



Lakeland Industry and Community Association

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## **TECHNICAL WORKING GROUP**

### **Meeting Minutes**

**May 7, 2020 – 1:00 p.m. - 4:00 p.m.**

**Video/Teleconference**

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**Present:** Patrick Traudt  
Andrea Woods  
Megan Tilley  
Nathan Ballard  
Shawn Elgert  
Warren Hobart

**Observers and Guests:**

**Staff and Contractors:** Kristina Martel, LICA Executive Director  
Arianne Crook, Accounting Assistant  
Michael Bisaga, Manager, Environmental Monitoring Programs  
Lily Lin, Data & Reporting Specialist  
Tricia Fleming, Environmental Coordinator  
Tina Martin, LICA Administrative Professional

**Regrets:** Annette Hobart  
Fin MacDermid  
Randy Parenteau  
Alex Demmons

### **1.0 CALL TO ORDER:**

Arianne Crook, exiting LICA Executive Director, called the meeting to order at 1:05 p.m.

#### **1.1 Introductions**

#### **1.2 Vision, Mission and Values and Attendance**

There are no attendance concerns.

### **1.3 Approval of Agenda**

#1 Moved by Patrick Traudt AND CARRIED that the May 7th, 2020 Agenda be approved as presented.

### **1.4 Approval of Minutes**

#### **1.4.1 December 3rd, 2019**

#2 Moved by Andrea Woods AND CARRIED that the December 3, 2019 Minutes be approved as presented.

## **2.0 ONGOING BUSINESS**

### **2.1 Watershed Update**

#### **2.1.1 WRRP 2019-2022 Grant**

##### **2.1.1.1 Fiera Biological Consulting Proposal**

The new Environmental Coordinator reviewed the 2018 Fiera Biological Consulting proposal. She has been in contact with Fiera and they have confirmed that they are still able to complete the work with a few cost adjustments. She has also been in contact with the North Saskatchewan Watershed Alliance (NSWA) to collaborate on some of our waterways which they are already assessing.

##### **2.1.1.2 Riparian Site Assessment**

The Environmental Coordinator reviewed the Cows and Fish riparian site assessment as a way to complete site assessments in areas LICA plans to complete riparian restoration. She will contact Colin Hanusz, the previous Manager of Environmental Management Programs, to gain insight into how the riparian planting sites were chosen at the time that the WRRP grant application was submitted.

#### **2.1.2 WRRP 2020-2022 Grant**

LICA was successful in obtaining a second grant under the WRRP with a focus on:

- constructing a rain garden,
- holding 'street to stream' workshops on managing runoff,
- signage for off-highway vehicles regarding appropriate stream crossing, and
- legacy signs educating on LICA's previous restoration efforts.

### **2.1.2.1 Rain Gardens**

Ideally, we will install a large rain garden in a public location to educate the public about low impact development. LICA was looking at either installing the rain garden at the Energy Centre in Cold Lake or in the planned Community Garden in Bonnyville between the Wholesale Club and Sobeys. Alternatively, we could create 4 smaller rain gardens on private land. Site selection must be done in conjunction with the Alberta Low Impact Development Partnership (ALIDP) to ensure site suitability.

### **2.1.3 Alberta Lake Management Society**

The LICA Industry Steering Committee (LISC) has not approved funding for the 2020 ALMS Lakewatch Program. The Environmental Coordinator is working on obtaining permission to draw down our surpluses to fund the program. LICA is also in discussions with ALMS to reduce programming costs. Confirmed lakes available for sampling this year include:

- Moose
- Skeleton North Basin
- Lac Sante
- Minnie
- Crane
- Muriel
- Marie
- Wolf
- Vincent

Sampling only the nine confirmed lakes would also create cost savings. Lake sampling is dependent upon successfully securing funding from the LISC.

Of note, the WRRP grant includes funding for one year of Jessie Lake sampling. Ideally, we would complete this next year after we have completed the restoration work slated for the summer of 2020.

## **2.2 Monitoring Operations Update**

### **2.2.1 OSM Work Plans**

#### **2.2.1.1 Active Monitoring Network**

The Cold Lake station has been reorganized to remove redundant wiring and equipment and a new continuous PM monitor has been added. The station relocation will improve site conditions and accessibility. Once the station move is completed the installation of the height-compliant tower will commence.

The Manager of Environmental Monitoring Programs presented his recommendations regarding the relocation of the Maskwa station and the PAMS.

**#3 Moved by Warren Hobbart AND CARRIED that the Maskwa relocation proposal be accepted.**

#### **2.2.1.2 Passive Monitoring Network**

The Manager of Environmental Programs presented updated dashboard reports which show that air quality in the LICA region continues to meet AAAQO overall.

A recommendation to install passive H<sub>2</sub>S monitors at the previous PAMS sites in Bonnyville has been put forth to continue to assist with determining the effectiveness of management actions and informing the need to do future monitoring.

