

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 *	*Decision Pool D: Project Not Funded.
15/01/2018		OSM - Focus Study	
Program Category *	Status *	Dept. ID	
Standards, QA/QC	Hold	1104-01171	
Project Leadership / Contact information			
Project Title *	Key Words (max 10) *		
Naphthenic Acid Sample Holding Time Study	Monitoring standards, protocols, methods, tools, scientific rigor, scientific integrity, Naphthenic Acid		
Surname *	Given Name *	Title *	
Fu	Long	Director, Standards, Quality and Innovation	
Organization *	Department	Division	
Alberta Provincial	AEP	EMSD	
Branch *	Section/Unit (if applicable)	Phone *	
EMOB	Standards, Quality and Innovation	7802297280.00	
Email *	Mailing Address	City	
long.fu@gov.ab.ca	10th floor, 9888 Jasper Ave.	Edmonton	
Postal Code	EMSD Executive Owner (If Applicable)		
T5J 5C6	Monique Dubé		
Project Information			
Project Objective(s) (Bullet Form) *	Develop field sampling protocols for naphthenic acid monitoring in surface water, including sampling, preservation and holding requirements. [This is an existing project (S1-3-1-1617, Naphthenic Acid Field Protocol) in 2016-2017 on hold in the last two years].		
Plain Language Overview (100 words) *	Naphthenic acid is a natural component of oil sands in Alberta. It occurs in natural water and can be enriched in oil sands processing processes. This project is part of the Naphthenic Acid Analytical SOP project that will establish a standard operating procedure (SOP) for the preservation, holding and preparation of naphthenic acid ambient surface water samples. This SOP will support the surface water quality monitoring programs in Alberta's oil sands region. The ambient surface water naphthenic acid measurement results will be used to assess the condition of the environment and the impacts of oil sands operation on the quality of surface water in the oil sands region of Alberta.		
Project Duration *	Project Original Start Date *	Estimated Completion Date *	
Multi-Year	14/04/2014	31/03/2020	
Specify Objectives This Project Will Address in 2018/2019. *	1. Develop a data set that allows for the quantification of the effect of sample holding time on the nature of naphthenic acid samples collected from natural sources. 2. Develop a data set that allows for the quantification of the effect of alkaline preservation of naphthenic acid samples collected from natural sources.		
Specify Objectives This Project Will Address Beyond 2018/19 (if multi-year). *	Develop and document relevant field protocols and lab analytical methods for surface water naphthenic acid monitoring.		
List Key Questions/Hypotheses Related to Each Objective Stated Above. *	What are the appropriate procedures for preservation and preparation for naphthenic acid surface water samples? What are the impacts on the nature and concentration of naphthenic acid samples over various holding time periods under various combination of preservation and preparation conditions?		
Main Assumptions, Constraints, Dependencies. *	Government of Alberta is responsible to monitor the surface water quality to ensure oil sands operations are in compliance with the relevant policy objectives and regulatory requirements. The Government of Alberta is committed to the delivery of credible and relevant environmental data and expects that relevant questions are addressed through scientific methods using appropriate and consistent methodology.		
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 checked="" 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 type="checkbox"/> Other	<input type="checkbox"/> Upper Athabasca Region

AEP ONLY: Strategic Alignment to EMSD Outcomes

AEP ONLY: Strategic Alignment to EMSD Science Plan, select 1-2 areas that apply (If Applicable)	
Sustainability of Water Resources for Human Use	
Human Relationship with the Environment	

AEP ONLY: Strategic Alignment to AEP Departmental Outcomes

AEP ONLY: Environmental and Ecosystem Health and Integrity	AEP ONLY: Sustainable Economic Diversity	AEP ONLY: Social Well-Being
Water (Surface and Ground)	Yes	Yes

