



**FORT MCKAY**  
FIRST NATION

# **Fort McKay First Nation's Namur Lake Air Monitoring Station**

Air and Odour Management Conference  
*Toronto – 2019*

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**Pravid Environmental Inc.**

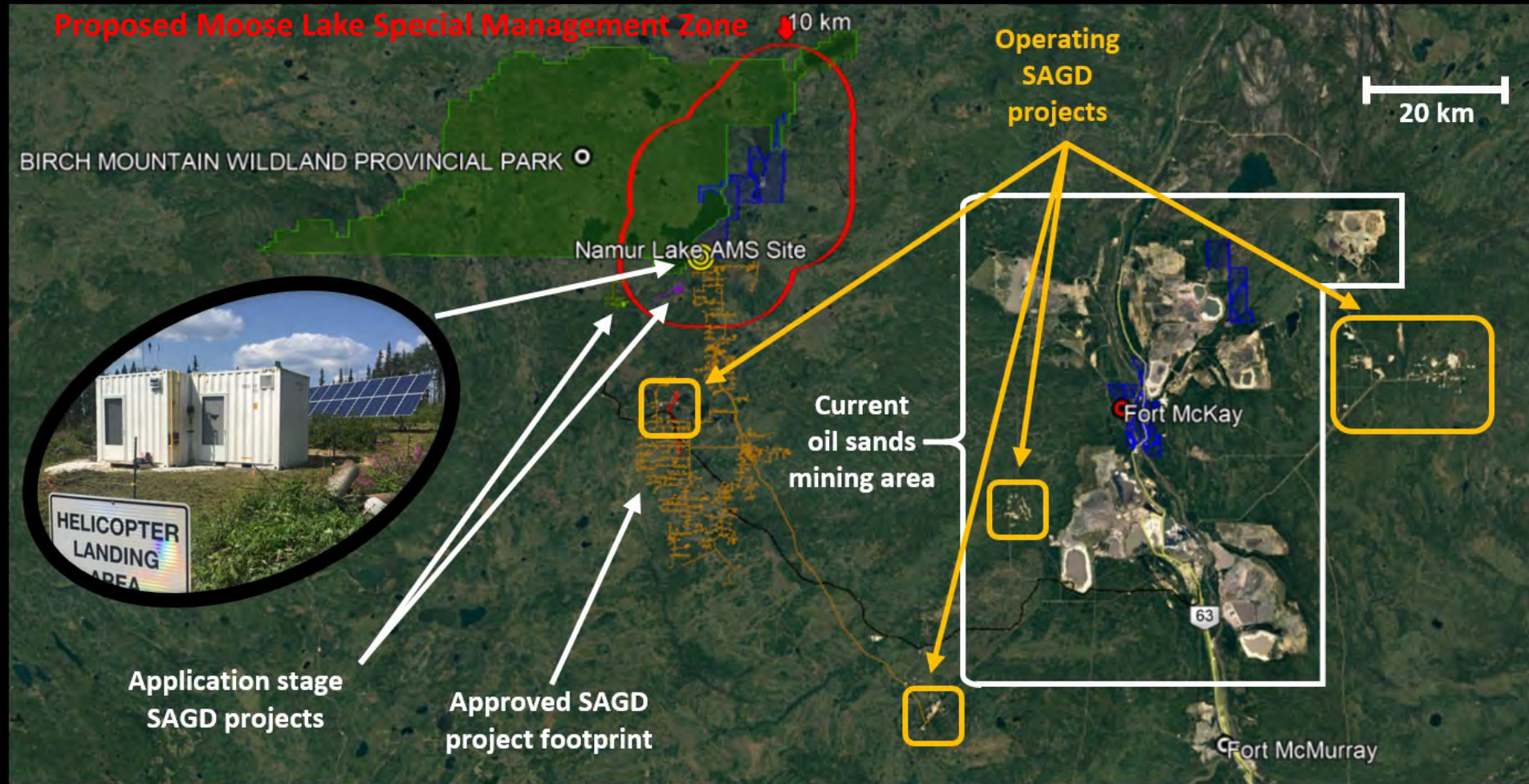


● Fort McKay



**Fort McKay**

**Fort McKay First Nation was compelled to act to protect the air quality in the Moose Lake area, which is a sacred place to its community.**