**#4 Moved by Patrick Traudt AND CARRIED that the recommendation to add passive H<sub>2</sub>S monitoring to the previous PAMS sites in Bonnyville be accepted.**

#### **2.2.1.3 Ambient Air Quality Surveillance Beaver River Valley**

LICA has lost communication with one of the monitoring stations and will be investigating once Covid-19 restrictions have lessened. No other update at this time.

#### **2.2.1.4 Soil Acidification Monitoring Program**

The draft reports for the Moose Lake and Whitney Lakes soil sampling plots are being reviewed.

### **2.2.1.5 Beaver River Surface Water Quality Monitoring**

Upon receipt of OSM approval, the core monitoring group intends to integrate a surface water quality monitoring program for the LICA region in three phases:

- 1) 2020-2021 Discussion and training on tributary sampling,
- 2) 2021-2022 Deploy trial testing at a few of the 10 sites
- 3) 2022-2023 Deploy full monitoring at all 10 sites and develop a 2023-2024 multi-year monitoring plan.

### **2.3 Integrated Watershed Management Plan**

A contractor to complete the IWMP report will be chosen at the next IWMP committee meeting. A gap in Traditional Knowledge has been identified by the Environmental Coordinator which will be filled in as the process proceeds. Community engagement has been delayed due to the Covid-19 restrictions. The Environmental Coordinator is working on the survey that will be launched in conjunction with the community engagement process.

## **3.0 ACTION LIST**

### **3.1 Follow-up on Action List**

#### **3.1.1 December 3, 2019 TWG Meeting**

The TWG Committee reviewed the action list for the December 3, 2019 TWG Committee Meeting. Item 2.2.1.4 is on pause due to Covid-19 restrictions.

## **4.0 UPCOMING MEETING DATES**

### **4.1 Board Meeting – May 14, 2020**

An email update will be provided to the Board of Directors in lieu of hosting a face-to-face meeting in the month of May.

### **4.2 Next TWG Meeting – TBD**

## **5.0 ADJOURNMENT**

The meeting adjourned at 3:15 p.m.

**#5 Moved by Warren Hobart AND CARRIED that the meeting be adjourned.**

Approved on: \_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

## Monitoring Program Manager's Recommendations Report

### May 7<sup>th</sup> 2020 Technical Working Group Meeting

**Recommendation: Relocate the Maskwa Monitoring Station to Site #1 (identified on map).**

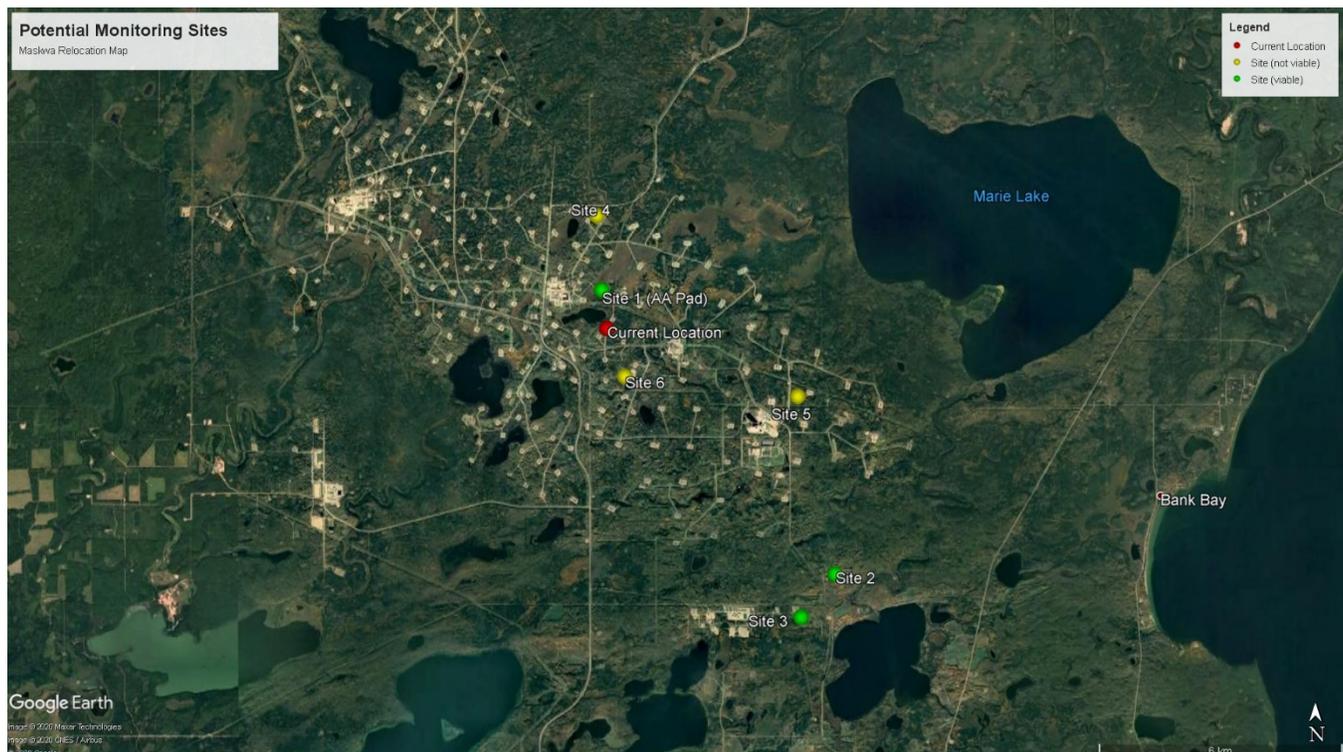
**Issue:** The Maskwa monitoring station does not meet Air Monitoring Directive (AMD) siting criteria.

