



Lakeland Industry and Community Association

8237, 5107W - 50 Street, Bonnyville, AB T9N 2J5

☎ 780 812-2182 📠 780 812-2186 🌐 www.lica.ca

# Acid Deposition Monitoring Program Expansion Committee Meeting Minutes Thursday, June 9, 2022 9:00 a.m. – 12:00 p.m. LICA Boardroom and via Microsoft Teams

---

Present: Heather Harms  
Desiree Parenteau (arrived at 9:13 a.m.)  
Brent McGarry  
Clarence Makowecki  
Wally Qiu  
Leo Paquin  
Andrea Woods  
Greg Wentworth  
Nikole Andres  
Jennifer O'Brien  
Salim Abboud

Observers and Guests:

Staff and Contractors: Vicky Krawchuk, LICA Executive Director  
Michael Bisaga, Manager, Environmental Monitoring Programs  
Lily Lin, LICA Data & Reporting Specialist  
Eveline Hartog, LICA Administrative Professional

Regrets: Fin MacDermid  
Amanda Avery-Bibo  
Sean Mercer

## 1.0 **CALL TO ORDER**

Heather Harms Committee Chairperson, called the meeting to order at 9:03 a.m.

### 1.1 **Territorial Acknowledgement**

### 1.2 **Introductions**

**1.3 Vision, Mission, and Values**

**1.4 Roll Call**

**1.5 Approval of Agenda**

**1.5.1 June 9, 2022 ADMPEC Agenda**

**#1 Moved by Leo Paquin AND CARRIED that the June 9 2022, Agenda be approved as presented.**

**1.6 Approval of the Minutes**

**1.6.1 May 3, 2022, ADMPEC Meeting**

**#2 Moved by Leo Paquin AND CARRIED that the May 3, 2022, minutes be approved as presented.**

**2.0. ONGOING BUSINESS**

**2.1 Strategy Information**

**2.1.1 Acid Deposition Monitoring Strategy for the Cold Lake Region**

The Manager of Environmental Monitoring Programs indicated that there were no changes at this time.

**2.1.2 Acid Deposition Management Framework for Alberta**

The Manager of Environmental Monitoring Programs indicated that the framework is still in draft form. He reminded the Committee that this framework will likely be important in establishing “limits of change” when developing the adaptive monitoring and adaptive management elements of the Strategy. He indicated that this item would remain on future agendas. A Committee member added that the release of the framework was imminent.

**2.1.3 Regional Modelling Outputs**

The Manager indicated that since the last meeting he has requested shape files, maps, modeling files, etc. from Environment Canada regarding the GEM-MACH model. It was mentioned that the first model run has been completed and hopefully, LICA will have access to the information by the end of the month.

**3.0 OTHER BUSINESS**

**3.1 Acid Deposition Monitoring Strategy Implementation Plan Development. Progress Updates and Discussion Regarding:**

### **3.1.1 Wet Deposition: Update on Discussion with WSU Laboratory**

The Manager of Environmental Monitoring Programs indicated that he had investigated various labs that could do testing on wet deposition samples. He pointed out that Wisconsin State University (WSU) Laboratory of Hygiene does this type of testing. He is leaning towards using WSU since Wood Buffalo Environmental Association (WBEA) uses this lab so the data would be comparable across both the LICA and WBEA networks. He reviewed the National Atmospheric Deposition Program (NADP) siting criteria indicating that according to LICA's acid deposition monitoring Strategy, wet deposition sites need to be in areas of higher deposition. Locating precipitation samplers in the areas of higher deposition would mean that LICA's sites do not meet the NADP siting criteria (and therefore the results would not be included in the NADP National/Continental database). Despite not being included in the NADP database, the data will meet the objectives of LICA's acid deposition monitoring strategy (WBEA has similar sites in their network that do not meet NADP siting criteria). A Committee member mentioned that AEP is currently transitioning to the WSU laboratory for the Provincial deposition monitoring sites so he feels that the Manager is on the right track in using the WSU lab. He indicated that he may be able to fast track AEP's transition to WSU for the Cold Lake site.

The Manager briefly outlined what equipment for wet deposition monitoring was needed indicating that it would be easy to access and would be purchased in the next few months.

### **3.1.2 Dry Deposition: Progress on Commissioning Enhanced Passive Monitoring**

The Manager of Environmental Monitoring Programs informed the Committee that according to the Strategy, two more parameters would be added to the passive monitoring network: ammonia (NH<sub>3</sub>) and nitric acid (HNO<sub>3</sub>) both of which can be tested by Bureau Veritas labs in Edmonton. The existing passive stations will need to be enhanced with additional housing for the new parameters; the equipment has been ordered with expected delivery sometime in August with sampling to commence in September 2022.

### **3.1.3 Soil: Tentative Plan for Screening New Soil Monitoring Site(s)**

The Manager of Environmental Monitoring Programs indicated that LICA's Long Term Soil Acidification Monitoring LTSAM Cold Lake Site 2021 report is in draft form and should be released in about a month's time. He will direct the Committee on how to find the report once it is available. A Committee member mentioned that this report should also be presented to Oil Sands Monitoring Program since one of OSM's goals is to detect changes in the environment (the soil monitoring program indicates that there is slow acidification occurring in regional soils); he further added that he could facilitate this presentation. Ideally, he would like to see this report presented to OSM before their workplan is developed in November/December of this year. The Manager agreed to present this to OSM at that time.

The Manager of Environmental Monitoring Programs directed the Committee to a brief overview of the report indicating that the 2021 samples indicated that there

was an increase in total S but which was not indicated in two other main acidification indicators. This suggests that slow acidification may be occurring. The Cold Lake site is currently LICA's only site that is reasonably close to an area of high deposition; the new site(s) will be located in the area of highest modelled acid deposition.

Regarding screening for new soil monitoring sites, the first step will be to conduct desktop screening and mapping of potential sites this summer, field assessments/screening during the early fall with identification of the new sites in 2023. Potential new sites will be located in areas of high deposition with a sampling protocol that aligns with our existing soil acidification monitoring sites. The maps provided to the Committee indicate areas where enhanced monitoring could occur i.e., the Cenovus and Imperial Oil corridor north of Cold Lake.

### **3.1.4 Surface Water: Update on Southern Lakes (UN-599, UN-5)**

Regarding the southern lakes, the Manager of Environmental Monitoring Programs indicated that access to some of the lakes will be an issue. As demonstrated by the maps presented to the Committee UN-599 and UN-5 are within the Integrated Zone, meaning there are fewer requirements and restrictions concerning access. Of the other two lakes under consideration for surface water monitoring Cariboo Lake is closer to military targets while Underwood Lake is further away from targets but in an area with more restrictions. Industry Committee members offered their assistance to the Manager of Environmental Monitoring Programs in obtaining the paperwork and orientation to obtain his CLAWR card and also will provide the Manager with more detailed maps of the Cold Lake Air Weapons Range.

## **4.0 ACTION LIST**

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

#### **4.1.1 Action List for May 3, 2022, ADMPEC Meeting**

The Committee reviewed the action list from the May 3, 2022, meeting, noting:

- Item 3.1.2 from Actions Brought Forward will remain as an ongoing action item as well as having the two lakes considered as wetland monitoring rather than lake monitoring.

## **5.0 UPCOMING MEETING DATES**

### **5.1 Board Meeting – June 23, 2022**

### **5.2 June 14, 2022, In-Person IWMP Engagement Session 3**

### **5.3 June 20, 2022, Virtual IWMP Engagement Session 3**

**5.4 Next ADMPEC Meeting**

The Committee agreed that they would not meet again until early September at which time a Doodle Poll would be sent out to confirm a suitable date. During the summer, the Manager of Environmental Monitoring Programs will email updates to the Committee, both at the end of July and August.