# The Namur Lake Air Monitoring Station

# Off-grid Sustainable Air Monitoring with 36 Solar Panels!

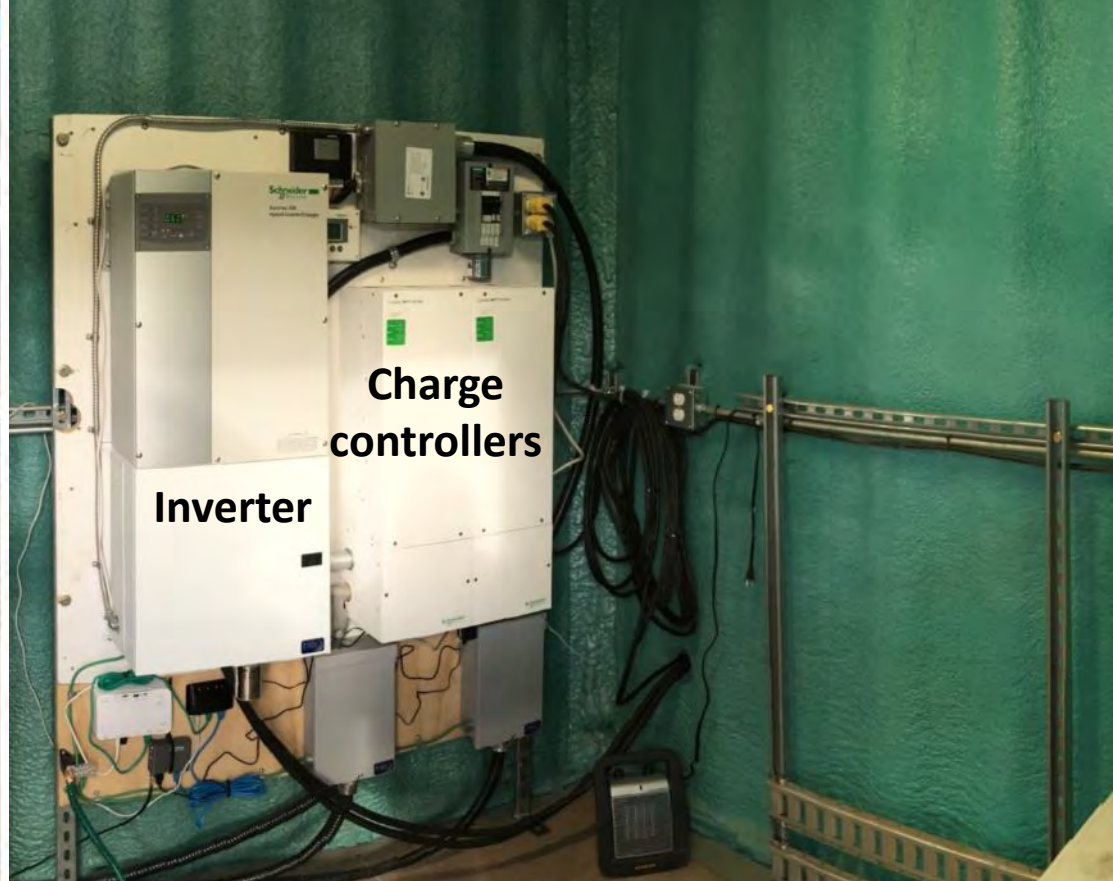
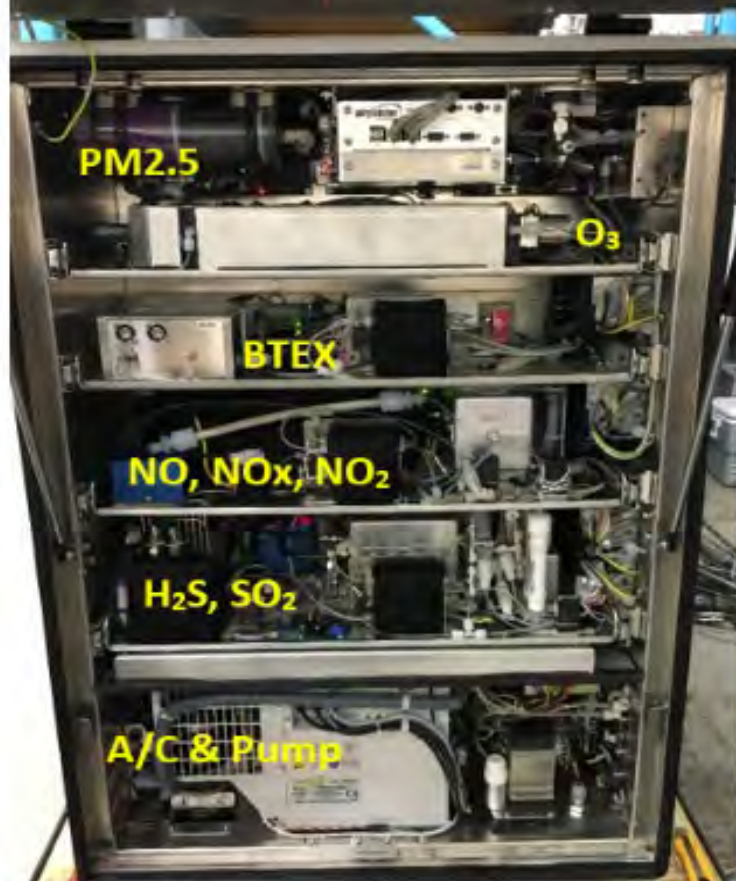
(Combined produces over 10,000 watts of electricity during charging!)



**Storing all this electricity requires batteries...  
Lots of batteries!**



**8,000 lbs of batteries provides a lot of  
storage capacity... enough to run the  
station for 3 - 4 days when fully charged!**

