

# 2018-19 Work Plan Template

All fields with an \* are mandatory

Project Description Summary			Co-Chair Decision (March 8, 2018)
Date *	Project/Work Plan Identifier (if applicable)	Program Type and Strategic Alignment *	<p><b>*Decision Pool C: Activity paused; new project paused.</b></p> <p>* Activity paused pending outcomes of the Deposition Monitoring Integration Workshop</p> <p>* It is a requirement that key members of the project team participate in a Deposition Monitoring Integration Workshop to be informed by the Oil Sands Monitoring Secretariat.</p> <p>*Funding in 2018/19 is dependent upon the findings of the Deposition Monitoring Integration Review and Workshop.</p>
21/12/2017	N/A	OSM - Long Term Monitoring	
Program Category *	Status *	Dept. ID	
Air/Atmosphere/Climate	New Project	1104 - 03418	
Project Leadership / Contact information			
Project Title *	Key Words (max 10) *		
Cold Lake Soil Acidification Monitoring Program	Acidification, Soil Monitoring, Air Emissions, Cold Lake, Acid Deposition		
Surname *	Given Name *	Title *	
Myrick	Bob	Director, Airshed Sciences	
Organization *	Department	Division	
Alberta Provincial	Alberta Environment and Parks	Environmental Monitoring and Science	
Branch *	Section/Unit (if applicable)	Phone *	
Science	Airshed Sciences	7802297290	
Email *	Mailing Address	City	
Bob.Myrick@gov.ab.ca	9888 Jasper Avenue	Edmonton	
Postal Code	EMSD Executive Owner (if Applicable)		
T5J 5C6	Bill Donahue		
Project Information			
Project Objective(s) (Bullet Form) *	The objective of this project is to collect soil samples, analyze for soil acidification parameters that can be directly affected by acidic atmospheric deposition and evaluate for potential impact/change in monitored soils.		
Plain Language Overview (100 words) *	Analysis of data collected as part of the provincial long term soil monitoring program had identified decreasing soil pH in the Cold Lake area. The LICA soil monitoring program was initiated to compliment and enhance existing soil sampling by Alberta Environment and Parks, local industry, and the Alberta Lake Management Society. Sampled on a staggered four-year cycle, LICA established soil sampling plots in Moose Lake Provincial Park (2010), Whitney Lakes Provincial Park (2011), and southwest of Tucker Lake (2012). These three plots are in addition to the soil sampling plot sampled directly by AEP. Each site (AEP site, Moose Lake Provincial Park, Whitney Lakes Provincial Park, Tucker Lake and AEP provincial monitoring site) is sampled every four years. The LICA soil sampling program uses the same sampling and laboratory analysis protocol as Alberta Environment and Parks.		
Project Duration *	Project Original Start Date *	Estimated Completion Date *	
Multi-Year	1/9/2009	Long-term Monitoring Program (no completion date)	
Specify Objectives This Project Will Address in 2018/2019. *	The specific objective to be addressed in 2018-19 is to collect soil samples at the Moose Lake site, analyze the samples collected and compare data from this site that collected four years previous. Using historical and current data determine if acidification is occurring at this site.		
Specify Objectives This Project Will Address Beyond 2018/19 (if multi-year). *	This is a long-term monitoring program and individual sites are sampled every four years. The specific objective for future years is to identify changes in soil chemistry and process indicators for samples collected in the Cold Lake area.		
List Key Questions/Hypotheses Related to Each Objective Stated Above. *	The key question associated with this project is: Is atmospheric deposition associated with emissions from oil sands operations causing changes to soil chemistry and soil acidification in the Cold Lake region?		
Main Assumptions, Constraints, Dependencies. *	<ul style="list-style-type: none"> <li>- Contracts with airshed organizations can be executed by April 1, 2018</li> <li>- LICA will have the expertise, resources and ability to deliver the monitoring program. This project was conducted directly by AEP (funded through Land Policy) in 2016 at the Cold Lake provincial soil monitoring site.</li> </ul>		
Partner Categories (select all that apply) * A partner is an individual, group, agency, community etc. that is an active participant in the project and in achieving the project deliverables.	Knowledge System *	Location (select all that apply) *	
<input type="checkbox"/> Federal Government <input type="checkbox"/> Another AEP Division <input type="checkbox"/> Another GoA Department <input type="checkbox"/> University/Academic Institution <input type="checkbox"/> Solely delivered by GoA	Classical Science	<input type="checkbox"/> Office or Laboratory <input type="checkbox"/> Sub-regional <input type="checkbox"/> Transboundary (provincial/territorial) <input type="checkbox"/> Lower Peace Region <input type="checkbox"/> Upper Peace Region	