**6.0 ADJOURNMENT**

Meeting adjourned at 10:23 a.m.

**#3 Moved by Desiree Parenteau AND CARRIED that the meeting be adjourned.**

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

\_\_\_\_\_  
Signature

Acid Deposition Monitoring Program Expansion Committee Attendance 2021-22

Name	Sept. 16, 2021	Oct. 21, 2021	Dec. 2, 2021	Dec 15, 2021	Jan 17, 2022	April 11, 2022	May 3, 2022		
Amanda Avery Bibo	TC	TC	A	A	A	TC	A		
Salim Abboud	TC	TC	A	A	TC	TC	A		
Sean Mercer	TC	A	A	TC	TC	TC	TC		
Greg Wentworth	TC	TC	-	-	-	-	TC	-	-
Brent McGarry	TC	TC	TC	TC	TC	TC	TC		
Wally Qiu	TC	TC	TC	TC	TC	TC	TC		
Jennifer O'Brien	TC	TC	TC	TC	TC	A	TC		
Nikole Andres	-	-	-	-	-	TC	TC		
Lindsay Hollands	A	TC	A	TC	A	-	-	-	-
Leo Paquin	TC	TC	TC	TC	TC	TC	TC		
Clarence Mackowecki	TC	TC	TC	TC	TC	TC	TC		
Heather Harms (Chair)	TC	TC	TC	TC	TC	√	√		
Desiree Parenteau	TC	TC	TC	TC	TC	TC	TC		
Findlay MacDermid	TC	TC	TC	TC	TC	TC	A		
Bob Myrick	-	-	-	-	-	-	-	-	-
Andrea Woods	TC	TC	TC	TC	TC	A	TC		
Contractors/Observers									
Michael Bisaga	TC	TC	TC	TC	TC	TC	TC		
Kayla Hellum	-	-	-	-	-	-	-	-	-
Lily Lin	TC	TC	TC	TC	TC	TC	TC		
Rachel Bates	-	-	-	-	-	-	-	-	--
Nikita Lattery	-	TC	TC	-	-	A			

NOTE:

√ = Present

TC = Telephone/Video Conference

A = Absent from Meeting



Lakeland Industry and Community Association

Box 8237, 5107W - 50 Street, Bonnyville, AB T9N 2J5

780 812-2182 780 812-2186 www.lica.ca

**Acid Deposition Monitoring Program Expansion Committee Meeting**  
**LICA Boardroom and via [Microsoft Teams](#)**  
**Thursday, June 9, 2022**  
**9:00 a.m. – 12:00 p.m.**

**Meeting Objectives:**

1. Continue to discuss and develop implementation plan details for the Acid Deposition Monitoring Strategy.

Item	Agenda		Discussion Leader	Required Outcome
<b>9:00</b>	<b>1.0</b>	<b>CALL TO ORDER</b>		
	1.1	Territorial Acknowledgement	<b>Heather</b>	
	1.2	Introductions	<b>All</b>	
	1.3	Vision, Mission, and Values	<b>Heather</b>	
	1.4	<a href="#">Roll Call</a>	<b>Heather</b>	For Review
	1.5	Approval of Agenda:		
	1.5.1	<a href="#">June 9, 2022, ADMPEC Agenda</a>	<b>Heather</b>	For Decision
	1.6	Approval of Minutes:		
	1.6.1	<a href="#">Minutes for May 3, 2022, ADMPEC Meeting</a>	<b>Heather</b>	For Decision
<b>9:15</b>	<b>2.0</b>	<b>ONGOING BUSINESS</b>		
	2.1	2.1.1 Acid Deposition Monitoring Strategy for the Cold Lake Region 2.1.2 Acid Deposition Management Framework for Alberta 2.1.3 Regional Modelling Outputs	<b>Mike, Greg</b>	For Information
<b>9:30</b>	<b>3.0</b>	<b>OTHER BUSINESS</b>		
	3.1	Acid Deposition Monitoring Strategy Implementation Plan Development. Progress updates and discussion regarding: 3.1.1 Wet Deposition: Update on discussions with WSU laboratory 3.1.2 Dry Deposition: Progress on commissioning enhanced passive monitoring 3.1.3 Soil: Tentative plan for screening new soil monitoring site(s) 3.1.4 Surface Water: Update on southern lakes (UN-599, UN-5)	<b>Mike</b>	For Discussion
<b>11:45</b>	<b>4.0</b>	<b>ACTION LIST</b>		
	4.1	Follow-up On Action List 4.1.1 <a href="#">Action List for May 3, 2022, ADMPEC Meeting</a>	<b>Heather</b>	For Review
<b>11:55</b>	<b>5.0</b>	<b>UPCOMING MEETING DATES</b>		
	5.1	Board Meeting – June 23, 2022	<b>Heather</b>	For Information
	5.2	Next ADMPEC Meeting – TBD	<b>Heather</b>	For Information
<b>12:00</b>	<b>6.0</b>	<b>ADJOURNMENT</b>	<b>Heather</b>	For Decision



Lakeland Industry and Community Association  
8237, 5107W - 50 Street, Bonnyville, AB T9N 2J5  
☎ 780 812-2182 📠 780 812-2186 🌐 [www.lica.ca](http://www.lica.ca)

# Acid Deposition Monitoring Program Expansion Committee Meeting Minutes Tuesday, May 3, 2022 9:00 a.m. – 12:00 p.m. LICA Boardroom and via Microsoft Teams

---

Present: Heather Harms  
Desiree Parenteau  
Brent McGarry  
Clarence Makowecki  
Wally Qiu  
Leo Paquin  
Andrea Woods  
Sean Mercer (left at 10:00 a.m.)  
Greg Wentworth  
Nikole Andres  
Jennifer O'Brien

Staff and Contractors: Kristina Morris, LICA Executive Director  
Michael Bisaga, Manager, Environmental Monitoring Programs  
Lily Lin, LICA Data & Reporting Specialist  
Eveline Hartog, LICA Administrative Professional

Regrets: Salim Abboud  
Fin MacDermid  
Amanda Avery-Bibo

## 1.0 CALL TO ORDER

Heather Harms Committee Chairperson, called the meeting to order at 9:01 a.m.

### 1.1 Territorial Acknowledgement

### 1.2 Introductions

### 1.3 Vision, Mission, and Values

#### 1.4 [Roll Call](#)

#### 1.5 Approval of Agenda

##### 1.5.1 [May 3, 2022](#)

#1 Moved by Leo Paquin AND CARRIED that the May 3, 2022, Agenda be approved as presented.

#### 1.6 Approval of the Minutes

##### 1.6.1 [April 11, 2022](#)

#2 Moved by Jennifer O'Brien AND CARRIED that the April 11, 2022, minutes be approved as presented.

## 2.0 ONGOING BUSINESS

### 2.1 Strategy Information

#### 2.1.1 Acid Deposition Monitoring Strategy for the Cold Lake Region

The Manager of Environmental Monitoring Programs noted that the three items under Ongoing Business in the agenda would be revisited each meeting since the strategy is still being adjusted as new information is being added. He indicated that, after speaking with Wood Buffalo Environmental Monitoring Association, annular denuders should be added as a type of monitoring to enhance our monitoring strategy.

He also noted that LICA was granted approval from AEP on the OSM workplans, which includes the 100% of the funding requested for implementation of the monitoring strategy.

#### 2.1.2 Acid Deposition Management Framework for Alberta

The Manager of Environmental Monitoring Programs updated the Committee on the status of the management framework which is still in draft form and awaiting approval. This framework will likely provide LICA with information about limits of change and will help to adaptively manage the monitoring program.