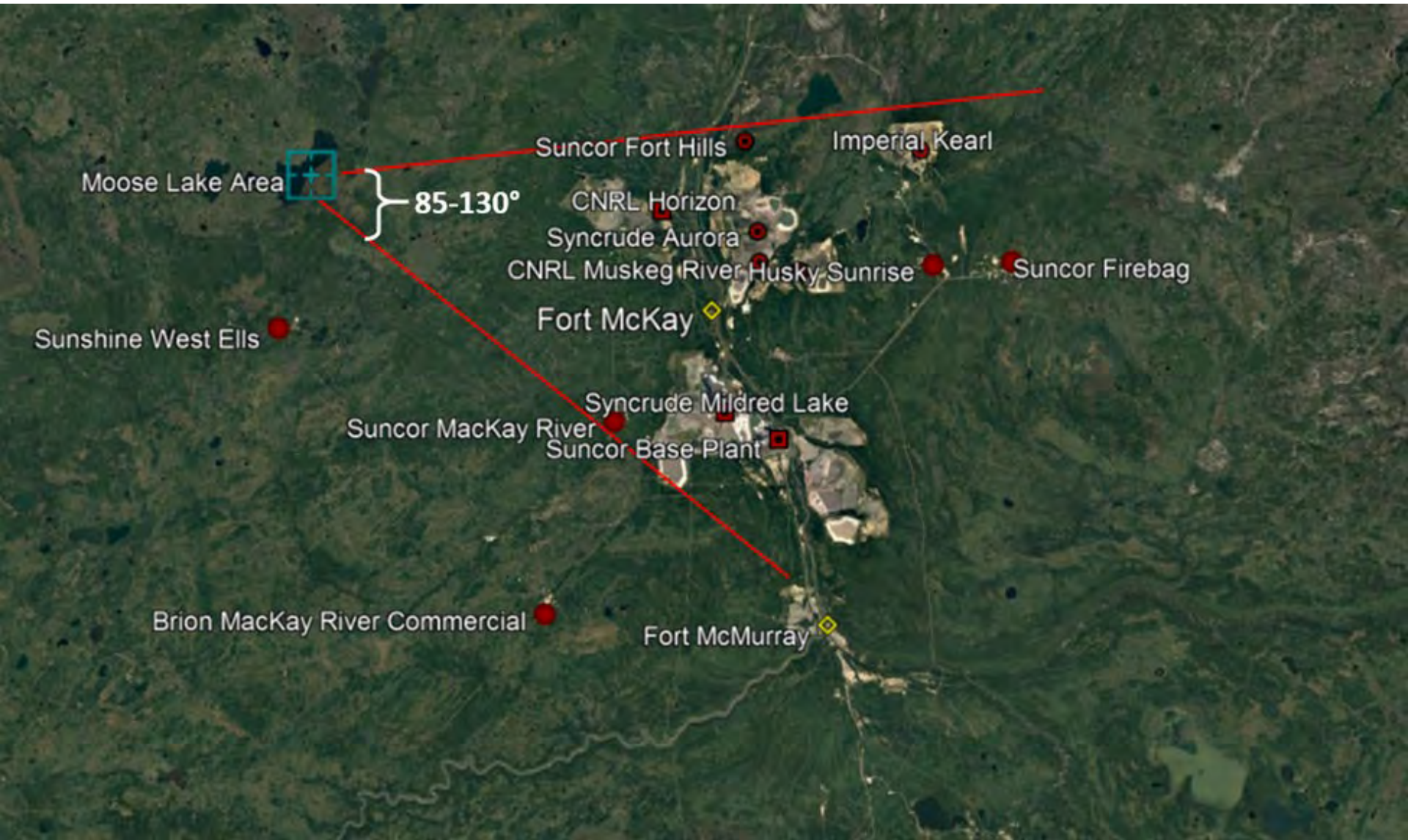


## FMFN's Airpointer® monitors:

- NO/NOx/NO<sub>2</sub>
- O<sub>3</sub>
- SO<sub>2</sub>
- H<sub>2</sub>S
- BTEX
- Particulate Matter (Nephelometer)
- Wind Speed & Wind Direction
- Temperature, Humidity, Precipitation

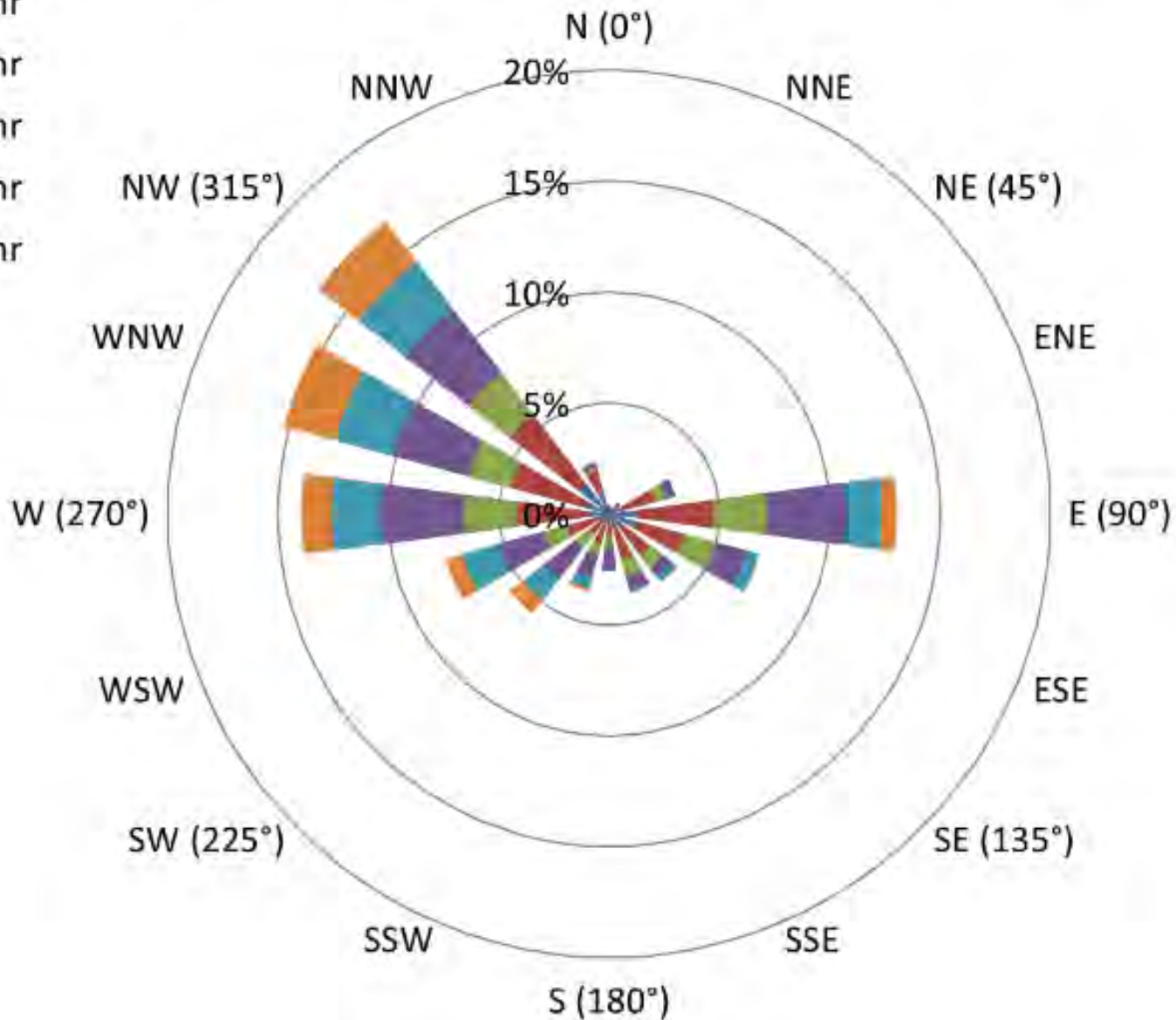
Excellent system for remote operations due to system diagnostics and ability to troubleshoot remotely.