<input type="checkbox"/> Citizen Science	<input type="checkbox"/> North Saskatchewan Region	
<input type="checkbox"/> Indigenous Community or Organization	<input type="checkbox"/> Red Deer Region	
<input type="checkbox"/> ENGO	<input checked="" type="checkbox"/> Lower Athabasca Region	
<input checked="" type="checkbox"/> Other	<input type="checkbox"/> Upper Athabasca Region	
<b>AEP ONLY: Strategic Alignment to EMSD Outcomes</b>		
AEP ONLY: Strategic Alignment to EMSD Science Plan, select 1-2 areas that apply (if Applicable)		
Ecosystems and Predicting Change		
Choose one		
<b>AEP ONLY: Strategic Alignment to AEP Departmental Outcomes</b>		
AEP ONLY: Environmental and Ecosystem Health and Integrity	AEP ONLY: Sustainable Economic Diversity	AEP ONLY: Social Well-Being
Biodiversity	No	No
AEP ONLY: Protected Public Health and Safety from Environmental		
No		
AEP ONLY: IMAG/IMSC Information Needs, Please Specify Which Need(s) is Being Addressed. File location M:\EMSD\Common\Portfolio Mgmt System Shared Docs	Info Need #12 (Ecosystem Services), Info Need #30 (Environmental Health Risk in Alberta) and Info Need #37 (Long-Term Soil Acidification Monitoring Program): The Cold Lake Soil Acidification Monitoring Program is integrated with the provincial Long-Term Soil Acidification Program. This program is intended to conduct more intensive monitoring of soils that are sensitive to acidifying inputs in the Cold Lake area. The provincial sampling protocols are used by this program.	
AEP ONLY: How This Project Will Address Each Strategic Theme Selected Above.	Environmental and Ecosystem Health and Integrity: Soil monitoring is used as an indicator of potential damage to the ecosystem by acidifying substances. The Cold Lake program is a sub-set of the provincial soil monitoring program.	
<b>Project Methodology</b>		
List the Key Project Phases and Provide Bullets for Each Major Task Under Each Project Phase. *	Phase 1 – Field Sampling Phase 2 – Laboratory Analysis Phase 3 – Data Analysis, Synthesis and Reporting	
Describe How Changes in Environmental Condition Will Be Assessed. *	Changes in the environment will be assessed by examining the long term trend of key soil indicators including parameters that can be directly affected by acidic inputs, and which in turn could affect other components of the ecosystem.	
Are There Benchmarks (e.g., objectives, tiers, triggers, limits, reference conditions, thresholds, etc.) Being Used to Assess Changes in Environmental Condition? If So, Please Describe, If Not, State "NONE". *	The AEP Cold Lake soil acidification monitoring site is the only site in the province to show decreasing pH in the upper-most layers. LICA's program is intended to determine if this trend is site specific or a pattern that can be measured more broadly across the region.	
Provide a Brief Description of the Methods By Project Phase. *	<p><b>Phase 1 – Field Sampling:</b> Sample collection for the two Moose Lake forest plot sub-sites. This will include the collection of 168 mineral soil and 24 leaf litter samples from the two Moose Lake sub-sites. Samples to be collected per Alberta sampling protocol, with samples collected from pits in established plots at 0-2, 2-5, 5-10, 10-15, 15-30, 30-45 and 45-60 cm depth intervals, plus a leaf litter sample at each plot.</p> <p><b>Phase 2 – Laboratory Analysis:</b> Analysis and of samples for different indicators of potential acidification:</p> <ul style="list-style-type: none"> <li>- sample preparation – 192 samples</li> <li>- pH – mineral and organic leaf litter (LFH) samples</li> <li>- total C – mineral and organic leaf litter (LFH) samples</li> <li>- total N – mineral and organic leaf litter (LFH) samples</li> <li>- total S – mineral and organic leaf litter (LFH) samples</li> <li>- cation exchange capacity and exchangeable ions – mineral samples</li> <li>- extractable ions – mineral samples</li> </ul> <p><b>Phase 3 – Data Analysis, Synthesis and Reporting:</b> A report will be generated with a tabulation of laboratory data showing the following: (1) comparison tables and graphs showing 2014 and 2018 data; (2) advanced statistics showing the trend in key parameters; and (3) documentation of sampling, analysis, and data.</p>	
List the Key Indicators Measured. *	Soil acidification parameters are soil attributes that can be directly affected by acidic inputs, and which in turn could affect other components of the ecosystem. These attributes include pH, exchangeable base saturation, aluminum (Al) concentration in soil solution, base cation (BC) concentration in soil solution, and the ratio of BC to Al concentrations. Associated attributes are levels of carbon (C), nitrogen (N) and sulphur (S) in surface soil horizons.	
Describe Sample Handling Procedures, if Not Applicable, State N/A. *	Sample collection, laboratory analysis and data QA/QC are conducted in accordance with the ESRD (now AEP) sampling protocol. Roberts, T.L. Nason, G.E. and Regier, H. 1989. Long term soil acidification monitoring in Alberta from 1981 to 1988 (draft). Soil Protection Branch, Waste and Chemicals Division, Alberta Environment, Lethbridge, AB.	