#### 2.1.3 Regional Modelling Outputs

The updated GEM-MACH model is still being worked on and should be available in the next six months. A Committee member mentioned that the first test run using the 2018 data is completed and is ready. He offered to set up a meeting between himself, the Manager of Environmental Monitoring Programs, and Paul Makar from ECC, to confirm the status of the GEM-MACH outputs and request the data once it is available.

### 3.0 OTHER BUSINESS

#### 3.1 Acid Deposition Monitoring Strategy Implementation Plan Development Progress Updates and Discussion Regarding:

The Manager of Environmental Monitoring Programs, to give context to the plan development, reminded the Committee that the intention of the Strategy is to build off of the current LICA passive monitoring network.

He continued to present the Implementation Plan within the attached slides.

#### Implementation Schedule Graphic

The Manager of Environmental Monitoring Programs prepared a visual representation of the implementation Plan timeline, which includes Wet Deposition, Passive, Ion Exchange, Soil, Surface Water, Annular Denuders and Adaptation, and other monitoring. The lined bars mean a “phasing-in” process of when each monitoring endeavor would start. He proceeded to further note:

He is expecting wet deposition monitoring to start this year since it is easy to implement, and LICA will use the existing ambient monitoring sites. Once the arrangement with the lab has been confirmed and equipment purchased, monitoring can begin. The wet deposition consists of precipitation samples taken monthly from existing ambient sites.

Concerning passive monitoring the Manger of Environmental Monitoring Programs indicated that there is the initial and then phase-in stages of this work.

He indicated that ion exchange monitoring involves small arrays and different monitoring sites and more work. There are 2 phases to this type of monitoring; identify and then deploying the sites. Our current soil sites are good candidates for ion exchange monitoring, and we can begin monitoring these sites this year. The scope of work will be phased in over the next 2 years as scoping and screening new sites will be done in 2023. He also added that there are 2 deployment intervals; April to September which is the growing season, and October to March.

The Manager of Environmental Monitoring Programs then addressed the soil monitoring element of the strategy, reminding the Committee that LICA already monitors deposition in soil but is intending to enhance this program. Although LICA will continue ongoing soil sampling at the Moose Lake site in 2022, there will be scoping, and screening of new viable sites conducted to be incorporated into the 2023 sampling program. In 2023, LICA will continue with soil sampling at the Whitney Lake site, along with the new selected sites.

Surface water monitoring was mentioned as an area still under investigation since all the lakes are located on the Cold Lake Air Weapons Range. It was suggested by a Committee member that a multi-faceted approach to monitoring around these lakes may be helpful in LICA gaining access to these restricted areas. Many Industry Committee members offered their assistance in helping LICA regarding access to the air weapons range. Another Committee member indicated that as of May 2, 2022, there were changes to procedures regarding access to the restricted zones. This Committee member offered to email the new requirements to the Manager of Environmental Monitoring Programs and other members of the Committee. Once again, surface water monitoring will have a phased-in

approach with the first year seeing easily accessible lakes being monitored and the second year the less accessible lakes.

The Manager of Environmental Monitoring Programs went on to inform the Committee those annular denuders are, *in a way*, a better passive sampler; like passives, they collect a one-month sample but are better since the volume of air sampled is known. He indicated that he would be seeking training opportunities on using the denuders and that he would also rely on Wood Buffalo Environmental Association (WBEA) to assist with the analysis. These samplers require solar power and so some cost is involved with setting up the remote power.

Regarding vegetation health the Manager of Environmental Monitoring Programs indicated that the Committee would revisit vegetation monitoring in the fall of 2022.

The Manager of Environmental Monitoring Programs confirmed that the information presented within the Gantt chart incorporates lags in obtaining data, associated budget costs, and timelines discussed with LICA partners.

### **3.1.1 Wet Deposition**

The Manager of Environmental Monitoring Programs reviewed the costs for collection and analysis of these samples. The preferred laboratory for analysis is the Wisconsin State University of Hygiene. The Strategy proposes one site for this work and this site is currently part of the provincial network and is overseen by AEP. The other proposed site is by the City of Cold Lake and is farther away from the deposition area. A Committee member will chat with someone from AEP and report back about potential site integration.

### **3.1.2 Dry/Wet Deposition**

The Manager Environmental Monitoring Programs informed the Committee that WBEA is in the process of developing a program to do their own analysis and are working towards getting accreditation to do so. They are open to conducting the analysis for LICA and have the capacity to analyze the proposed 45 samples. Given this new role for WBEA and the benefit for LICA, the Manger Environmental Monitoring Programs would like to investigate opportunities where LICA could support this initiative such as:

- Allocate part of our budget towards their accreditation.
- Assist in cross-auditing.
- Co-deployment sampling that goes on in our network.

These are all just initial questions for discussion and consideration adding that there would be benefits for LICA to support this endeavor by WBEA. Once options have been determined to be feasible, he will bring them to the Committee and Board for decision.

He then went on to discuss passive sampling indicating that WBEA uses a combination of labs to do this. He mentioned that LICA could conduct a cost comparison or mirror what WBEA is doing. Bureau Veritas offers this service, and their fieldwork is very good.

### 3.1.3 Soils

Regarding soils, the Manager of Environmental Monitoring Programs indicated that new site selection and screening needs to be done. LICA had conducted a site screening process 15 years ago and can utilize this data to help LICA screen and identify sites in the initial process. Further screening is recommended as this data may not be able to predict current areas of highest deposition given the lapse in time.

In terms of analysis of samples, LICA currently uses Northern Forestry Research Centre, however with the anticipated changes at this lab he suggested that LICA look at a different provider such as Exploring National Research Council of Victoria, which is currently utilized by WBEA.

It was suggested by a Committee member that LICA do a co-analysis and comparison of soil samples initially while we do the switch, preferably by Dr. Salim Abboud to ensure continuity.

### 3.1.4 Surface Water

The Manager of Environmental Monitoring Programs indicated that now there are no costs established for surface water monitoring since there are some variables to consider such as accessibility. Two of the four lakes are accessible, and he will work with industry partners to gain access to all the lakes named in the strategy. He is not sure if Site B is outside of the air weapons range target circle, and he will continue to investigate this. The acid-sensitive lakes protocol will be followed as well as adding some enhanced passive monitoring at the accessible sites.

#### Summary

In summary, the first-year costs for the acid deposition monitoring program is estimated to be approximately \$186,000.00 and OSM has approved \$240,000.00 in its 2022 budget to cover the monitoring activities. A Committee member wondered if the transitioning from a strategy to actual work will now need to go before the LICA Board of Directors. The Board will remain in the loop regarding progression within the implementation phase.

The Manager of Environmental Monitoring Programs felt that if the Committee agreed, LICA could get started on the passive monitoring right away as this is the easiest to implement. There will be a phase-in at the existing sites over the summer while the new site selection would be done using digital screening over the next six months. A proposal will be forthcoming to the Committee on viable site selection. Some of the Industry Committee members offered to assist in the selection and deployment process, if required.

**#3 Moved by Andrea Woods AND CARRIED that LICA begin implementing additional sampling at the existing passive monitoring sites.**

A Committee member wondered if LICA had any historical data on the water quality of Barbara and Marguerite Lakes. The Manager of Environmental Monitoring Programs indicated that he would investigate the 2012 study done and see if these lakes were included in this study.

The next meeting will see a formal implementation plan developed for soil screening and site selection for Ion Exchange monitoring. He further noted to the Committee that an Implementation Plan summary document will be developed by the end of this year, as work starts to commence.

#### **4.0 ACTION LIST**

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

###### **4.1.1 [April 11, 2022](#)**

The Committee reviewed the action list from the April 11, 2022, meeting, noting:

- Item 3.1.2 regarding the GEM-MACH modelling will be removed
- Items under 3.1.4 will be removed
- Item 3.1.7 has been completed and will continue to be further refined.

