

2018-19 Work Plan Template

All fields with an * are mandatory

Project Description Summary			Co-Chair Decision
Date *	Project/Work Plan Identifier (if applicable)	Program Type and Strategic Alignment *	<p>* Decision Pool A: Workplan approved but at a reduced funding level.</p> <p>* Approved at \$200,000 (17/18 levels)</p> <p>* This project was underpenned in 2017/18. Quarterly updates on expenditures and accurate forecasts for 18/19 are required.</p> <p>* Deliverables for this level of funding are to be clarified and an amended workplan submitted before March 23, 2018 to the Oil Sands Monitoring Secretariat.</p> <p>* This project is to be completed in the 2018/19 year. The methods development is to then inform any ongoing monitoring.</p> <p>* The OSM Secretariat will schedule a meeting with COSIA and the Alberta Energy Regulator that the project lead is to attend/participate in. The intent of the meeting will be to discuss the application/relevance of this method development to on-going monitoring of tailings pond emissions as well as if this monitoring falls within the scope of the Oil Sands Monitoring Program.</p> <p>*Funding expectations: as a minimum a final report is required by March 31, 2019. All publications or products resulting from this work requires acknowledgement of funding from the Oil Sands Monitoring Program and are to be provided to the Oil Sands Monitoring Secretariat for tracking and any programmatic communications purposes. Work funded through the Oil Sands Program will be available for public dissemination.</p>
19/06/2018	A-MD-7-1819	OSM - Focus Study	
Program Category *	Status *	Dept. ID	
Air/Atmosphere/Climate	Existing Project		
Project Leadership / Contact information			
Project Title *	Key Words (max 10) *		
Develop Methods to Measure Tailings Pond Emissions	Tailings ponds, atmospheric emissions, fluxes, air pollutants, greenhouse gases, method comparison		
Surname *	Given Name *	Title *	
Cober	Stewart	Section Manager	
Organization *	Department	Division	
ECCC			
Branch *	Section/Unit (if applicable)	Phone *	
ASTD		(416) 739-4618	
Email *	Mailing Address	City	
Stewart.Cober@canada.ca	4905 Dufferin St.	Toronto	
Postal Code	EMSD Executive Owner (if Applicable)		
M3H 5T4			
Project Information			
Project Objective(s) (Bullet Form) *	<p>The overall goals of this focused study are to:</p> <ul style="list-style-type: none"> * Quantify fluxes of air pollutants and odorous compounds, including volatile organic compounds (VOCs), reduced sulphur compounds (RSCs) and polycyclic aromatic hydrocarbons (PAHs), as well as greenhouse gases (CH4 and CO2), from a tailings pond using various techniques. * Assess the feasibility and performance of various micrometeorological, remote sensing and other techniques to determine a suitable alternative for the methods (eddy covariance, spot water samples and floating flux chambers) currently used by operators to estimate emissions from tailings ponds. 		
Plain Language Overview (100 words) *	<p>Oil Sands operators typically use in house or contract work based on spot water samples and floating flux chambers for estimating emissions from tailings ponds. However, there are concerns that this technique lacks temporal and spatial representativeness and leads to large uncertainties for tailings pond emission estimates. This work plan details micrometeorological methods combined with specialized air quality sampling instruments that could provide an improved coverage of compounds (VOCs, PACs, inorganic pollutants, and semi volatile acids) with better spatial representation.</p>		
Project Duration *	Project Original Start Date *	Estimated Completion Date *	
Multi-Year	4/1/2017	31/03/2020	
Specify Objectives This Project Will Address in 2018/2019. *	<ol style="list-style-type: none"> 1) Workshop to discuss preliminary results and next steps 2) Project Report submitted to all participants 3) Finalize data analysis 4) Supplementary report (Hi-vol, passive & water sample analysis) submitted to all participants 5) Finalize validation of field data and upload to web portal 6) Preparation and circulation of manuscripts for publication in the peer reviewed literature 7) Dissemination of results at the AGU conference 8) Meeting with COSIA and AER to discuss the application of the method to on-going monitoring of tailings pond emissions 9) Submission of manuscripts to peer reviewed journals 		
Specify Objectives This Project Will Address Beyond 2018/19 (if multi-year). *	<ol style="list-style-type: none"> 1) Data workshop 2) Publication of results in the peer reviewed literature 		
List Key Questions/Hypotheses Related to Each Objective Stated Above. *	<ol style="list-style-type: none"> 1) Air pollutants and GHGs emitted by tailings ponds, and other fugitive emission sources, have a potential impact on ambient air quality and odours in nearby communities (in conjunction with A-MD-4-1718 Atmospheric Process Study - OS Air pollution emissions, transformation and fate). 2) Gaseous emissions from tailings ponds can be quantified with improved accuracy using various measurement methods demonstrated in this study (in conjunction with A-MD-4-1718 Atmospheric Process Research - OS Air pollution emissions, transformation and fate). 		
Main Assumptions, Constraints, Dependencies. *	<ul style="list-style-type: none"> * assumptions are linked to specific analysis methods and will be elaborated in project reports * constraints: only one pond was studied & is likely not representative of all ponds; only 1 month of data was collected, representative only of summer conditions 		