List SOPs that Will Be Used, If Not Applicable, State N/A.*	Sample collection, laboratory analysis and data QA/QC are conducted in accordance with the ESRD (now AEP) sampling protocol. Roberts, T.L. Nason, G.E. and Regier, H. 1989. Long term soil acidification monitoring in Alberta from 1981 to 1988 (draft). Soil Protection Branch, Waste and Chemicals Division, Alberta Environment, Lethbridge, AB.	
Describe the QA/QC Plan, If Not Applicable, State N/A.*	Sample collection, laboratory analysis and data QA/QC are conducted in accordance with the ESRD (now AEP) sampling protocol. Roberts, T.L. Nason, G.E. and Regier, H. 1989. Long term soil acidification monitoring in Alberta from 1981 to 1988 (draft). Soil Protection Branch, Waste and Chemicals Division, Alberta Environment, Lethbridge, AB.	
Describe How Indigenous Communities are Involved in the Project Design, Data Collection, and Analysis (Knowledge Co-creation) and How is their Consent Sought. If Not Applicable, State N/A.*	Indigenous communities are involved through inclusion in LICA.	
<b>Components Delivered by Others</b>		
List by Project or Project Phase Each Component That Will Be Delivered by An External Party (including analytical laboratories) and Name the Party. State None if Not Required.*	All monitoring in this project plan is delivered by the Lakeland Industry and Community Association (LICA).	
Will These Components be Delivered Under Grant or Contract or Both? Please Describe and Name the Associate Work Plan/Grant/Contract for These Services if Not Included Within This Work Plan.*	All monitoring in this project plan is delivered by LICA through a contract with AEP.	
<b>Monitoring Site Locations and Coordinates (for all sites, please add them to the Monitoring Site Location tab - a separate excel sheet)</b>		
Attach Map of Locations. Distinguish Indicators by Station if Necessary. Distinguish Sampling Frequency by Station if Necessary.	The soil monitoring sites are indicated with the purple diamond symbol in the tab called "LICA Map".	
<b>Project Schedule</b>		
<b>FOR OIL SANDS MONITORING PROJECTS ONLY:</b> A coordinated field monitoring schedule for the OSM Program is required. Please complete the attached document named "OSM Program Field Monitoring Schedule" in addition to this work plan. Fill as much as you can recognizing that scheduling changes will occur and the scheduling document will be updated regularly. Please note the scheduling document will be shared with stakeholders.	See "Monitoring Site Locations" tab.	
<b>FOR OIL SANDS MONITORING PROJECTS ONLY:</b> Have You Coordinated With Other Project Leads On Field Logistics? If So, Please Specify.*	Monitoring field logistics are coordinated by LICA.	
<b>Other</b>		
Additional Details.	Note that the Cold Lake Soil Acidification Monitoring Program was NOT funded as an OSM monitoring project in 2017-18 as sampling was conducted by AEP at the Cold Lake provincial soil monitoring site. In 2014, 2015 and 2016, the Cold Lake Soil Acidification Monitoring Program was funded through Oil Sands Monitoring.	
Will Capacity Building and Training be a Component of the Project and If So, Explain How. If Not, State N/A.*	N/A	
Environmental Impact and Considerations.	N/A	
<b>Data Management and Digital Assets</b>		
Will Data be Produced as a Result of This Project? *	Type of Quantitative Data Variables	Frequency Of Collection
Yes	Discrete	Annually
Data Collection Period: Start Date - End Date	Timeline For Upload Period: Start Date - End Date	
June 1 to September 30, 2018	31-Mar-19	
Is There a Data Sharing Agreement? (Yes or No).	No	
Will the Data Include Traditional Knowledge as Defined by and Provided by an Indigenous Representative, Community or Organization (Yes / No).	No	
Platform/Location of Data Storage.	<a href="http://www.lica.ca">www.lica.ca</a>	