**Background:** This issue was first identified by Alberta Environment during a 2017 audit of LICA's stations.

Overtime, trees around the station have grown too tall and are now impeding air movement around the station. The site no longer meets Air Monitoring Directive siting criteria for meteorological instruments. Initially, LICA proposed tree removal around the station however this would require clearing a 100-meter radius around the station; this approach was prohibitively expensive and would also require tree removal on land that is already well into a reclamation phase. The AMD requires a 100-meter radius tree-free clearing around monitoring stations.

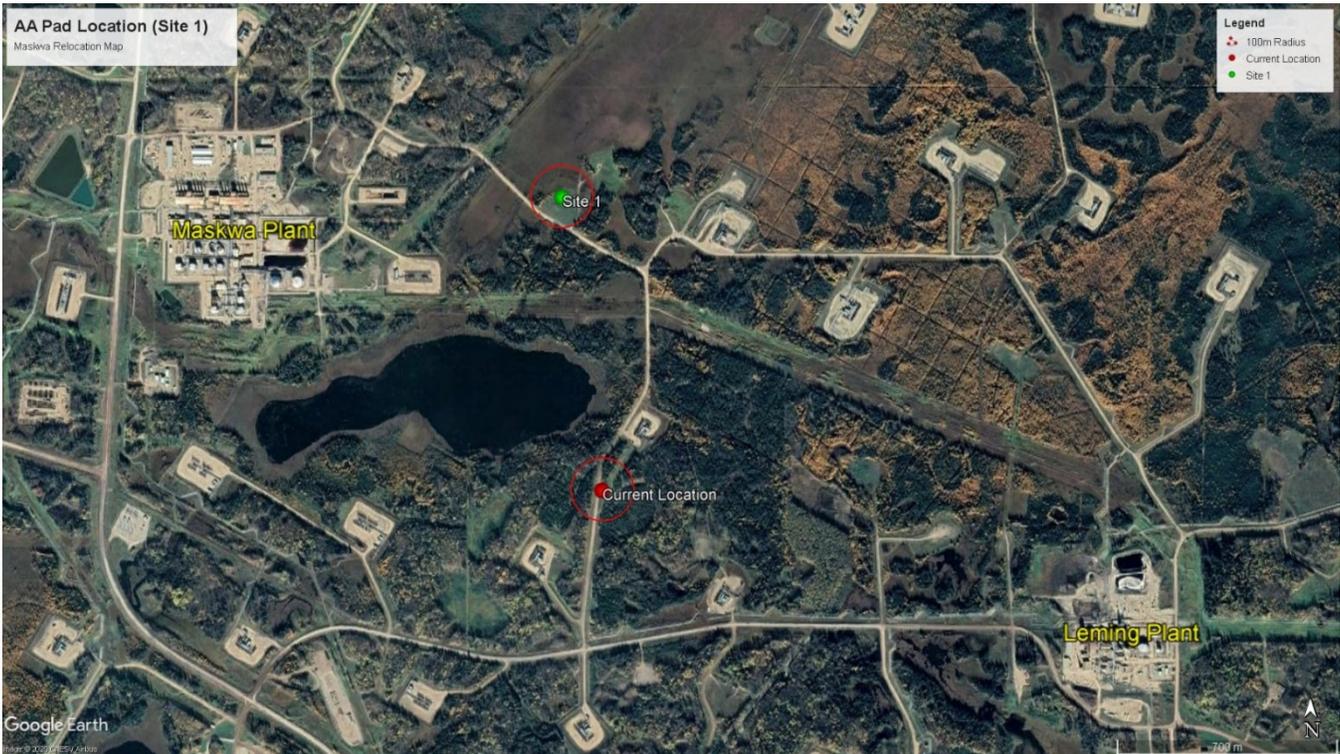
Relocating the station to a comparable monitoring site is important. The data produced at this location are an important link to historical air quality and are representative of air quality in the Cold Lake Oil Sands region.