# Air Quality is Often a Function of Wind Direction



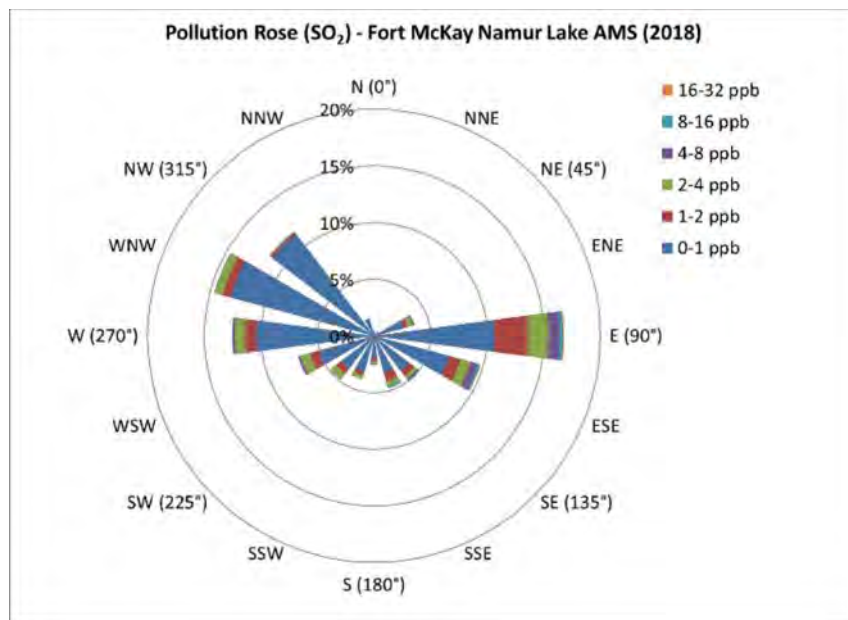
# Windrose - Fort McKay Namur Lake AMS (2018)