**Project Deliverables**

**Proposed 2018-19 Deliverable Type (for each deliverable outline document, presentation, meeting, etc.)**

<input type="checkbox"/> Peer-reviewed Journal Publication	<input type="checkbox"/> Peer-reviewed Conference Proceeding	<input type="checkbox"/> Non-peer reviewed Conference Proceeding
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	Q1 - Deliverable, Comments
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	Q2 - Deliverable, Comments
Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	Q3 - Deliverable, Comments
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	Q4 - Deliverable, Comments
<input checked="" type="checkbox"/> Technical Report	<input type="checkbox"/> Book Chapter	<input type="checkbox"/> Public Dissemination Document
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	Q1 - Deliverable, Comments
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	Q2 - Deliverable, Comments
Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	Q3 - Deliverable, Comments
Q4 - Deliverable, Comments LICA Long Term Soil Acidification Monitoring - Moose Lake. Prep. for Lakeland Industry and Community Association, Bonnyville, AB.	Q4 - Deliverable, Comments	Q4 - Deliverable, Comments
<input type="checkbox"/> Conference Presentation(s)	<input type="checkbox"/> Stakeholder Presentation	<input type="checkbox"/> Key Engagement/Participation Meeting *
Q1 - Deliverable, Comments Choose one	Q1 - Deliverable, Comments Choose one	Q1 - Deliverable, Comments Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Q2 - Deliverable, Comments Choose one	Q2 - Deliverable, Comments Choose one	Q2 - Deliverable, Comments Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Q3 - Deliverable, Comments Choose one	Q3 - Deliverable, Comments Choose one	Q3 - Deliverable, Comments Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.