AEP ONLY: Protected Public Health and Safety from Environmental
Yes

AEP ONLY: IMAG/IMSC Information Needs, Please Specify Which Need(s) is Being Addressed. File location M:\EMSD\Common\Portfolio Mgmt System Shared Docs	<p>31. Policy and Planning. "State of Emerging Contaminants in Alberta's Rivers: Knowledge Gaps Related to Identification, Quantification and Toxicity of PAHs and NAs There is a commitment in LAR SWQMF to work to fill in these knowledge and data gaps and include PAHs and NAs as indicators and develop triggers once a reliable dataset has been compiled".</p> <p>4. Strategy. "monitoring and science program capable of answering foundational questions pertaining to cumulative effects, with a shorter-term focus on items pertaining to the Wood Buffalo National Park, UNESCO World Heritage Committee Mission report".</p> <p>7. Operations. "Water Monitoring Network Development, Evaluation, and Maintenance: Operations Division requires information to inform water quality concerns (drinking water security, effluent impacts, human health, and indigenous request commitments). Requires evaluation of MTRN and LTRN network".</p> <p>9. Operations. "Water Management Framework Response Monitoring: EMF response monitoring is necessary to provide Operations with information to respond to and delineate extent of exceedances of EMF limits. Understanding causal factors/contributors is important to assess risk to aquatic ecosystems".</p> <p>18 and 21. Policy and Planning. "Current and historical status of water quality in Alberta's major rivers: Long- and medium-term river network To understand the current condition and historical trends in water quality in the major rivers in Alberta; To develop and maintain up-to-date long-term data sets that can be easily accessed to address policy, planning and operational needs, including (but not limited to) the development and implementation of Surface Water Quality Management Frameworks (SWQMFs) under regional plans in the seven land-use planning regions.</p>
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AEP ONLY: How This Project Will Address Each Strategic Theme Selected Above.	Monitoring standards and protocols are a cross cutting area that affect all areas of environmental monitoring and scientific
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Project Methodology

List the Key Project Phases and Provide Bullets for Each Major Task Under Each Project Phase. *	<p>1. Sample collection and preservation.</p> <p>Collect samples from the selected surface water sources in the oil-sands region.</p> <p>Water will be collected in two 20 L HDPE containers. Samples will be transported to the laboratory.</p> <p>Upon arrival in the laboratory, twelve samples will be preserved by adjusting pH to 10.5 with 2M NaOH.</p> <p>All 1 L amber glass bottles will be stored at 4oC at InnoTech Alberta's Vegreville facilities.</p> <p>2. Sample preparation and analysis.</p> <p>Samples will be analyzed weekly over a 12 week period. A total of 18 analyses per sampling location will be performed over the 12 week period.</p> <p>Analysis will be performed using an UHPLC-Orbitrap Elite mass spectrometer.</p> <p>The Orbitrap will be operated under the conditions as outlined in the proposal (attached).</p> <p>3. Data analysis and reporting.</p> <p>Analysis results (total naphthenic acid and speciation profiles) obtained for the preserved and non-preserved samples will be compared.</p> <p>To determine sample holding times, total concentration results will be plotted as a function of time and the resulting plots will be examined for inflection points that lead a permanent change in slope.</p> <p>Results from both preserved and unpreserved samples will be evaluated. At the same time, changes in speciation plots will be monitored.</p> <p>Research findings will be collected in a project report containing a detailed description of all methodologies employed.</p>
	Describe How Changes in Environmental Condition Will Be Assessed. *