- 9-17 km/hr
- 7-9 km/hr
- 5-7 km/hr
- 4-5 km/hr
- 2-4 km/hr
- 0-2 km/hr

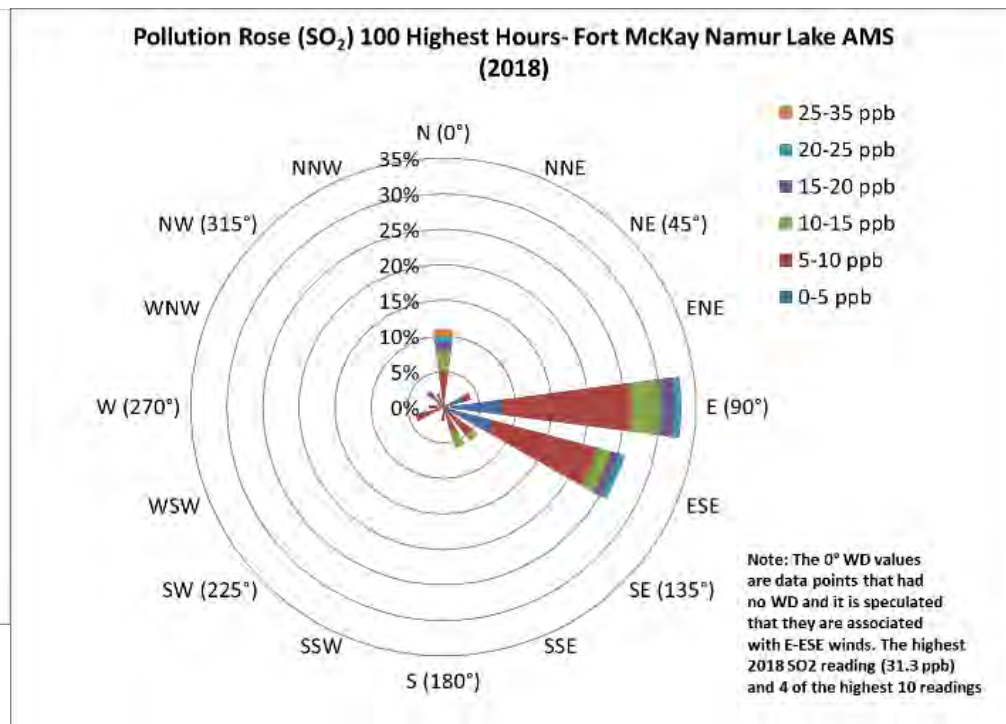


# Sulphur Dioxide (SO<sub>2</sub>) Levels as a Function of Wind Direction

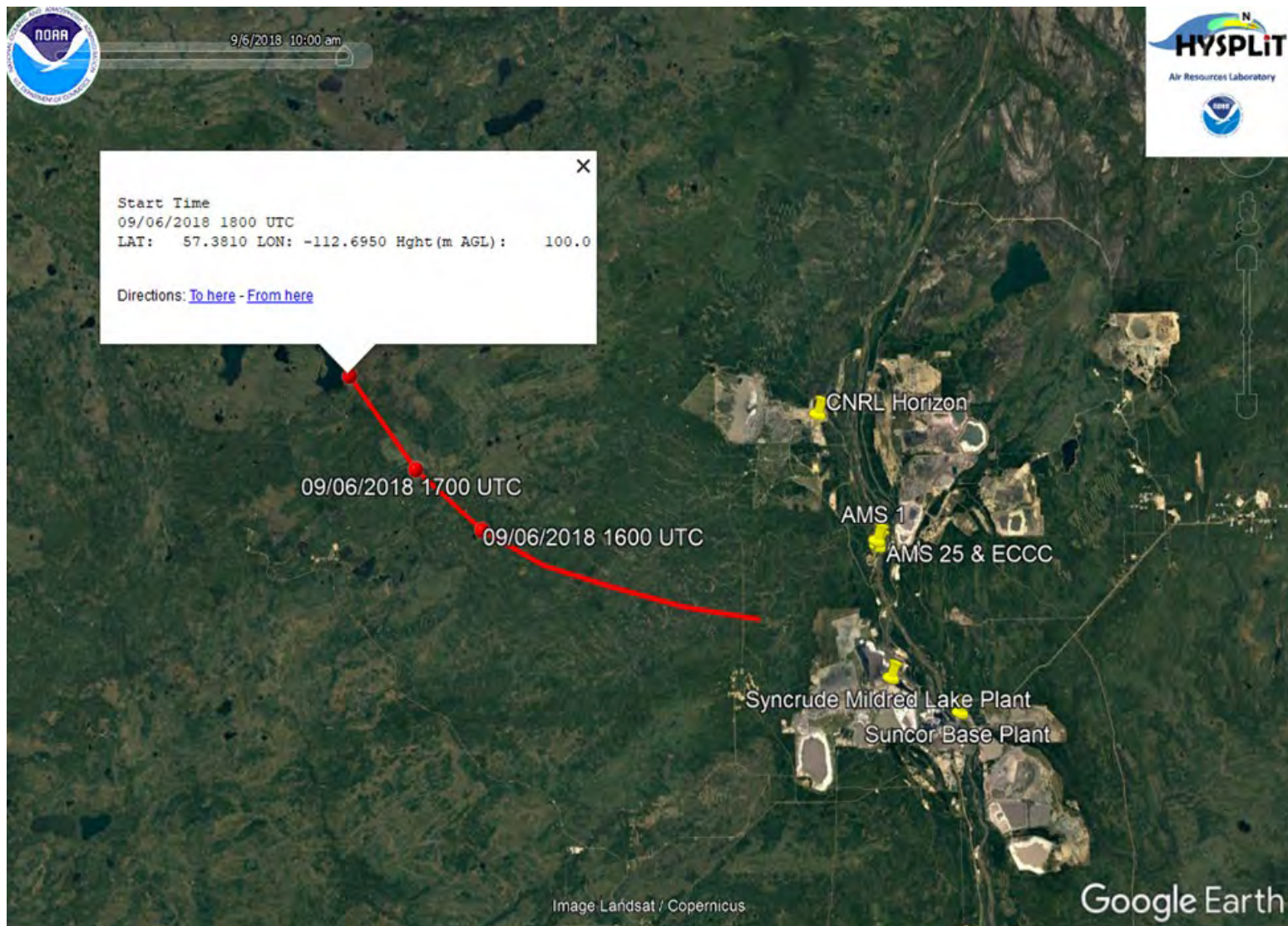
## All SO<sub>2</sub> Data



## 100 Highest Hourly SO<sub>2</sub> Levels

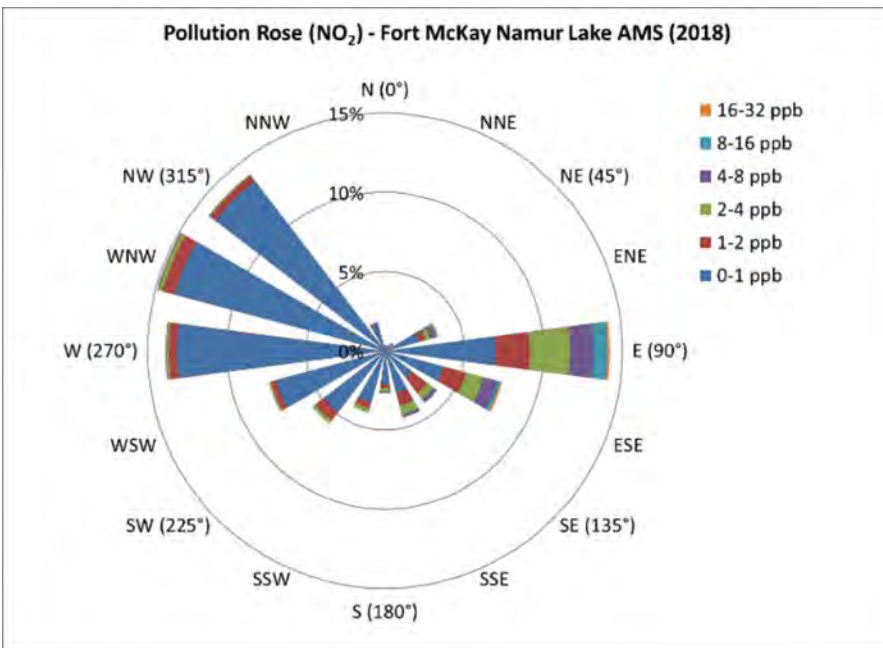


# Maximum 2018 SO<sub>2</sub> Level (31.3 ppb) at Namur lake AMS Sept 6, 2018 at 11:00am (MST) (1800 UCT) Back Trajectory 6 hours