Over the last 2 years, several potential relocation sites were evaluated. Most were deemed to be *not viable* because of tree clearing costs or distance from the existing monitoring location. In *Figure 1*, Sites 4-6, either required extensive tree removal or their long-term status changed (slated for development). Sites 2 & 3 had good siting characteristics however, they were nearly 10km away from the existing monitoring location; this would likely result in noticeable changes in air quality measurements. Site 1 is the preferred location for the station.



**Figure 1: Potential Maskwa Monitoring Station relocation sites.**

In Figure 2, Site 1 (AA Pad) and the current Maskwa station locations are marked; the imagery shows the nearby oil sands infrastructure including the multi-well pads and the Maskwa and Leming central processing plants. Site 1 is approximately 800m from the current monitoring location and would continue to monitor air quality that is representative of the area.



**Figure 2: Oil sands operations in the vicinity of the current Maskwa station and Site 1.**

Figure 3, shows the immediate surroundings of Site 1. A 100m radius around the proposed location is also shown within which, a small stand of trees will have to be removed (west southwest quadrant) to meet AMD criteria.



**Figure 3: Site 1 detail showing clearing, 100m radius, access path and the closest active production pad for power connection.**

**Cost:** Relocating the Maskwa monitoring station will involve several steps, including energizing the site, removing trees, creating a level gravel pad, installing fencing, and moving the trailer. The table below provides an estimate of the costs for the different parts of the relocation project. Some of these estimates are based on actual quotes while other are informed by LICA projects with similar scopes of work.

Electricity infrastructure (ATCO pole and line installation, rough-in):	\$45,000
Tree removal (WSW quadrant of Site 1):	\$10,000
Site preparation (leveling, gravel pad, chain link fencing):	\$15,000
Finishing electrical (disconnection, reconnection, trenching, permitting):	\$10,000
Station move (shut-down, relocation, start-up, AMD requirements):	\$7,500
<b>Total Estimated Project Costs:</b>	<b>\$87,500</b>

The time it takes to complete the relocation project will be affected by several factors, namely the availability of the electricity distributor for infrastructure installation. Other factors that will affect the timing include restrictions during nesting season for tree removal, permitting processes, and limitations on work due to COVID-19 measures. Once approved, it is estimated that the entire scope of work will be complete in 9-12 months.

**Risks:** Cost over-runs and implementation delays. Not proceeding leaves the Maskwa monitoring site non-compliant with the AMD.

**Recommendation 2: Consider changing the name of Maskwa to Aspen or Tamarack.**

The Maskwa monitoring station is often associated with Imperial Oil’s Maskwa central processing facility. Historically, that may have been accurate but with the design of the airshed monitoring program, the Maskwa monitoring station is intended to provide air quality data that is representative of the entire oilsands operating field where there are in fact several different operators. With the station moving to a new location, the Board of Directors feels now might be a good time to also rename the station. Two names are being proposed: Aspen and Tamarack. Both of these tree species can be found in the vicinity of the station with a sizeable Tamarack bog east of the proposed new site.

**Recommendation 3: Install H<sub>2</sub>S Passive Monitors at the former PAMS monitoring locations.**

**Issue:** The PAMS is being relocated; in doing so, H<sub>2</sub>S monitoring capability will be removed from the Bonnyville area.

**Background:** From 2016 to 2020, LICA deployed the PAMS in and around Bonnyville for three reasons: to fill in a gap, measure air quality in this important population center, and to shed light on a local issue residents talk about – the unpleasant smell from Jessie Lake and the sewage lagoons. From 2016-2017, the PAMS was in Bonnyville at the AER offices and from 2018-2020, the PAMS was located near the sewage lagoons east of Town.

Overall, concentrations of the air pollutants measured were comparable to those observed in Cold Lake, and air quality was good in all parameters except one – “the smell”. An unusually high number of exceedances of the Alberta Ambient Air Quality Objective for hydrogen sulphide (H<sub>2</sub>S) were recorded (continuous measurements). Approximately 200 exceedances of the 1-hour Ambient Air Quality Objective for H<sub>2</sub>S were recorded at each of the two monitoring locations over the course of the project.

This issue of frequent H<sub>2</sub>S exceedances from an open area source is a new one for LICA. We have shared our results both internally and externally to help decision-makers determine if there is an appropriate management response. LICA’s monitoring efforts in and around Bonnyville will be complete in Spring 2020, after which, the PAMS will be relocated to the Lac La Biche area, thereby removing H<sub>2</sub>S monitoring capability from Bonnyville.

While the PAMS was continuously monitoring air quality at the two Bonnyville sites, passive monitors were co-located on the roof of the station. H<sub>2</sub>S concentrations from the passive monitors were lower because the time-integration period is longer, however, the pattern of concentrations is in general agreement with continuous monitoring results. *Figures 4 and 5* show that H<sub>2</sub>S passive monitors did a good job of detecting the presence of elevated concentrations and are well suited for long-term monitoring of area H<sub>2</sub>S sources such as water bodies.