#### **5.0 UPCOMING MEETING DATES**

##### **5.1 Strategic Planning Meeting – May 12, 2022 (VIRTUAL ONLY)**

##### **5.2 Board Meeting – May 26, 2022**

##### **5.3 Next ADMPEC Meeting**

The next ADMPEC meeting is anticipated to be scheduled for early June. A doodle poll will be sent to the Committee.

#### **6.0 ADJOURNMENT**

Meeting adjourned at 10:41 a.m.

**#3 Moved by Heather Harms AND CARRIED that the meeting be adjourned.**

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

\_\_\_\_\_  
Signature

# ADMPEC

Meeting Support Slides

June 9, 2022

### 3.1.1 Wet Deposition: Update on discussions with WSU laboratory

- Discussed establishing contract Wisconsin State Laboratory of Hygiene
- NADP Siting Criteria
- Comparability with AEP Cold Lake site?
  - WBEA: WSU/NADP
  - AEP: Alberta Innovates
  - ECCC: CAPMoN

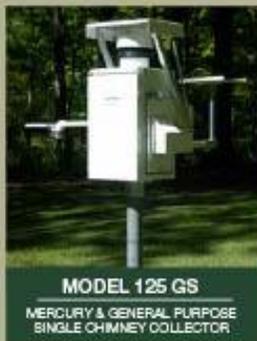
## FEATURES OF ALL N-CON PRECIPITATION SAMPLERS

# N-CON | AUTOMATIC DEPOSITION SAMPLERS



**MODEL 120 ADS**

AC / DC OPERATION BUCKET  
STYLE COLLECTOR



**MODEL 125 GS**

MERCURY & GENERAL PURPOSE  
SINGLE CHIMNEY COLLECTOR



**MODEL 127 TM**

MERCURY & TRACE METALS  
DUAL CHIMNEY COLLECTOR

### Reliable Wet and/or Dry Deposition Sampling

Infrared precipitation sensor responsive to light snow, drizzle or heavy fog

Heavy duty drive motor for reliable operation in all weather conditions

Compact design minimizes splash from exterior surfaces

Setup requires no special tools or calibration

National Atmospheric Deposition Program (NADP) approved\*

### INFRARED PRECIPITATION SENSOR:

Does not "hunt" under marginal precipitation conditions  
Opens within 5 drops or onset of precipitation  
Closes within 25 seconds of end of precipitation  
Heated lid prevents snow/ice build up

### DATA RECORDER OUTPUT:

Two unpowered, normally open contacts indicate  
system power on and sample in progress

### MOUNTING:

Direct mounting on 2" NPB pipe (user provided)

### HOUSING:

Powder coated aluminum  
Padlockable

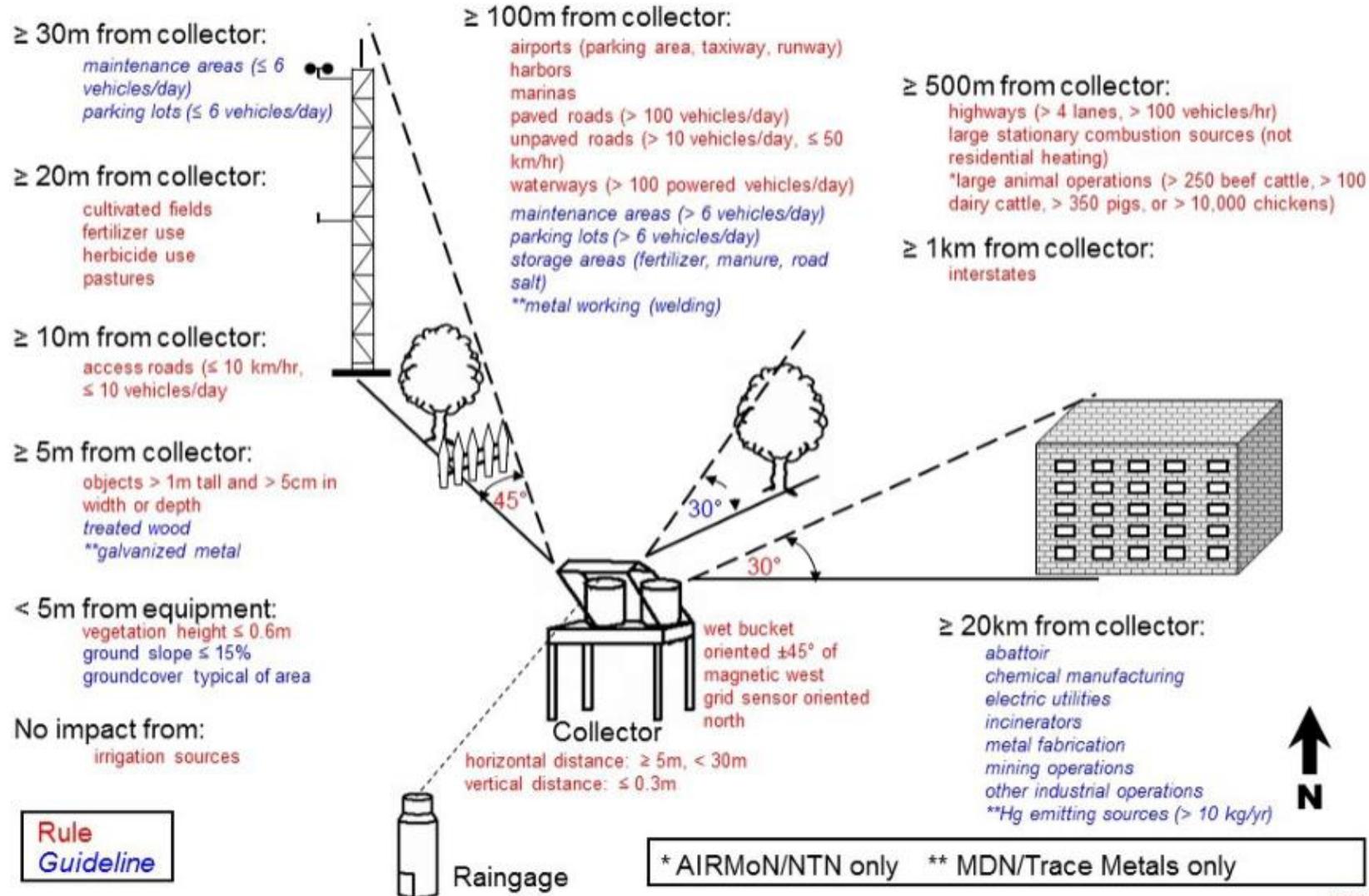
### Custom Configurations

Our design team is available to  
help configure custom  
collectors and sample trains  
to meet your specific needs.



\*AD6 (Model 120) approved for all NADP NTN sites. G8/TM (Model 125 & 127) approved for NADP MDN sites.

## NADP Siting Criteria – Wet Deposition



### 3.1.2 Dry Deposition: Progress on commissioning enhanced passive monitoring

- Ammonia ( $\text{NH}_3$ ) – Ogawa (provided by BV Labs)
- Nitric acid ( $\text{HNO}_3$ ) - USDA Forest Service (provided by BV Labs)
- New housing required; anticipate August delivery
- In Canada, Bureau Veritas is accredited by the Standards Council of Canada (SCC) to ISO/IEC 17025 for tests and matrices required for passive air analysis.

### 3.1.3 Soil: Tentative plan for screening new soil monitoring site(s)

- Draft Report: LICA LONG TERM SOIL ACIDIFICATION MONITORING LTSAM COLD LAKE SITE - 2021
- There were small decreases in pH<sub>c</sub> and increases in total S, which suggest minor acidification had occurred in the 1982 to 2021 period of soil chemistry monitoring.
- However, this was not indicated in the two other main acidification indicators, namely base saturation percentage and BC:Al aluminum ratio.
- The changes are considered 'minor' as pH<sub>c</sub> differs by only 0.2 to 0.5 units, which is likely not sufficient to measurably affect vegetation and soil microflora.
- Overall, the data suggest that slow acidification may be occurring.