<p>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". *</p>	<p>NA</p>
<p>Provide a Brief Description of the Methods By Project Phase. *</p>	<p>Task 1: Sample collection and preservation Collect three samples from surface water sources in the oil-sands region. Potential site locations are AB07DA0620 (Muskeg River near mouth), AB07DC0110 (Firebag River near mouth) and AB07CD0210 (Clearwater River 2km u/s Waterways). To ensure representative samples, at each location, water will be collected in two 20 L HDPE containers. Samples will be transported to the laboratory. Upon arrival in the laboratory, water from the two 20 L HDPE containers collected at each site will be combined. From the combined 40 L, 24 1 L amber glass bottles will be filled. Twelve samples will be preserved by adjusting pH to 10.5 with 2M NaOH. The remaining twelve 1 L samples will not be preserved. All 1 L amber glass bottles will be stored at 40C at InnoTech Alberta's Vegreville facilities.</p> <p>Task 2: Sample preparation and Analysis: Samples will be analyzed weekly over a 12 week period. To assess variability in the chemical measurement process (CMP), samples will be subjected to the CMP in triplicate at (a) the start of the 12 week period, (b) after six weeks and (c) after 12 weeks. Thus, a total of 18 analyses per sampling location will be performed over the 12 week period.</p> <p>Unpreserved and preserved samples will be extracted by passing 500 mL of sample over a preconditioned 500 mg styrene divinylbenzene (ENV+) solid phase extraction (SPE) cartridge. Cartridge preconditioning consists of exposing the cartridge to 10 mL of MilliQ water adjusted to pH 2 with formic acid, followed by 10 mL of methanol (HPLC grade) and finally, with 5 mL of MilliQ water adjusted to pH 2 with acetic acid. Each sample will be acidified to pH 2 using formic acid. The acidified sample will be drawn through the SPE cartridge at a flow rate of approximately 1 mL.min⁻¹. The adsorbent will be eluted using 5 mL of methanol at 1 mL.min⁻¹. The resulting extract will be evaporated to dryness under a stream of N₂ and reconstituted to 1 mL using dichloromethane. Analysis will be performed using an UHPLC-Orbitrap Elite mass spectrometer.</p> <p>Component separation will be performed using an Ultimate 3000 HPLC system (Thermo Fisher Scientific, San Jose, CA, USA) on a Cosmosil C18 MS-II column (100 x 3.0 mm, 2.5 µm particle size; Nacalai USA, San Diego, CA, USA) at 40°C. Flow rate will be set at 0.5 mL/min and an injection volume of 5µL will be used. The mobile phases consisting of (A) 0.1% acetic acid in water and (B) 100 % methanol will be employed. The following mobile phase composition will be used: 5% B for 1 min, followed by a linear gradient ramp to 90% B at 10 min, to 99% over 5 min, and returning to 5% B in 1 min, followed by a 4 min hold prior to the next injection. The eluent is injected directly into the Orbitrap Elite.</p> <p>The Orbitrap will be operated under the following conditions: (a). Source temperature of 350°C in electrospray (ESI) or atmospheric chemical ionization (APCI) modes. (b). Discharge current set at - 5 µA (APCI-). (c). Sheath, aux, and sweep gas flow at 30, 5 and 5 (arbitrary units), respectively. (d). Capillary temperature at 350 °C. (e). S-Lens RF at 65 %. (f). Resolving power set to a nominal value of 120,000 at full width half-maximum at m/z 400, and using a full maximum ion time of 200 ms.</p> <p>MS/MS experiments will be performed by collision-induced dissociation (CID) with a normalized collision energy of 35 V, and an activation time of 10 ms. Mass calibration and tuning will be done externally by direct infusion of a standard mixture of caffeine, the peptide MRFA (sequence, Met-Arg-Phe-Ala), and Ultramark 1600 in H₂O/acetonitrile 50:50 (v/v), covering a range from m/z 138 to 1722. Mass spectral data will be collected at 2 full scans per second between 100-1000 m/z using automatic gain control. Data acquisition and analysis will be performed with Thermo Xcalibur 2.0 software.</p> <p>Task 3: Data analysis and reporting Analysis results (total naphthenic acid and speciation profiles) obtained for the preserved and non-preserved samples will be compared. Inherent uncertainties present in the chemical measurement process will be taken into account to decide whether results obtained for preserved and unpreserved samples are significantly different.</p> <p>To determine sample holding times, total concentration results will be plotted as a function of time and the resulting plots will be examined for inflection points that lead a permanent change in slope. Results from both preserved and unpreserved samples will be evaluated. At the same time, changes in speciation plots will be monitored.</p>
<p>List the Key Indicators Measured. *</p>	<p>Research findings will be collected in a project report containing a detailed description of all methodologies employed.</p>
<p>List the Key Indicators Measured. *</p>	<p>Naphthenic acid concentrations and components distribution under various holding time, preservation, and sample preparation conditions.</p>
<p>Describe Sample Handling Procedures, If Not Applicable, State N/A. *</p>	<p>The purpose of this project is to develop a sample handling protocol. As shown in the attached proposal.</p>
<p>List SOPs that Will Be Used, If Not Applicable, State N/A. *</p>	<p>CALA accredited Orbitrap SOP.</p>