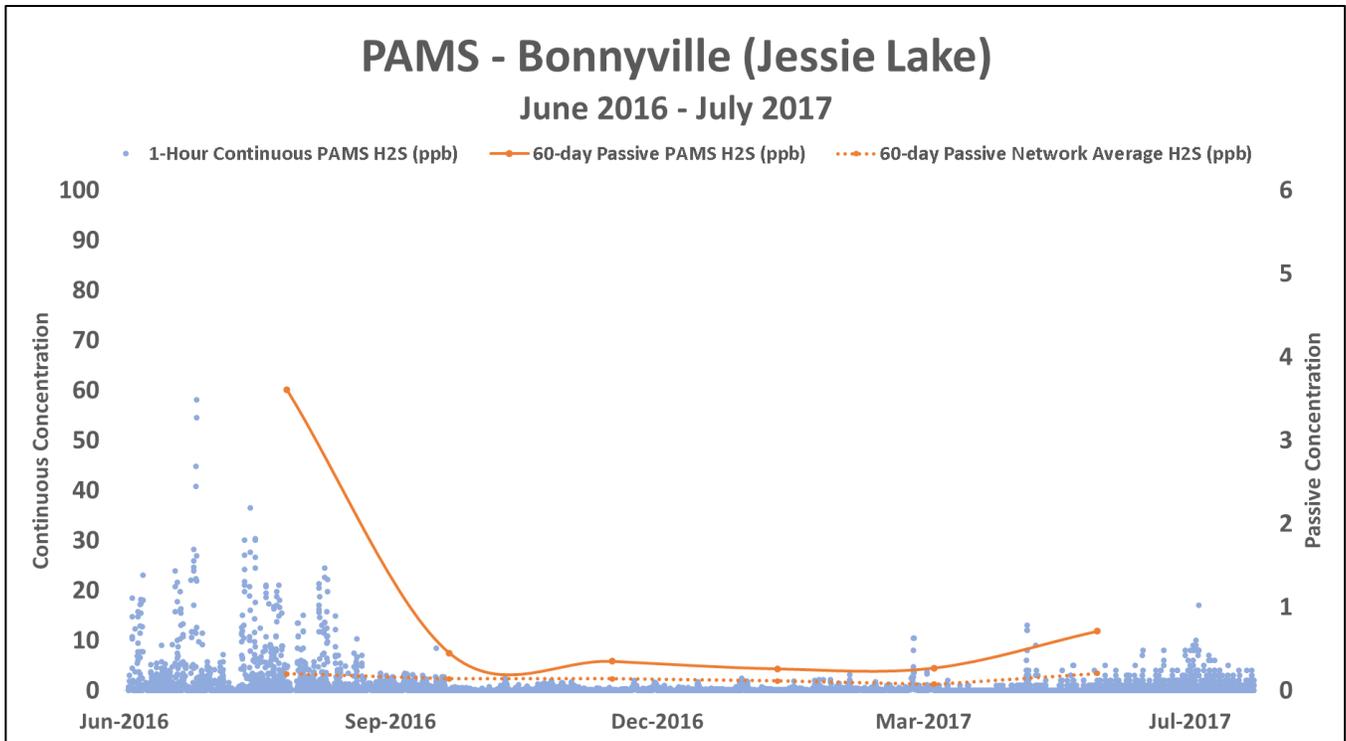


Figure 4: PAMS Bonnyville continuous and passive measurements.