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 checked="" type="checkbox"/> Federal Government <input checked="" type="checkbox"/> Another AEP Division <input type="checkbox"/> Another GoA Department <input checked="" type="checkbox"/> University/Academic Institution <input type="checkbox"/> Solely delivered by GoA <input type="checkbox"/> Citizen Science <input type="checkbox"/> Indigenous Community or Organization <input type="checkbox"/> ENGO <input checked="" type="checkbox"/> Other	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"/> North Saskatchewan Region <input type="checkbox"/> Red Deer Region <input checked="" type="checkbox"/> Lower Athabasca Region <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)		
Choose one		
Choose one		
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
Choose one	Choose one	Choose one
AEP ONLY: Protected Public Health and Safety from Environmental		
Choose one		
AEP ONLY: IMAG/IMSC Information Needs, Please Specify Which Need(s) is Being Addressed. File location M:\EMSD\Common\Portfolio Mgmt System Shared Docs		
AEP ONLY: How This Project Will Address Each Strategic Theme Selected Above.		
Project Methodology		
List the Key Project Phases and Provide Bullets for Each Major Task Under Each Project Phase. *	Phase 1: Analysis of data Phase 2: Assessing the feasibility and performance of alternative methods Phase 3: Reporting and publications	
Describe How Changes in Environmental Condition Will Be Assessed. *	Fluxes of air pollutants and odorous compounds will be quantified from a tailings pond using various techniques.	
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". *	None	
Provide a Brief Description of the Methods By Project Phase. *	Phase 1: Analysis of the data collected in year 1 to quantify fluxes of volatile organic compounds (VOCs), reduced sulphur compounds (RSCs) and polycyclic aromatic hydrocarbons (PAHs), as well as greenhouse gases (CH4 and CO2). Phase 2: Assess the feasibility and performance of various micrometeorological, remote sensing and other techniques to determine a suitable alternative for the methods (eddy covariance, spot water samples and floating flux chambers) currently used by operators to estimate emissions from tailings ponds. Phase 3: The results from this project will be incorporated into one or more of the synthesis reports (R-1-1718) as appropriate, and various peer-reviewed publications	
List the Key Indicators Measured. *	Volatile organic compounds (VOCs), reduced sulphur compounds (RSCs) and polycyclic aromatic hydrocarbons (PAHs), greenhouse gases (CH4 and CO2)	
Describe Sample Handling Procedures, If Not Applicable, State N/A. *	Sample handling procedures are provided in standard operating procedure documents available internally and by request.	
List SOPs that Will Be Used, If Not Applicable, State N/A. *	Standard operating procedure documents available internally and by request.	
	Further Standards and Protocols are available on the EMSD website: http://environmentalmonitoring.alberta.ca/resources/standards-and-protocols/	
Describe the QA/QC Plan, If Not Applicable, State N/A. *	Quality assurance and quality control needs to be conducted in accordance with the SOPs for data QA/QC developed by ECCC, available internally and by request.	

