to possibly be present based upon previous recommendations made by the TEX project. The purpose of the study was to determine whether the measured values for any of the target parameters demonstrate probable source-attribution to site operations at the waste transfer station, so that future evaluations, such as a long-term air monitoring and/or a human health risk assessment, may then focus on key parameters demonstrated to be of potential concern.

RHP conducted a scoping study from May 17, 2019 to November 20, 2019. Real-time air monitoring instruments were placed at four sites surrounding the property boundaries of the Church St. Waste Transfer Station, and additionally at a control site near Twiggs Park, approximately a half-mile to the northwest. Measurement values for most of the study testing parameters were recorded at 1-minute intervals which resulted in a robust data set comprised of over 112 million data points. Each of the five monitoring stations were configured to measure twelve parameters of interest: nitric oxide (NO), nitrogen dioxide (NO_2), ozone (O_3), fine and coarse particulate matter ($PM_{2.5}$ and PM_{10}), carbon monoxide (CO), sulfur dioxide (SO_2), hydrogen sulfide (H_2S), methyl mercaptan (CH_4S), formaldehyde (HCHO), Volatile Organic Compounds (VOCs), and noise. Two of the monitoring stations were additionally configured to measure wind speed and direction. Lastly, a 30-day traffic study was conducted to consider traffic patterns as a potential influence.

Air monitoring data collected was evaluated using an industry-leading statistical analysis program by SAS. The data analysis involved assessment of trends over time, spatial differences for the study area vs. control site, temporal differences for operational vs. non-operational facility hours, and the effect of other influencing factors such as wind direction and traffic patterns.

After analyzing all twelve of the parameters through six different perspectives (or lenses), we present the findings as a hierarchical ranking which prioritizes parameters according to an overall weight of evidence (WOE) scoring approach. A summary of the WOE score totals is presented in the following table. A more detailed version of the WOE score table and scoring criteria are provided in Section 5 (Findings) and Appendix A.11.

Parameter	Weight of Evidence (WOE) Score Total	Prioritization
Formaldehyde (CH_2O)	+6	1st Tier Parameters
Nitric Oxide (NO)	+6	
Sulfur Dioxide (SO_2)	+5	2nd Tier Parameters
Nitrogen Dioxide (NO_2)	+4	
Volatile Organic Compounds (VOCs)	+3	
Noise (dB)	+2	
Carbon Monoxide (CO)	+1	
Methyl Mercaptan (CH_3SH)	+1	
Hydrogen Sulfide (H_2S)	0	Deprioritized Parameters
Ozone (O_3)	-1	
Particulate Matter (PM_{TOTAL})	-2	
Particulate Matter ($PM_{2.5}$)	-4	
Particulate Matter (PM_{10})	-4	

The top two parameters with the highest WOE scores (formaldehyde and nitric oxide) were designated as 1st Tier parameters that we recommend prioritizing as parameters of greatest interest for any future work. All other parameters with positive WOE score totals (i.e., sulfur dioxide, nitrogen dioxide, Volatile Organic Compounds, noise, carbon monoxide, and methyl mercaptan) were designated as 2nd Tier parameters that we recommend considering as secondary interest parameters for any future work. Parameters with null or negative WOE score totals (hydrogen sulfide, ozone, fine, coarse, and total particulate matter) were designated as deprioritized parameters and are not recommended for additional future study. Detailed recommendations for application of these findings to future study considerations are provided in Section 7 (Recommendations).