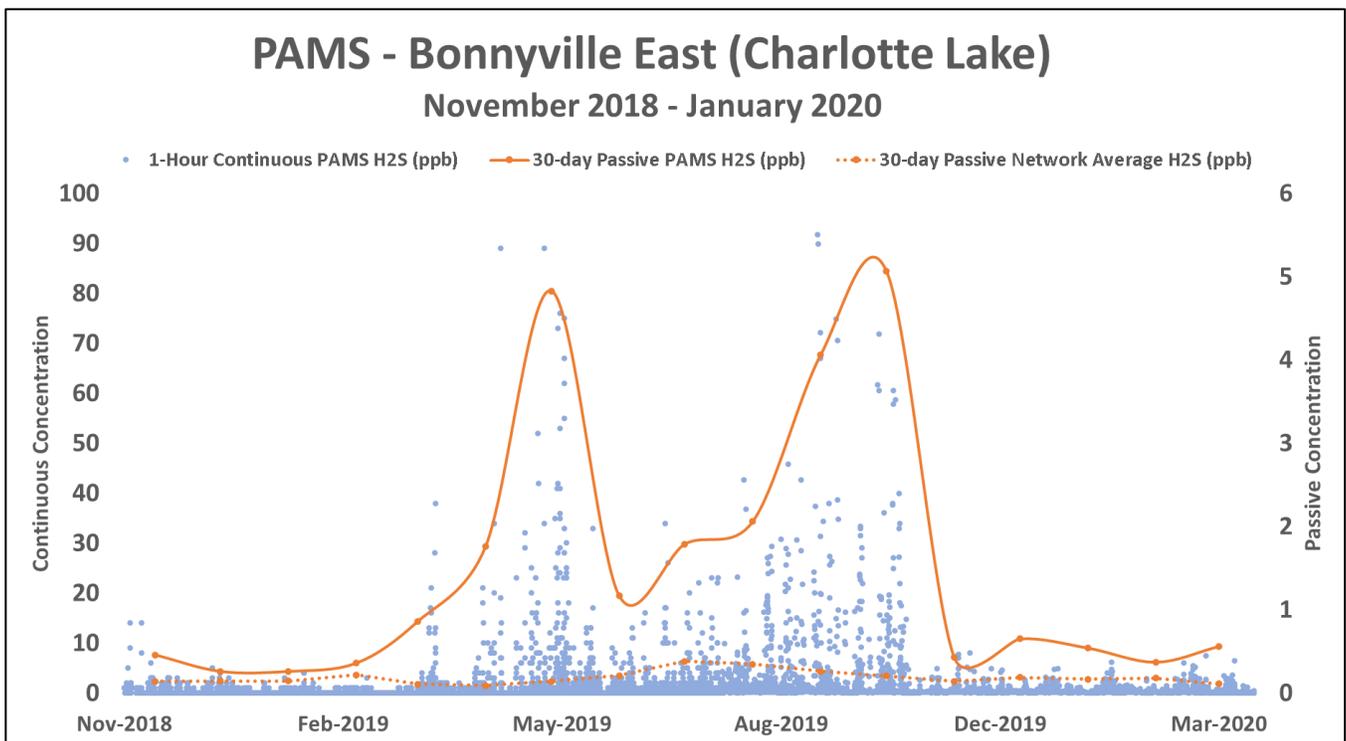


Figure 5: PAMS Bonnyville-East continuous and passive measurements.

Installing H<sub>2</sub>S passive monitors at both the Bonnyville (Jessie Lake) and Bonnyville-East (Charlotte Lake) former PAMS sites is a reasonable approach to maintain ongoing ambient measurements of H<sub>2</sub>S in the area. Monitoring will help inform future management actions, the success of mitigation measures implemented by the WPAC, and potentially identify the need to do future follow-up monitoring with the higher resolution instruments in the PAMS.

**Cost:** Each site will have a start-up cost of \$50 to purchase the passive monitoring weather shelter. The ongoing analytical cost is \$40 per month per site for an annual total for \$960.

**Risk:** The PAMS monitoring efforts around Bonnyville have been high profile projects for LICA; they generated interest among the public and local governments and resulted in management actions. If all monitoring ceases, LICA and its stakeholders will lack data needed to provide insight on potential improvements in air quality resulting management actions.

# Continuous Monitoring

# January 2020

## Cold Lake

## PAMS - Bonnyville

## St. Lina

## Maskwa



Monitoring data are presented as 1-hour averages. Dashed red lines indicate the applicable Alberta Ambient Air Quality Objective or Guideline (AAAQO/G). AAAQOs presented in these charts: sulphur dioxide 1-hour = 172 ppb, ozone 1-hour = 76 ppb, nitrogen dioxide 1-hour = 159 ppb. AAAQGs presented in these charts: particulate matter<sub>2.5</sub> 1-hour = 80 µg/m<sup>3</sup>. Air Quality Health Index (AQHI) Risk Range = 1-3 Low, 4-6 Moderate, 7-9 High, 10+ Very High ([www.alberta.ca/air-quality-health-index.aspx](http://www.alberta.ca/air-quality-health-index.aspx)).