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.*	N/A	
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. *	AEP and UofA involved in deploying instrumentation and sampling.	
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. *	Not applicable	
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.	An interactive map of all sampling locations is available on the ECCC OSM portal at: http://environmental-maps.canada.ca/osm/App/index?GOCTemplateCulture=en-CA	
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.	No sampling scheduled for 2018-19 (completed in 2017-18).	
FOR OIL SANDS MONITORING PROJECTS ONLY: Have You Coordinated With Other Project Leads On Field Logistics? If So, Please Specify. *	N/A	
Other		
Additional Details.	This project is linked to A-MD-4-1718 (Atmospheric Process Study – OS Air Pollution Emissions, Transformation and Fate), which will quantify many of the same pollutants measured during the tailings ponds study, but from an aircraft in 2018. Information on emission rates by one specific fugitive source will facilitate source attribution during analysis of the aircraft data, and provide ground-truthing for emission estimates based on the aircraft data. A second linkage exists to the modelling efforts with GEM-MACH. Emission rates established during this study will be compared to and incorporated into existing inventories. Subsequent model runs will then be compared to ambient monitoring results for further model development. The project also links to the deposition (A-MD-2-1718) and ground-based monitoring (A-MD-5-1718) projects by providing specific information on emissions from one particular fugitive source, facilitating source attribution analyses by providing a fingerprint for tailings ponds emissions. Lastly, the results from this project will be incorporated into one or more of the synthesis reports (R-1-1718) as appropriate.	
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	
Data Management and Digital Assets		
Will Data be Produced as a Result Of This Project? *	Type of Quantitative Data Variables	Frequency Of Collection
Yes	Discrete	Other
Data Collection Period: Start Date - End Date 29/07/2017 - 30/09/2017	Timeline For Upload Period: Start Date - End Date 3/31/2019	
Is There a Data Sharing Agreement? (Yes or No).	Yes: An EMISSIONS TESTING AND DATA SHARING COLLABORATIVE AGREEMENT between the four parties (ECCC, AEP, UofA, Oil Sands operator)	
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.	Final data will be submitted to the appropriate data portal (primarily the Oil Sands Monitoring Data Portal).	
Project Deliverables		
Proposed 2018-19 Deliverable Type (for each deliverable outline document, presentation, meeting, etc.)		
<input checked="" type="checkbox"/> Peer-reviewed Journal Publication	<input type="checkbox"/> Peer-reviewed Conference Proceeding	<input checked="" type="checkbox"/> Non-peer reviewed Conference Proceeding/Technical Reports
Q1 - Deliverable, Comments	Q1 - Deliverable, Comments	Q1 - Deliverable, Comments
		Report summarizing data collected by all participants during the 2017 field campaign expected in 2018
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	Q2 - Deliverable, Comments
Q3 - Deliverable, Comments	Q3 - Deliverable, Comments	Q3 - Deliverable, Comments
		Report summarizing the main findings of the summer intensive study, in addition to recommendations for future fugitive emissions monitoring expected by the end of 2018
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	Q4 - Deliverable, Comments
Publications will be prepared for submission to peer-reviewed journals from 2019 onwards		
<input checked="" 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
Platform	Choose one	
RM Staebler, S Moussa, Y You, A Leithead, J Wentzell, J Liggio, R. Mittermeier, K. Hayden, H Hung, M Moradi, L Jantunen, S Steffen, A Darlington: Turbulent Flux Measurements of Atmospheric Pollutants from a Tailings Pond in the Alberta Oil Sands. Fall Meeting of the American Geophysical Union, Washington DC, December 2018.		
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.
Proposed Deliverables After 2018/2019 for the project funds received in 2018/2019		
<input checked="" 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
Publications will be prepared for submission to peer-reviewed journals from 2019 onwards		
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.
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:		

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 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) Ralf Staebler, Samar G. Moussa, Yuan You, Amy Leithead, Jeremy Wentzell, John Liggio, Richard Mittermeier, Kathy Hayden, Geoff Stupple, Sandy Steffen, Hayley Hung, Tom Harner, Shao-Meng Li, Maryam Moradi, Ron Noronha, Anita Eng, Liisa Jantunen, Andrea Darlington, Julie Narayan, Michael Wheeler, Stewart Cober: TAPOS Project Report, Environment and Climate Change Canada. Shared AEP, Suncor and U of A, July 2018, 80 pp.
2)
3)
4)
5)
Conference Presentation
Required Format: Presenter, Date, Location, Title, Platform or Poster, Conference Name
1)
2)
3)
4)
5)
Stakeholder Presentation
Required Format: Presenter, Date, Location, Title, Platform or Poster, Name of Meeting
1)
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
Project Co-ordination	An Oil Sands operator/ECCC/AEP/UofA	1) Oversee and co-ordinate data analysis and synthesis 2) Identify fugitive emission monitoring priorities (to be completed after data has been analyzed)

Data Analysis and Reporting	An Oil Sands operator/ECCC/AEP/UofA	1) Data analysis and QA/QC 2) Upload QA/QC data AEP website 3) Preparation of peer reviewed manuscripts (if possible)

AEP ONLY: Additional Human Resources Required from EMSD

Name & Role	Branch - Section	Estimated time (% of annual FTE)	Salary Estimate Range

Financial Details and Budget Request

Source of Funding Requested Year 1 - 2018/19

	AEP ONLY: EMSD	OSM (ECCC)	OSM (AEP)
Salaries and Benefits		105994	0
Operations and Maintenance		44006	50000
Consumable materials and supplies			
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	0	150000	50000
Total budget approved			

Source of Funding Requested Year 2 - 2019/20

	AEP ONLY: EMSD	OSM
Salaries and Benefits		
Operations and Maintenance		
Consumable materials and supplies		
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		
Total budget approved		

Source of Funding Requested Year 3 - 2020/21

	AEP ONLY: EMSD	OSM
Salaries and Benefits		
Operations and Maintenance		
Consumable materials and supplies		
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	0	0
Total budget approved		

Source of Funding Requested Year 4 - 2021/22

	AEP ONLY: EMSD	OSM
Salaries and Benefits		
Operations and Maintenance		
Consumable materials and supplies		
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	0	0
Total budget approved		

Budget Request for the Entire Project	0	150,000
----------------------------------------------	---	---------

Project Approval(s)		
Proposal Submitted by		
Surname	Given Name	Organization
Cober	Stewart	ECCC
Signature	Date	
Proposal for OSM Reviewed by		
EMSD Executive Director	Signature	Date
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