Describe the QA/QC Plan, if Not Applicable, State N/A. *	As shown in the attached proposal.
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. *	NA
Components Delivered by Others	
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. *	Sample collection, preservation, preparation and analysis will be performed by Innotech. AEP will provide oversight and management of the project.
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. *	Innotech will perform the service as described above under a contract.
Monitoring Site Locations and Coordinates (for all sites, please add them to the Monitoring Site Location tab - a separate excel sheet)	
Attach Map of Locations. Distinguish Indicators by Station if Necessary. Distinguish Sampling Frequency by Station if Necessary.	Potential site locations are AB07DA0620 (Muskeg River near mouth), AB07DC0110 (Firebag River near mouth) and AB07CD0210 (Clearwater River 2km u/s Waterways). Exact locations will be determined early in 2018 in consultation with selected scientists/experts.
Project Schedule	
FOR OIL SANDS MONITORING PROJECTS ONLY: 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.	Field samples will be collected in August/September 2018. Lab Analysis will be performed during October to December 2018. Final report will be prepared by March 31, 2019.
FOR OIL SANDS MONITORING PROJECTS ONLY: Have You Coordinated With Other Project Leads On Field Logistics? If So, Please Specify. *	NA
Other	
Additional Details.	<p>2013-2014, EMSD and InnoTech conducted method development for NA in water sample analysis.</p> <p>2015/2016, EMSD supported InnoTech's NA methods (GCMS, Orbitrap, and FTIR) comparison study under JOSM.</p> <p>March 2016, AEMERA (EMSD) presented the NA method comparison results at a multi-stakeholder NA Methodology Workshop was tasked to lead the coordinator and development of NA sampling/analysis SOPs .</p> <p>April 2016, Long Fu of EMSD submitted a JOSM SOP work plan including NA method development.</p> <p>April 22, 2016, Long Fu received direction to submit two separate JOSM work plans: SOP work plan with a budget of \$250,000 and a NA method work plan with a budget of \$200,000.</p> <p>April 28, 2016, Long Fu sent the draft NA method work plan to two ECCC staff (who receive separate JOSM funding for OSPW research) for review - NA field protocol development and enriched NA material for general research purpose based on direction from Fred Wrona.</p> <p>May 3, 2016, ECCC staff emailed Long Fu and raised 5 issues. They also mentioned priorities discussions at a workshop on April 18, 2016 where EMSD was not in presence.</p> <p>May 6, 2016, Long Fu responded the 5 issues raised by ECCC. Long Fu also expressed the willingness to make the work plan better aligned with ECCC's projects.</p> <p>Long Fu had discussions with ECCC staff in May 2016 and various options for work alignment were considered.</p> <p>June 17, 2016, ECCC staff emailed Long Fu requesting reconsider the allocation of the \$200,000 budget as their effort for internal funding was not successful. More discussions continued and additional options were considered.</p> <p>July 25, 2016, Long Fu received direction that all \$200,000 budget will be re-located to ECCC for NA reference material project. NA field protocol work will be deferred. Long Fu's JOSM Standard work plan will have an NA SOP component.</p> <p>ECCC sent Long Fu CALA NA method accreditation on QToF in 2016, InnoTech sent Long Fu CALA accreditation on Orbitrap in 2017.</p> <p>AEP's NA surface water monitoring program were suspended in 2016 and 2017 due to the delay of field protocol work.</p>

Will Capacity Building and Training be a Component of the Project and If So, Explain How. If Not, State N/A.*

This project is part of a joint capacity building effort between GoA and Alberta InnoTech under a 5-year agreement to address the priority of naphthenic acid analysis for the Oil Sands region. A High Resolution Mass Spectrometer (Orbitrap) was purchased by GoA in 2013 (\$700,000) and Alberta InnoTech provided infrastructure and operation for the instrument. After initial methodology developed in 2013/2014, EMSD and InnoTech conducted method comparison study for GC/MS and Orbitrap during 2014 to 2015. In 2015/2016, InnoTech conducted additional methodology comparison study on GC/MS, Orbitrap and FTIR using natural and standard naphthenic acid samples under OSM funding.

In 2016/2017 and 2017/2018, the proposed field protocol development for naphthenic acid analysis was put on hold as directed by the JOSM Directors. As a result, the EMSD NA surface water monitoring program have been suspended for 2016/2017 and 2017/2018.

InnoTech received CALA NA method accreditation in 2017. Dr. Jon Martin in a recent email to Long Fu indicated that HPLC-Orbitrap is the best available method for comprehensive characterization in semi-quantitative mode.

This field protocol is needed for Alberta to resume the surface monitoring program for naphthenic acid in the Oil Sands region.

Environmental Impact and Considerations.

NA

Data Management and Digital Assets

Will Data be Produced as a Result Of This Project? *	Type of Quantitative Data Variables	Frequency Of Collection
Choose one	Choose one	Choose one

Data Collection Period: Start Date - End Date	Timeline For Upload Period: Start Date - End Date

Is There a Data Sharing Agreement? (Yes or No).