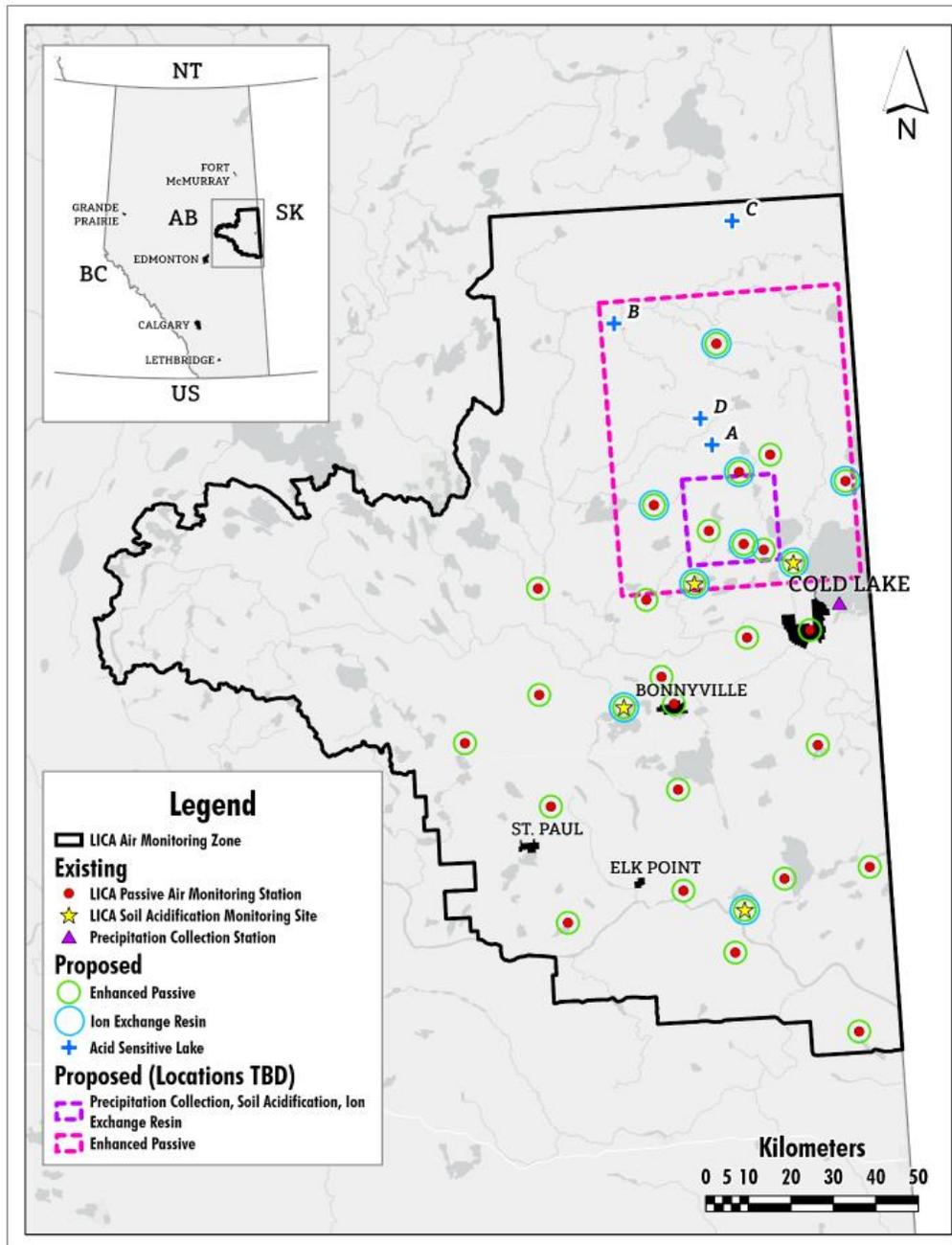


Figure 19: Monitoring strategy visualization

- Considerations For Soil Monitoring
  - Soil chemistry changes are slow; therefore, monitoring should be over a long period
  - Soil should have low acid buffering capacity
  - Under similar vegetation; generally, jack pine
  - Uniform topography
  - Ability to obtain protected status for a long period
- July – August 2022: Desktop screening and mapping
- September – October 2022: Field assessment/screening and sampling
- October 2022: Moose Lake sampling

# Site Selection Criteria

- Landform
  - Landform (site and local) – level to undulating landscapes
  - Moisture regime – xeric to subxeric
  - Nutrient regime – poor
  - Slope – <5%
  - Topographic position – level, or mid to upper slope
  - Aspect – variable; not a factor on level to undulating landscapes
  - Parent material – very coarse textured glaciofluvial or eolian
  - Soil drainage – very well to rapidly drained

- Vegetation

- The community type should be either jack pine/bearberry/lichen, jack pine/blueberry/lichen, or jack pine/blueberry/bearberry/lichen community types.
- Sites should not be infected with dwarf mistletoe, have excessive dead tops, or be damaged by fire or blowdown.

- Soils

- Soils should have the potential to be highly responsive to acidic
- There should be a sufficient level of exchangeable cations, such that a potential change can be detected over time.