# Continuous Monitoring

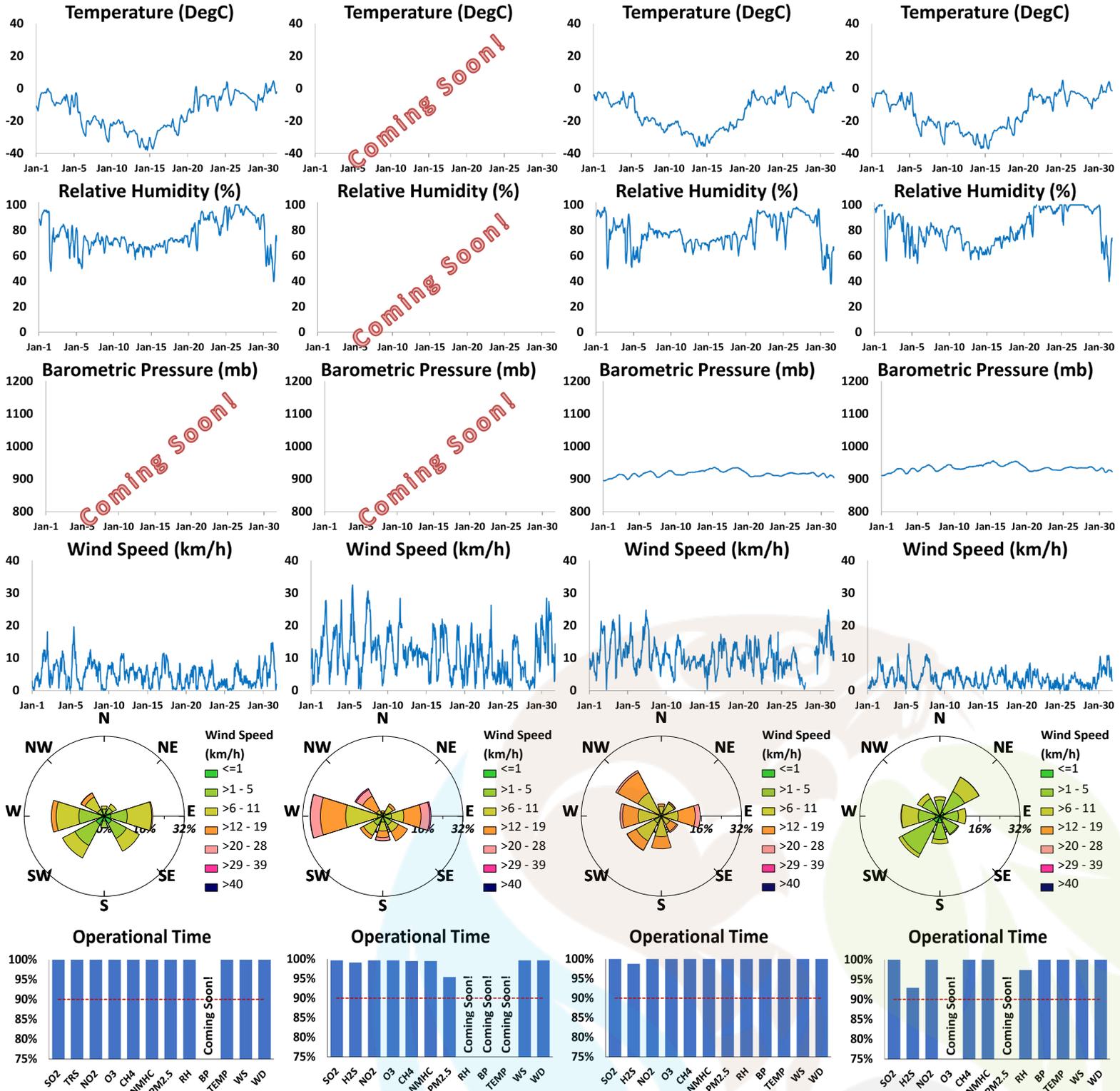
January 2020

## Cold Lake

## PAMS - Bonnyville

## St. Lina

## Maskwa



**Operations Notes:** Parameters noted as "Coming Soon" will be added in 2020. For operational time, the minimum requirement is 90% (indicated by the dashed red line on the above charts). **Cold Lake South:** No operational issues this month. **Maskwa:** The hydrogen sulphide analyzer spanned outside the lower limit on January 13. Nineteen hours of relative humidity data were invalidated as the hourly readings were recorded overrange. Minor adjustment was made to channel's datalogger configuration on January 24 to correct the issue. **St. Lina:** The analyzer spanned outside the lower acceptance limit between January 14 and 16. This was likely related to low ambient temperatures. Due to winter weather conditions, site access was not possible until January 20 to check the analyzer's functionality until January 22. The THC/CH4/NMHC analyzer failed the daily span check on January 27 and 28. The issue was isolated to the span system. As subsequent span results were without issues, no further action was required. Data quality between January 27 and 28 were not affected. **PAMS - Bonnyville:** The THC/CH4/NMHC span gas cylinder was replaced following a zero-span check on January 6. Two hours of downtime were recorded due to the additional zero-span check. The particulate matter instrument failed on January 17 hour 10. The cause was likely due to extreme winter conditions. Thirty-two hours of downtime were recorded due to this event. **Acronyms:** SO2 = sulphur dioxide, TRS = total reduced sulphur, NO2 = nitrogen dioxide, O3 = ozone, THC = total hydrocarbons, CH4 = methane, NMHC = non-methane hydrocarbons, PM2.5 = fine particulate matter, RH = relative humidity, H2S = hydrogen sulphide, BP = barometric pressure, TEMP = temperature, WS = wind speed, WD = wind direction, AQHI = air quality health index.