<b>Q4 - Deliverable, Comments</b>	<b>Q4 - Deliverable, Comments</b>	<b>Q4 - Deliverable, Comments</b>
Choose one	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
<input type="checkbox"/> <b>EMSD Strategic &amp; Operational Publication</b>	<input type="checkbox"/> <b>Other Documents</b>	
<b>Q1 - Deliverable, Comments</b>	<b>Q1 - Deliverable, Comments</b>	
<b>Q2 - Deliverable, Comments</b>	<b>Q2 - Deliverable, Comments</b>	
<b>Q3 - Deliverable, Comments</b>	<b>Q3 - Deliverable, Comments</b>	
<b>Q4 - Deliverable, Comments</b>	<b>Q4 - Deliverable, Comments</b>	
<b>Proposed Deliverables After 2018/2019 for the project funds received in 2018/2019</b>		
<input type="checkbox"/> <b>Peer-reviewed Journal Publication</b>	<input type="checkbox"/> <b>Peer-reviewed Conference Proceeding</b>	<input type="checkbox"/> <b>Non-peer reviewed Conference Proceeding</b>
<b>Q1 - Deliverable, Comments</b>	<b>Q1 - Deliverable, Comments</b>	<b>Q1 - Deliverable, Comments</b>
<b>Q2 - Deliverable, Comments</b>	<b>Q2 - Deliverable, Comments</b>	<b>Q2 - Deliverable, Comments</b>
<b>Q3 - Deliverable, Comments</b>	<b>Q3 - Deliverable, Comments</b>	<b>Q3 - Deliverable, Comments</b>
<b>Q4 - Deliverable, Comments</b>	<b>Q4 - Deliverable, Comments</b>	<b>Q4 - Deliverable, Comments</b>
<input checked="" type="checkbox"/> <b>Technical Report</b>	<input type="checkbox"/> <b>Book Chapter</b>	<input type="checkbox"/> <b>Public Dissemination Document</b>
<b>Q1 - Deliverable, Comments</b>	<b>Q1 - Deliverable, Comments</b>	<b>Q1 - Deliverable, Comments</b>
<b>Q2 - Deliverable, Comments</b>	<b>Q2 - Deliverable, Comments</b>	<b>Q2 - Deliverable, Comments</b>

Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	Q3 - Deliverable, Comments
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	Q4 - Deliverable, Comments
LICA Long Term Soil Acidification Monitoring - Whitney Lake. Prep. for Lakeland Industry and Community Association, Bonnyville, AB.		
<input type="checkbox"/> Conference Presentation(s)	<input type="checkbox"/> Stakeholder Presentation	<input type="checkbox"/> Key Engagement/Participation Meeting *
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	Q1 - Deliverable, Comments
Choose one	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	Q2 - Deliverable, Comments
Choose one	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	Q3 - Deliverable, Comments
Choose one	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	Q4 - Deliverable, Comments
Choose one	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
<input type="checkbox"/> EMSD Strategic & Operational Publication	<input type="checkbox"/> Other Documents	
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	
Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	