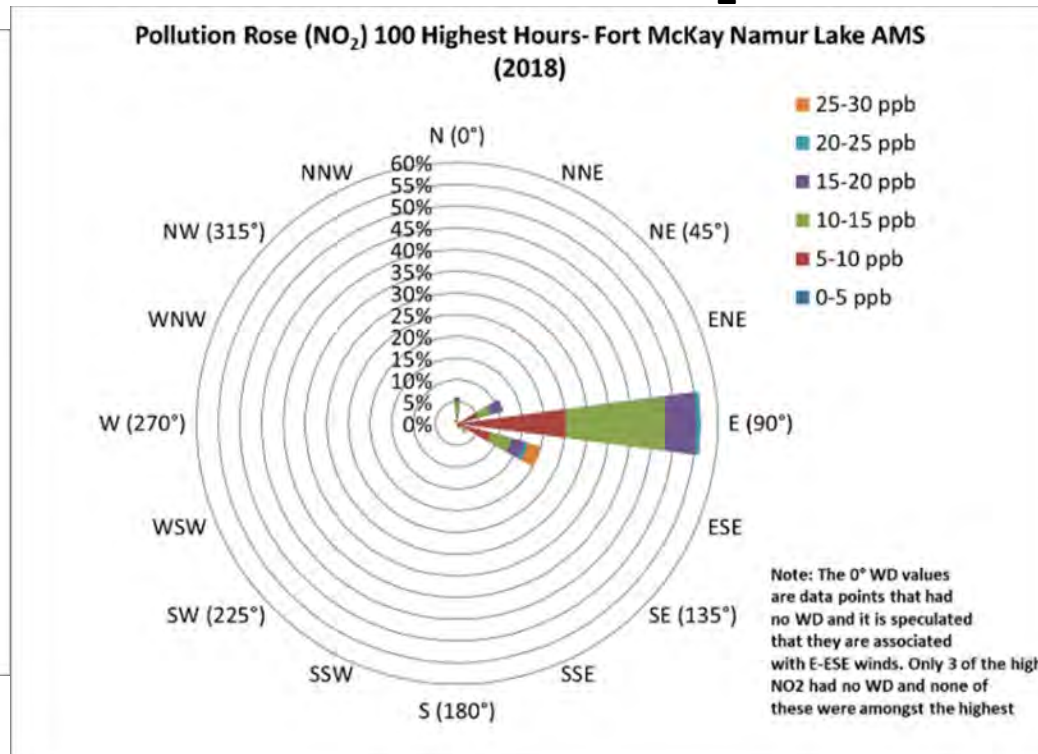


# Nitrogen Dioxide (NO<sub>2</sub>) Levels as a Function of Wind Direction

## All NO<sub>2</sub> Data



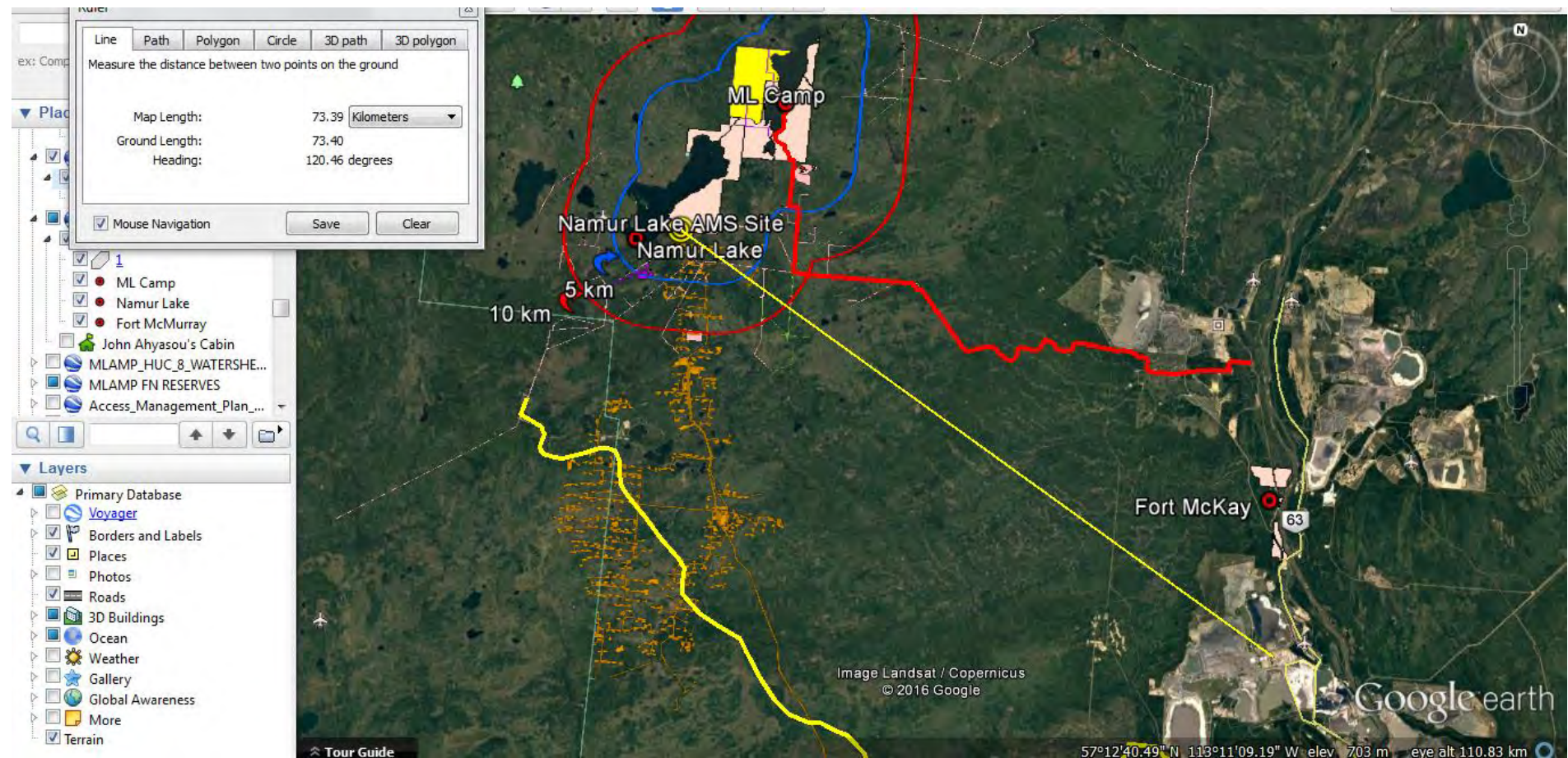
## 100 Highest Hourly NO<sub>2</sub> Levels