# Passive Monitoring

January 2020

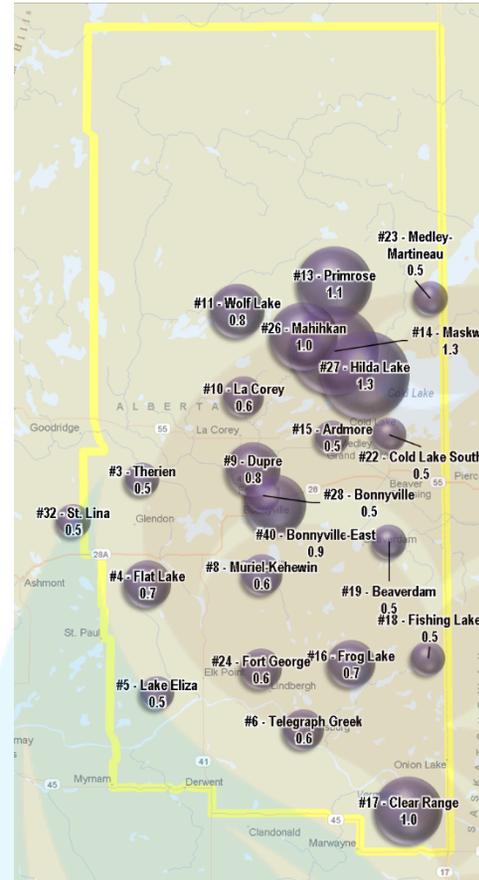
## Nitrogen Dioxide



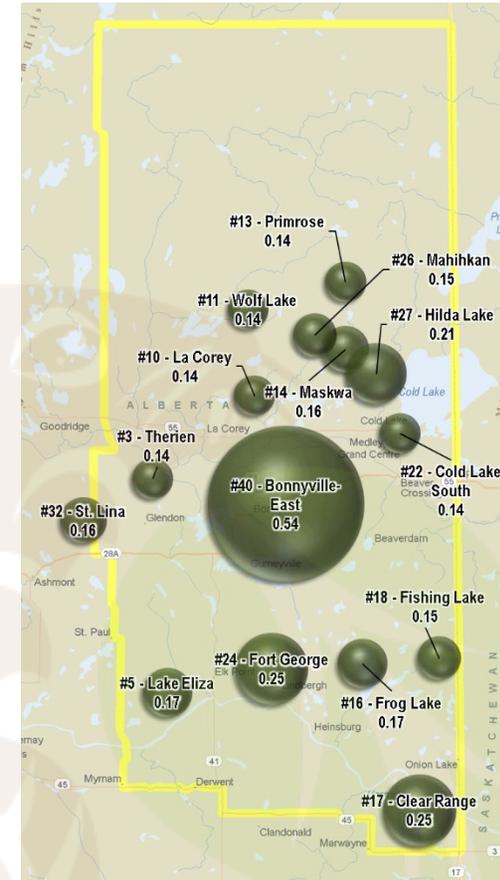
## Ozone



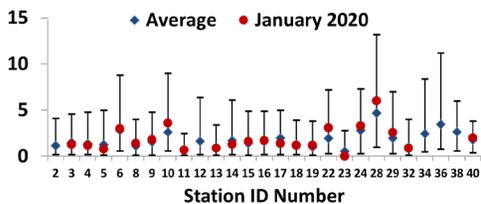
## Sulphur Dioxide



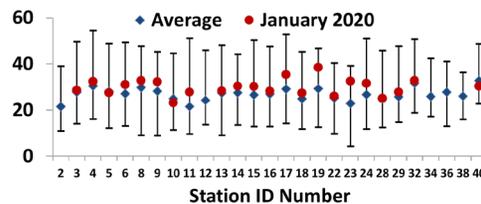
## Hydrogen Sulphide



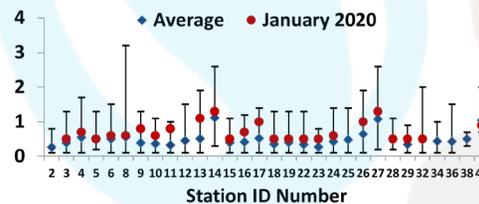
Minimum-Maximum-Average (ppb)  
Monthly Nitrogen Dioxide: 2007 - 2019



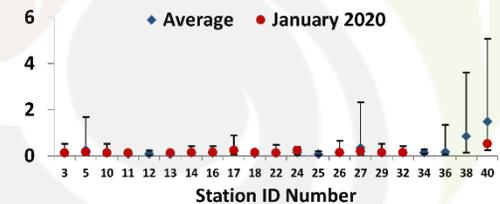
Minimum-Maximum-Average (ppb)  
Monthly Ozone: 2007 - 2019



Minimum-Maximum-Average (ppb)  
Monthly Sulphur Dioxide: 2007 - 2019



Minimum-Maximum-Average (ppb)  
Monthly Hydrogen Sulphide: 2007 - 2019



This series of bubble maps present monthly average concentrations in parts per billion (ppb) over a one-month period. Displaying data this way illustrates the spatial patterns of the parameters monitored in the LICA passive monitoring network. The 1-month Ambient Air Quality Objective for sulphur dioxide is 11 ppb.