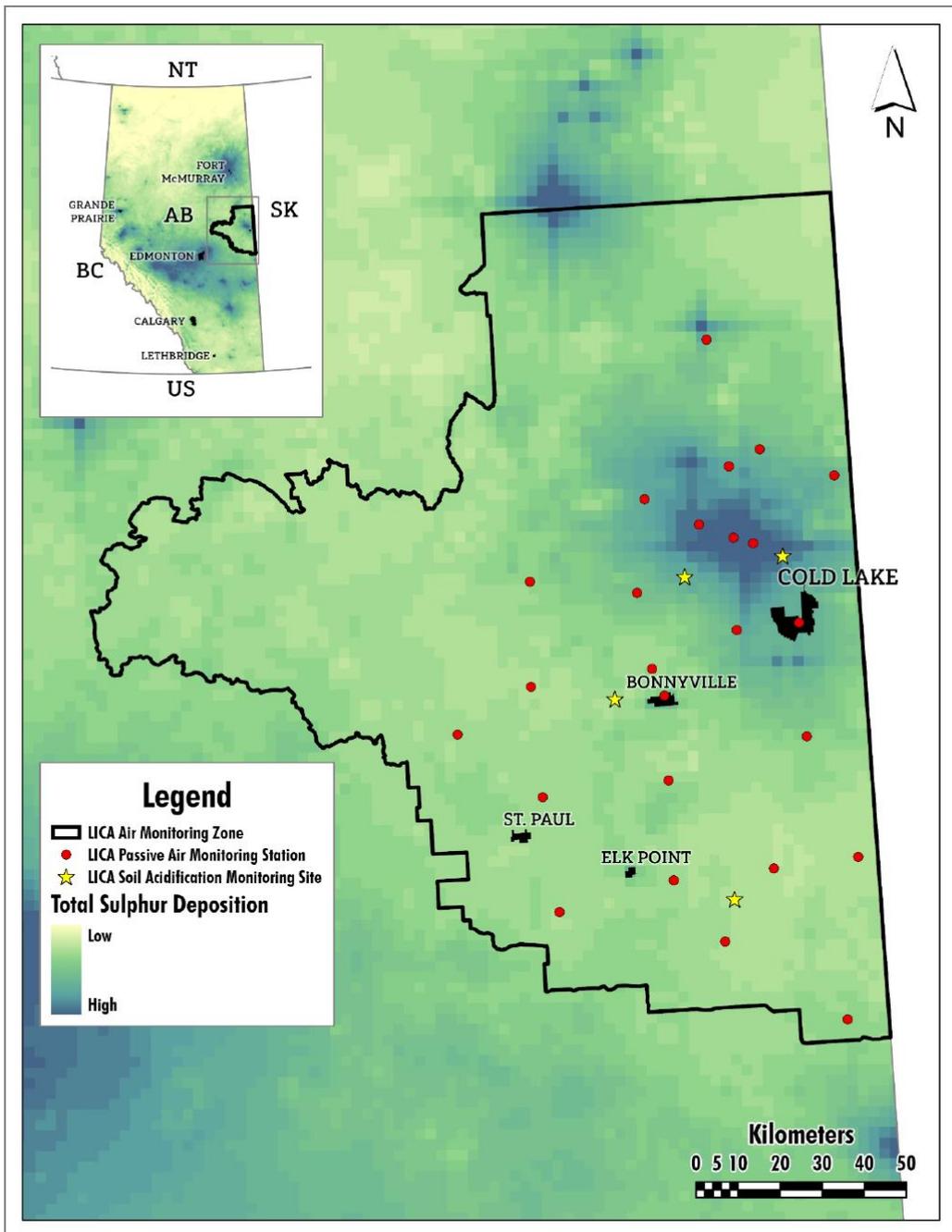


Figure 10: GEM-MACH predicted total sulphur deposition (2013 emissions profile)

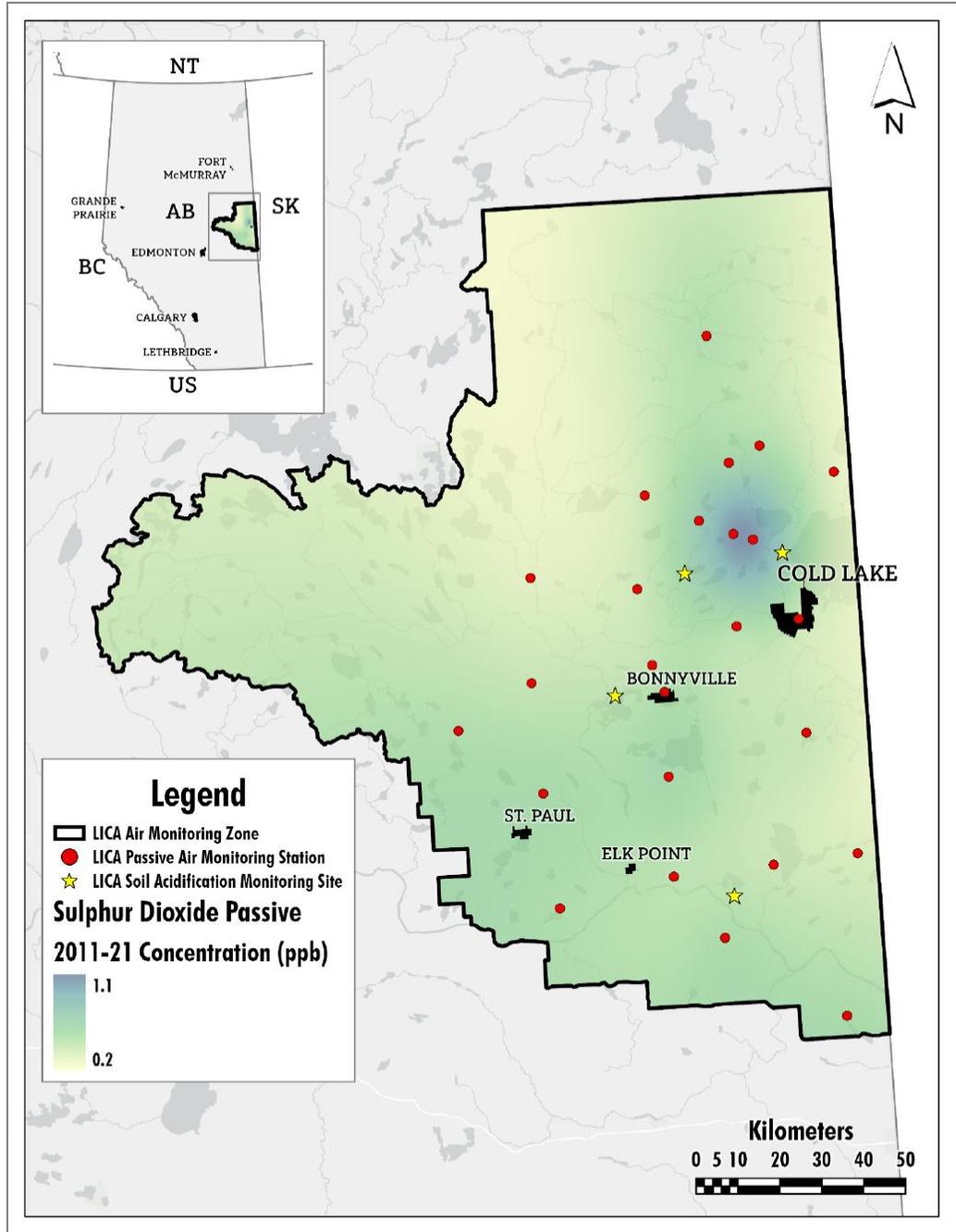


Figure 7: Sulphur dioxide passive results 2011-21 (ppb)