# **A Case Study of Source to Receptor (Namur Lake AMS) Oil Sands Impacts**



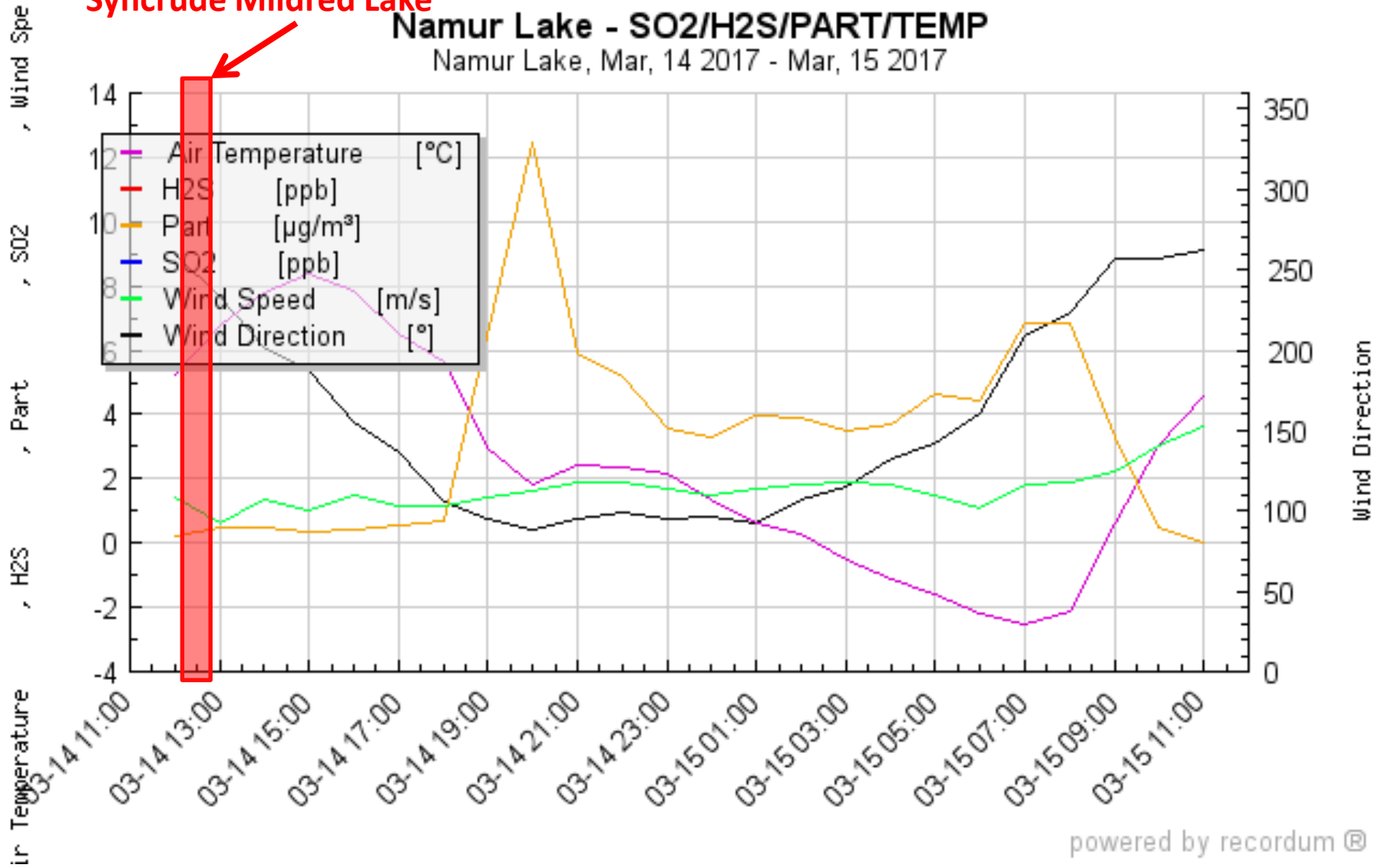
**The March 14, 2017 Syncrude Fire**



**Syncrude Mildred Lake to Namur Lake AMS = ~73 km**

**Approximate time of fire at  
Syncrude Mildred Lake**

**Namur Lake - SO<sub>2</sub>/H<sub>2</sub>S/PART/TEMP**  
Namur Lake, Mar, 14 2017 - Mar, 15 2017

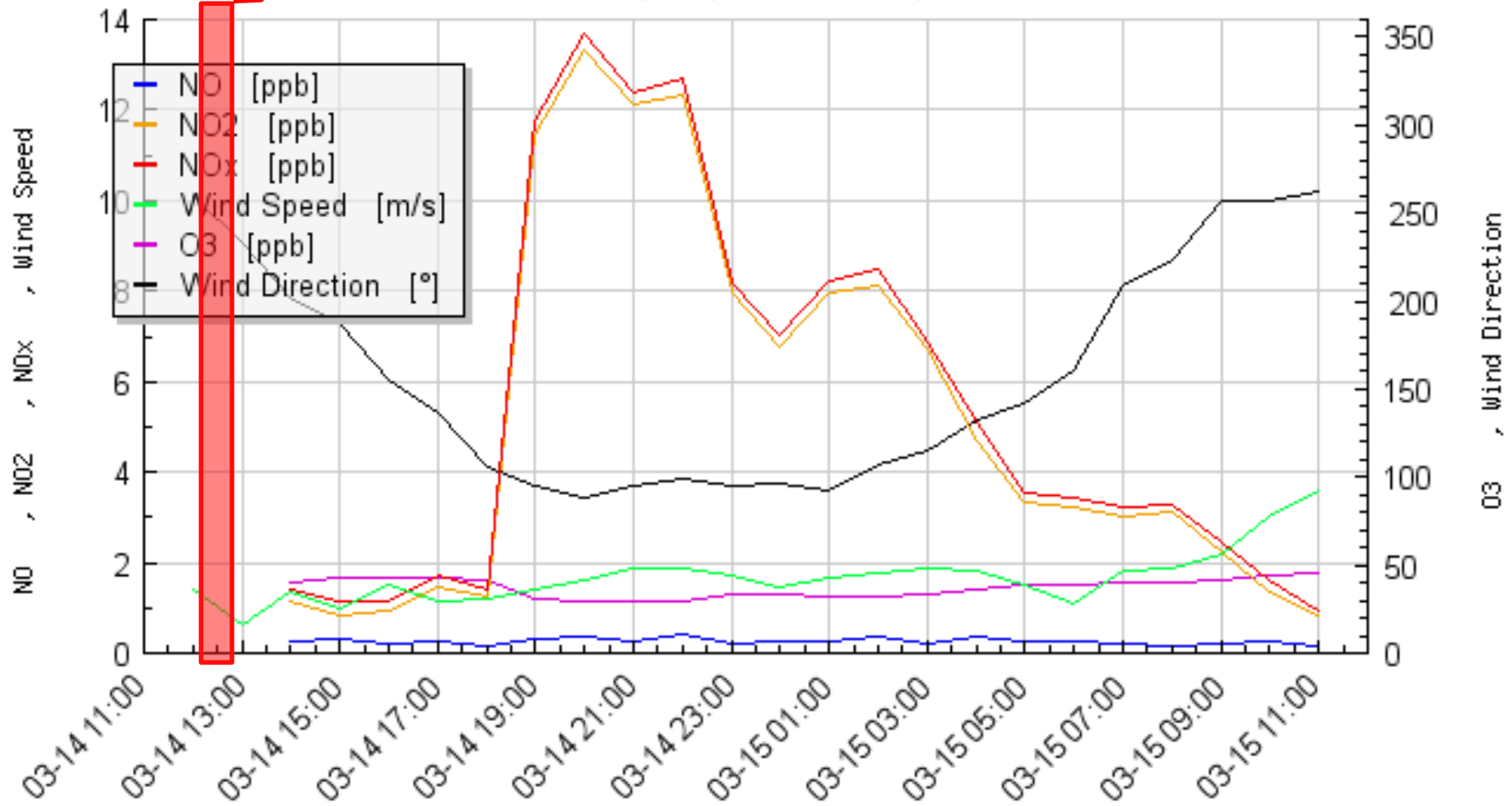


**SO<sub>2</sub>/H<sub>2</sub>S analyzer off-line at this time.**

**Approximate time of fire at  
Syncrude Mildred Lake**