All Completed Products		if a multi-
year project, specify all completed products to date (consistent format for the fields below). Add rows as required.		
<b>Journal Paper</b>		
Required Format: Author (follow APA citation format), Year, Title, Journal, Volume, Page Numbers, Open or Closed and Document Location		
Example: Jacoby, W. G. (1994). Public Attitudes Toward Government Spending. American Journal of Political Science, 38(2), 336-361.		
Fearon, J. D., & Laitin, D. D. (2003). Ethnicity, Insurgency, and Civil War. American Political Science Review, 97(01), 75. doi: 10.1017/S0003055403000534		
1)		
2)		
3)		
4)		
5)		
<b>Technical Report</b>		
Required Format: Author, Year, Title, Publisher Location, Name of Publisher, Publisher, Document Location		
Example: Author, F.M. (Publication Year). Title of Report (Report No. XXX). Publisher City, State: Publisher		
1) Abboud, S.A. and Turchenek, L.W. 2017. LICA Long Term Soil Acidification Monitoring - Tucker Lake Site. Prep. for Lakeland Industry and Community Association, Bonnyville, AB.		
2) Abboud, S.A. and Turchenek, L.W. 2016. LICA Long Term Soil Acidification Monitoring - Whitney Lakes Site. Prep. for Lakeland Industry and Community Association, Bonnyville, AB.		
3) Abboud, S.A. and Turchenek, L.W. 2015. LICA Long Term Soil Acidification Monitoring - Moose Site. Prep. for Lakeland Industry and Community Association, Bonnyville, AB.		
4) Same reports as above for previous years: Tucker Lake (2013), Whitney Lakes (2012), Moose Lake (2011)		
5) Abboud, S.A. and Turchenek, L.W. 2011. Long Term Soil Acidification Monitoring in the LICA Study Area. Prep. for Lakeland Industry and Community Association, Bonnyville, AB.		
<b>Book Chapter</b>		
Required Format: Author, Year, Title of Paper, Editors, Title of Book, Page Numbers, Location of Publisher, Name of Publisher, Document Location		
Example: Hemingway, E. (1999). The Killers. In J. Updike & K. Kenison (Eds.), The Best American Short Stories of the Century (pp.78-80). Boston, MA: Houghton Mifflin)		
1)		
2)		
3)		
4)		
5)		
<b>Conference Proceeding</b>		
Required Format: Author, Year, Title of Paper, Editors, Title of Proceedings, Name of Conference Location of Conference, Publisher Location, Name of		
Example: Author of Paper, A., & Author of Paper, B. (Year, Month date). Title of Paper. In A. Editor, B. Editor, & C. Editor. Title of Published Proceedings. Paper Presented at Title of Conference: Subtitle of Conference, Location (inclusive page numbers). Place of Publication: Publisher.)		
1)		
2)		
3)		
4)		
5)		
<b>Public Dissemination Document</b>		
Required Format: Author, Year, Title, Journal / Report, Volume, Publisher, Page Number, Number of Pages, Document Location		
1)		
2)		
3)		
4)		
5)		
<b>AEP ONLY: EMSD Strategic and Operational Publication</b>		
Required Format: Author, Year, Title, Publisher Location, Name of Publisher, Publisher, Document Location		
1)		
2)		
3)		
4)		
5)		
<b>Other Documents</b>		
Detailed Information of Other Documents		
1)		
2)		
3)		
4)		
5)		
<b>Conference Presentation</b>		
Required Format: Presenter, Date, Location, Title, Platform or Poster, Conference Name		

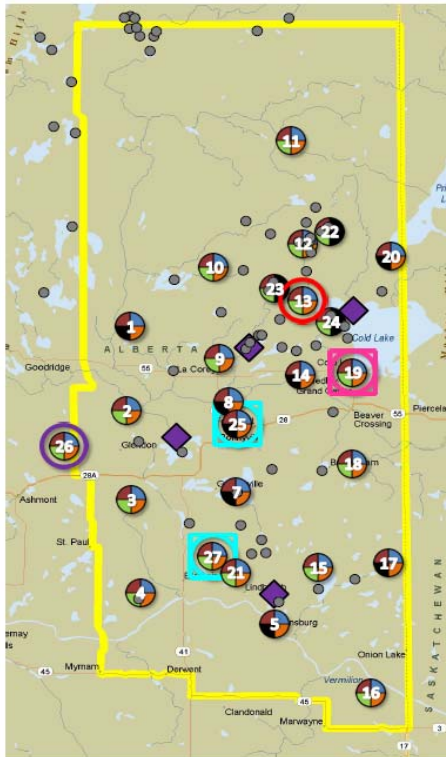


















OSM / EMSD Project Has Not Been Approved		
<b>Project Status</b>	<b>Date Notified</b>	<b>Date Required</b>
The project is conditionally approved. The following conditions are required before approval is granted.		
List the Condition(s)		
<b>Condition(s) Addressed / Approval Granted</b>		
Choose one		
OSM / EMSD Approval Post Removal of Condition(s)		
<b>Name &amp; Title</b>	<b>Signature</b>	<b>Date</b>