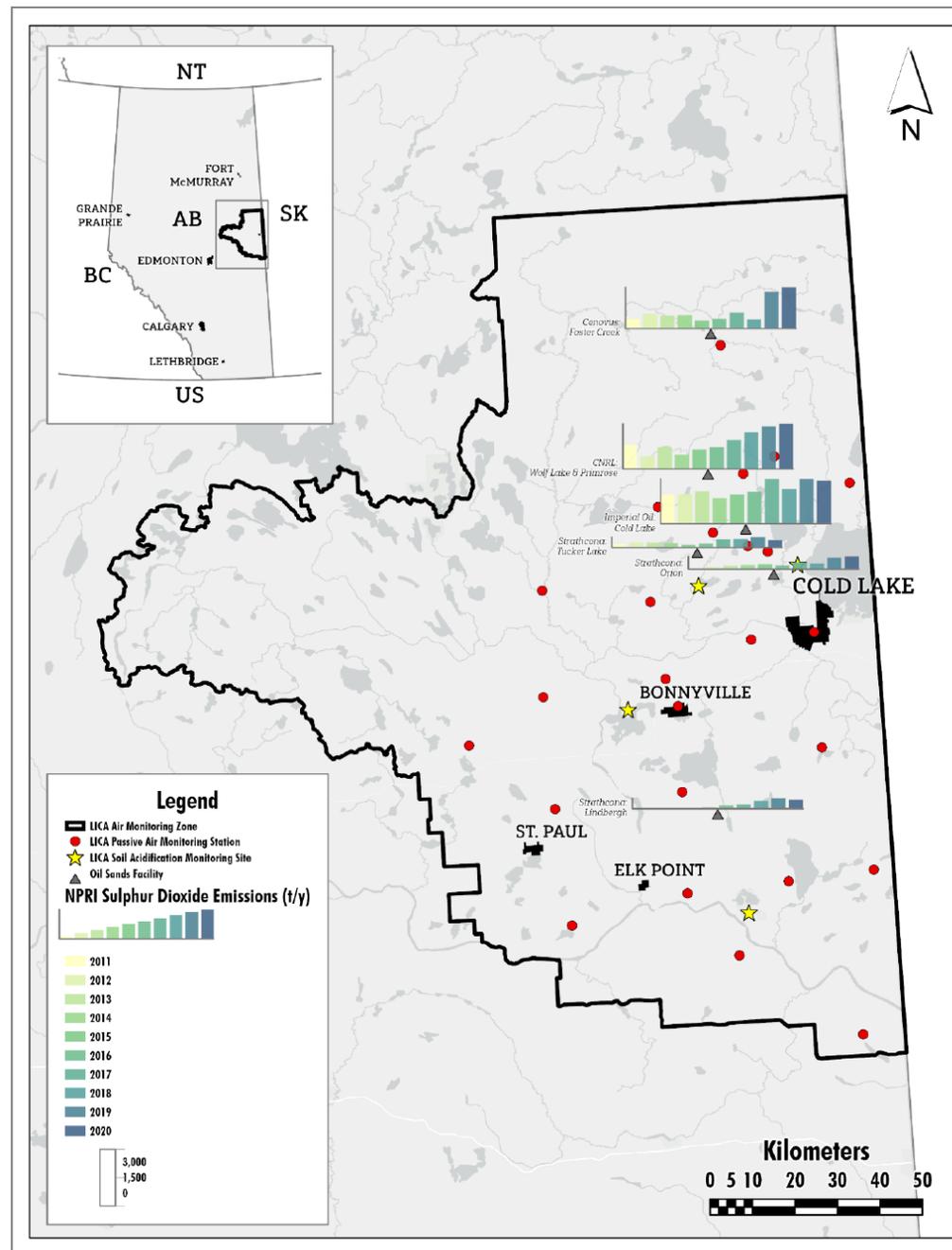


Figure 9: NPRI sulphur dioxide emissions 2011-20 (t/y)

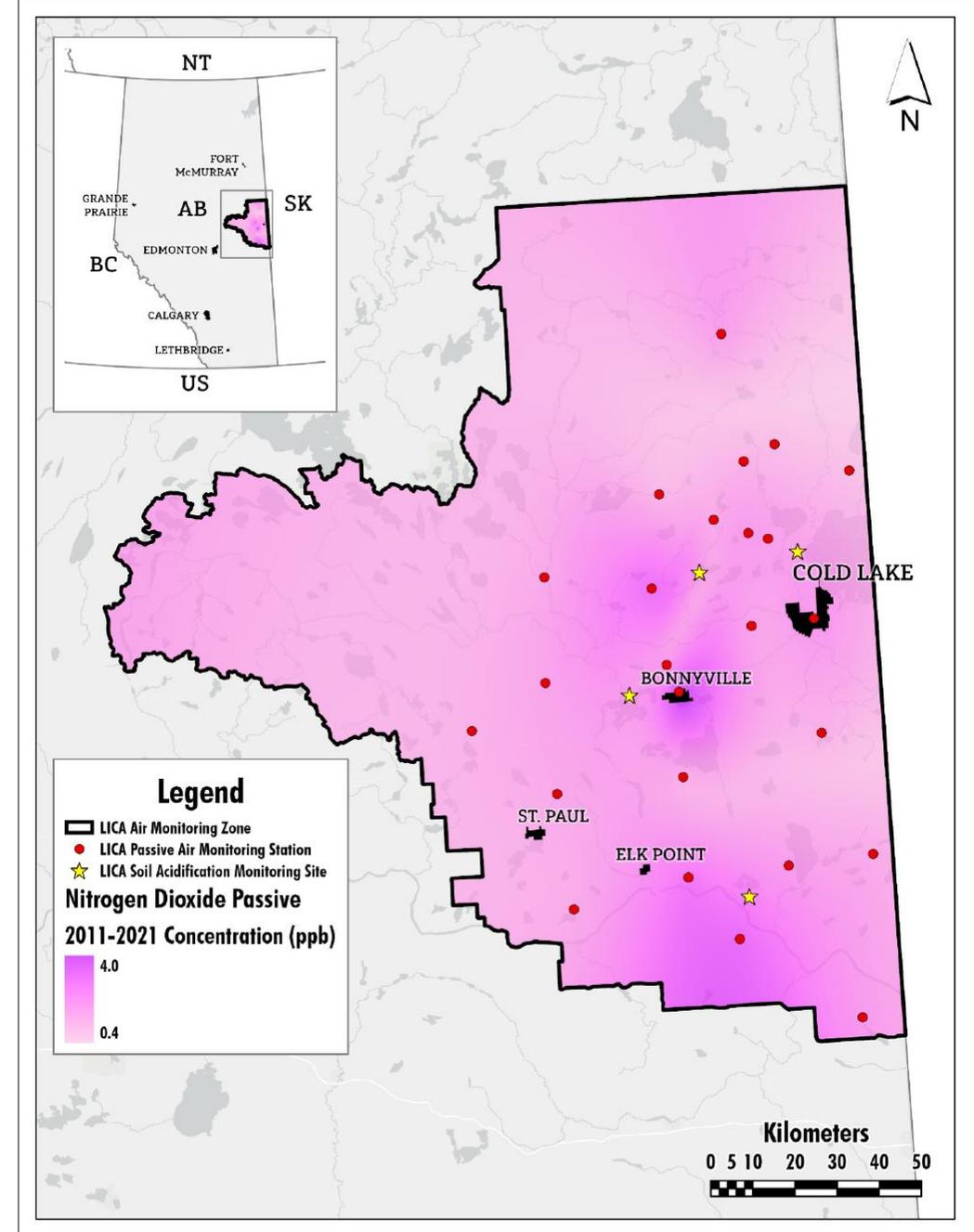
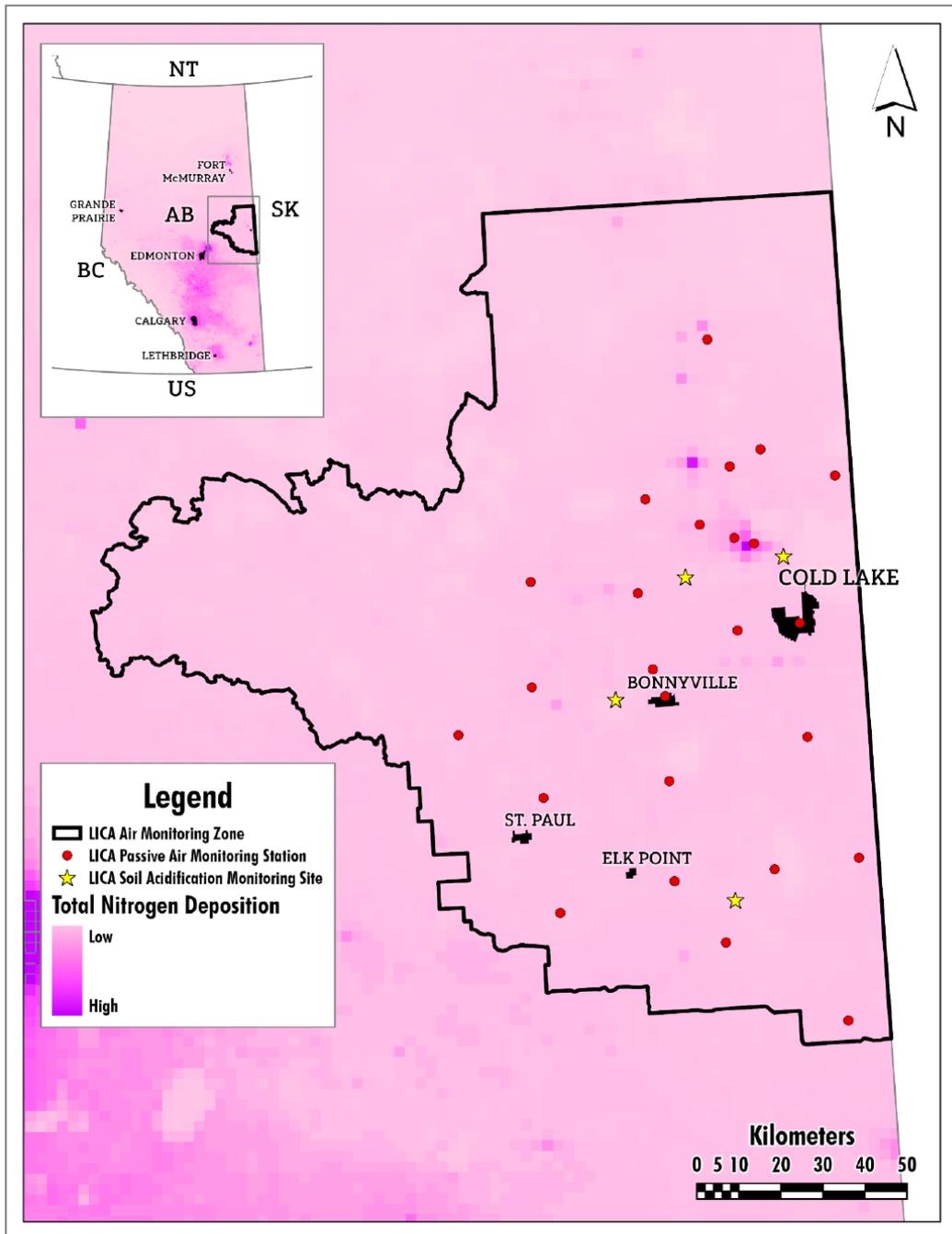