**Namur Lake - NOx/O3**

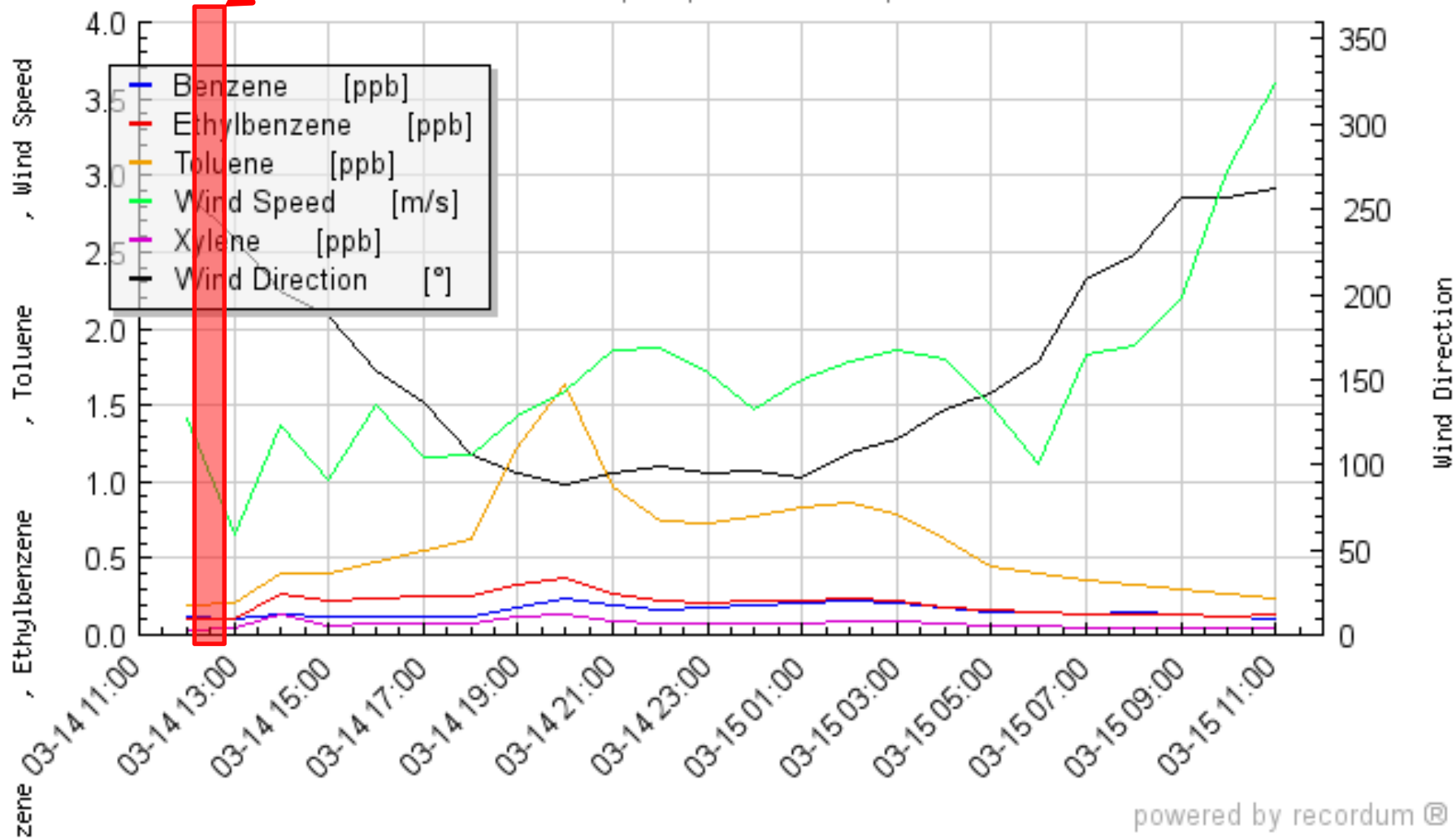
Namur Lake, Mar, 14 2017 - Mar, 15 2017



**Approximate time of fire at  
Syncrude Mildred Lake**

**Namur Lake - BTEX**

Namur Lake, Mar, 14 2017 - Mar, 15 2017



Thank you!



Questions?

# FORT MCKAY

FIRST NATION



Those interested in shovelling snow, please send your application with qualifications to: [rael@fortmckay.com](mailto:rael@fortmckay.com)

*Applicants must be capable of shoveling at a rate of 12 scoops per minute or more.*

**Acknowledgements: David Spink, Dr. Jeff Brook, Bori Arrobo**