Budget requirements – List areas that require budget expenditures: (ADD OR DELETE BUDGET CATEGORIES AS REQUIRED)	Financial Breakdown (should align with budget above)		Funding Recipient (identify organization where money will be allocated to)
	Cash	In - kind	
Operations	\$20,000		LICA
Maintenance			
Lab Analysis	\$45,000		LICA
Administrative/ Management			
Engagement			
Communications			
Capital			
Data Management & Reporting	\$18,000		LICA
Travel (identify conference, field, meetings)			
Publication costs (including translation)			
<b>TOTAL</b>	<b>\$83,000</b>		



**Legend:**

-  **Passive Monitor:**  
Sulphur Dioxide
-  **Passive Monitor:**  
Nitrogen Dioxide
-  **Passive Monitor:**  
Ozone
-  **Passive Monitor:**  
Hydrogen Sulphide
-  **Continuous Monitor:**  
Sulphur Dioxide, Hydrogen Sulphide, Oxides of Nitrogen,  
Total Hydrocarbons, Meteorology
-  **Continuous Monitor:**  
Sulphur Dioxide, Hydrogen Sulphide, Oxides of Nitrogen,  
Ozone, Methane/Non-Methane Hydrocarbons, Particulate  
Matter, Meteorology
-  **Continuous Monitor:**  
Sulphur Dioxide, Hydrogen Sulphide, Oxides of Nitrogen,  
Ozone, Total Hydrocarbons, Particulate Matter,  
Meteorology
-  **Continuous Monitor:**  
Sulphur Dioxide, Total Reduced Sulphurs, Oxides of  
Nitrogen, Ozone, Total Hydrocarbons, Particulate Matter,  
Meteorology
-  **Polycyclic Aromatic and Speciated Hydrocarbons:**  
Routine 1-in-6 day samples
-  **Polycyclic Aromatic and Speciated Hydrocarbons:**  
Routine 1-in-6 day samples  
High non-methane hydrocarbon triggered samples
-  **Soil Acidification Monitoring Plot:**  
pH, Soil Texture, Electrical Conductivity, Soluble Ions,  
Cation Exchange Capacity – Buffered/Unbuffered,  
Exchangeable Cations, Total Carbon, Total Nitrogen, Total  
Sulphur, Available Ammonium, Available Nitrates,  
Available Phosphorous
-  **Surface Water Acidification Assessment:**  
3<sup>rd</sup> Party Monitoring/Sampling

**Passive Stations:**

1 Sand River	15 Frog Lake
2 Therien	16 Clear Range
3 Flat Lake	17 Fishing Lake
4 Lake Eliza	18 Beaverdam
5 Telegraph Creek	19 Cold Lake South
7 Muriel-Kehewin	20 Medley-Martineau
8 Dupre	21 Fort George
9 La Corey	22 Burnt Lake
10 Wolf Lake	23 Mihilhikan
11 Foster Creek	24 Hilda Lake
12 Primrose	25 Town of Bonnyville
13 Maskwa	26 St. Lina
14 Ardmore	27 Portable Station

**Add All Monitoring Site Locations and Coordinates (insert more rows if required)**

Site Identifier *	Location Name *	Long/Lat *
Site 1		
Moose Lake	Moose Lake	54.27680264,-110.91229933
Site 2		
Whitney Lakes	Whitney Lakes	53.83889183,-110.53351627
Site 3		
Tucker Lake	Tucker Lakes	54.52627113,-110.63686629
Site 4		
Site 5		
Site 6		
Site 7		
Site 8		
Site 9		
Site 10		
Site 11		
Site 12		
Site 13		
Site 14		
Site 15		
Site 16		
Site 17		