Figure 14: GEM-MACH predicted total nitrogen deposition (2013 emissions profile)

Figure 11: Nitrogen dioxide passive results 2011-21 (ppb)

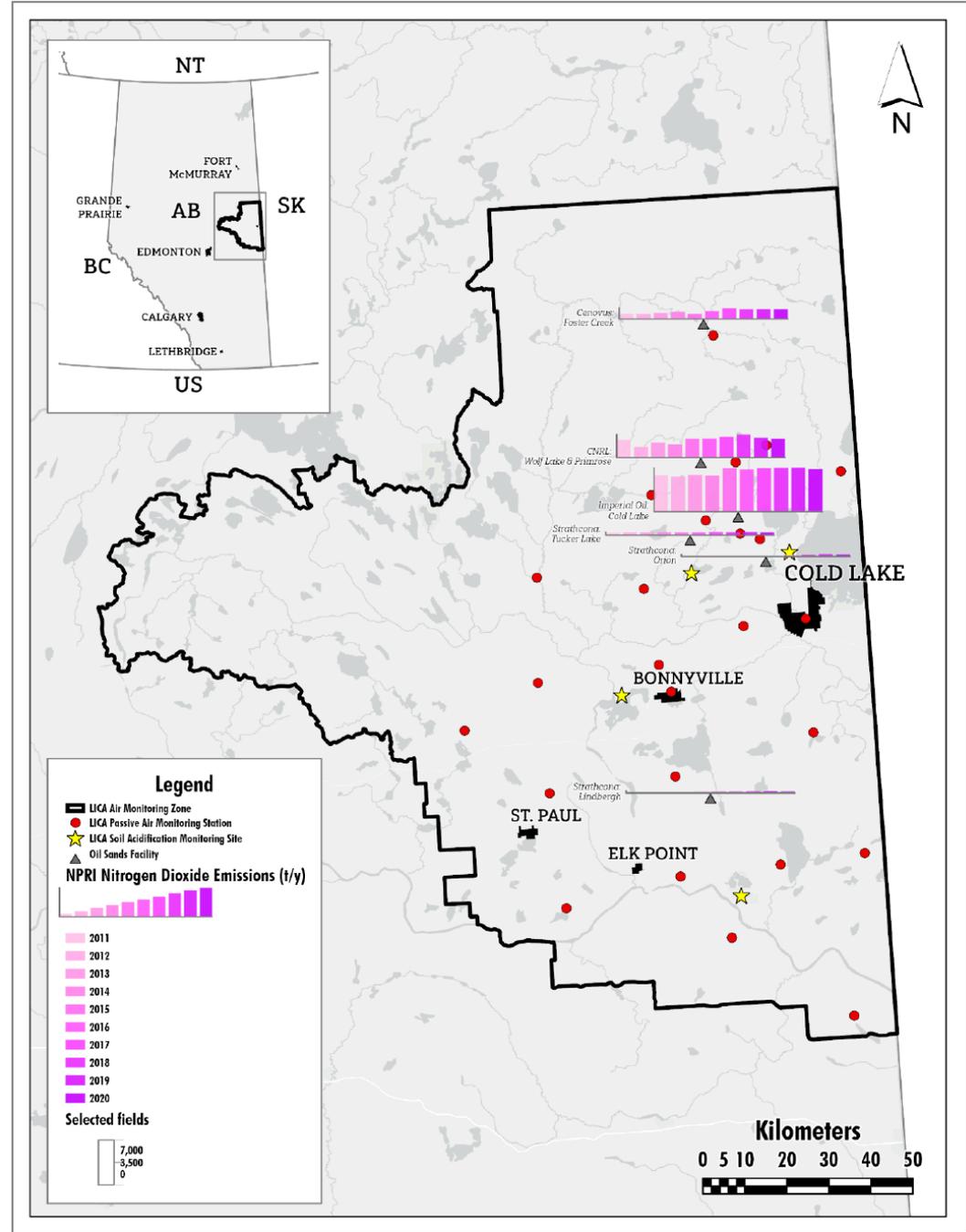


Figure 13: Figure 9: NPRI nitrogen dioxide emissions 2011-20 (t/y)

### 3.1.4 Surface Water: Update on southern lakes (UN-599, UN-5)

- UN-599 & UN-5 are within the “Integrated Zone”



[Meeting of the Acid Deposition Monitoring Program Expansion Committee]

Date: May 3, 2022

Recorder: Eveline Hartog

**ACTION LIST**

<b><u>Task</u></b>	<b>Person assigned to task</b>	<b>Date to be complete</b>	<b>Y/N</b>
<b>2.1.3 <u>Regional Modelling Outputs</u></b>			
<ul style="list-style-type: none"> <li>Schedule a meeting with Greg Wentworth, Mike Bisaga, and AEP, to confirm the status of the GEM-MACH outputs and request the data once it is available</li> </ul>	Greg Wentworth	May 2022	<b>IP</b>
<b>3.1 <u>Acid Deposition Monitoring Strategy Implementation Plan Development Progress Updates</u></b>			
<ul style="list-style-type: none"> <li>Forward to Manger of Environmental Monitoring Programs the update protocols regarding access to the restricted zones at the Cold Lake Air Weapons Range</li> </ul>	Leo Paquin	May 2022	<b>IP</b>
<b>3.1.1 <u>Wet Deposition</u></b>			
<ul style="list-style-type: none"> <li>Contact AEP regarding potential integration of existing provincial network wet deposition site and the proposed site located by the City of Cold Lake</li> </ul>	Greg Wentworth	May 2022	
<b>3.1 <u>Summary</u></b>			
<ul style="list-style-type: none"> <li>Begin implementing additional sampling at the existing passive monitoring sites</li> </ul>	Summer 2022	Mike	
<ul style="list-style-type: none"> <li>Commence screening and scoping of additional viable passive monitoring sites</li> </ul>	Winter 2022	Mike	
<ul style="list-style-type: none"> <li>Develop an Implementation Plan Summary Document</li> </ul>	December 2022	Mike	
<b><u>Actions Brought Forward</u></b>			
<ul style="list-style-type: none"> <li>3.1.2 Investigate if monitoring of shallow lakes namely Marguerite and Barbara Lakes will be done</li> </ul>	Mike	May 2022	<b>IP</b>

**Next Meeting: TBD June, 2022**