No, but results will be posted publically.

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.

Technical reports posted on-line

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 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	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	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	

Proposed Deliverables After 2018/2019 for the project funds received in 2018/2019		
<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 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	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	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 checked="" type="checkbox"/> Other Documents	
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	
Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	
	Progress report	
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	
	Technical report on preservation, preparation and holding time of naphthenic acid water samples.	
All Completed Products		if a multi-year project, specify
all completed products to date (consistent format for the fields below). Add rows as required.		
Journal Paper		
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)		
Technical Report		
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)		
2)		
3)		
4)		
5)		
Book Chapter		
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)		
Conference Proceeding		
Required Format: Author, Year, Title of Paper, Editors, Title of Proceedings, Name of Conference Location of Conference, Publisher Location, Name of Publisher, Document		
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)
Public Dissemination Document
Required Format: Author, Year, Title, Journal / Report, Volume, Publisher, Page Number, Number of Pages, Document Location
1)
2)
3)
4)
5)
AEP ONLY: EMSD Strategic and Operational Publication
Required Format: Author, Year, Title, Publisher Location, Name of Publisher, Publisher, Document Location
1)
2)
3)
4)
5)
Other Documents
Detailed Information of Other Documents
1)
2)
3)
4)
5)
Conference Presentation
Required Format: Presenter, Date, Location, Title, Platform or Poster, Conference Name
1) Long Fu, November 6th to 10th, 2016. Orlando Florida "A methodology comparison study for quantitative measurement of naphthenic acid in surface water in the Alberta oil sands region". Poster Presentation. SETAC North America 37th Annual Meeting/7th SETAC World Congress.
2) L. Fu, B. Leung, T. Nunifu, B. Fahlman, J. Pretorius. "Data Analysis of Naphthenic Acid Fraction Component for Water Samples from the Selected Sites in the Lower Athabasca River Basin". Presented at the Canadian Industrial Chemistry Conference, November 2014, Edmonton Alberta, Canada.
3)
4)
5)
Stakeholder Presentation
Required Format: Presenter, Date, Location, Title, Platform or Poster, Name of Meeting
1) Fu et al, March 14, 2016. Edmonton, Alberta. "Current Monitoring Programs: Review of existing SOPs". Platform. A workshop to assess the current state-of-the-science and identify paths forward regarding analytical methods for monitoring ambient waters potentially influenced by bitumen in the Athabasca region.
2)
3)
4)
5)
Key Engagement/Participation Meeting
Required Format: Meeting Host, Date, Location
1)
2)
3)
4)
5)

Human Resources / Staffing Plan (roles and responsibilities)		
Name & Role	Organization	Responsibilities
Long Fu, Project Lead	EMSD/EMOB	Project management and oversight
Carlin Schieck, Quality Assurance Coordinator	EMSD/EMOB	Project coordination
Vincent Yang, Analytical Chemist	EMSD/EMOB	Scientific assessment and evaluation

Project Approval(s)		
Proposal Submitted by		
Surname	Given Name	Organization
Fu	Long	AEP/EMSD
Signature	Date	
Proposal for OSM Reviewed by		
EMSD Executive Director	Signature	Date
Garry Scrimgeour	X	
AEP Administrator/Coordinator - Review	Signature	Date
ECCC Administrator/Coordinator - Review	Signature	Date
OSM Project Approved by		
AEP Co-Lead for OSM	Signature	Date
ECCC Co-Lead for OSM	Signature	Date
AEP ONLY: Proposal for EMSD Reviewed by		
EMSD Director	Signature	Date
AEP ONLY: EMSD Project Approved by		
EMSD Executive Director	Signature	Date
EMSD Chief Scientist	Signature	Date
OSM / EMSD Project Has Not Been Approved		
Project Status	Date Notified	Date Required
The project is conditionally approved. The following conditions are required before approval is granted.		
List the Condition(s)		
Condition(s) Addressed / Approval Granted		
Choose one		
OSM / EMSD Approval Post Removal of Condition(s)		
Name & Title	Signature	Date

Salaries and Benefits	32,319
Operations and Maintenance	3,890
Lab Analysis	34,560
Conferences and meetings travel	
Field work travel	
Project-related travel	
Engagement	
Reporting	
External Contracts - Organization/Vendor/Suppliers	
Overhead	
Grants	
Capital	
Total budget request for the year	70,769
Total budget approved	