

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 *	
9/4/2018	GW-LTMS-3-1819	OSM - Long Term Monitoring	
Program Category *	Status *	Dept. ID	
Watershed Sciences (Surface Water and Groundwater)	Existing Project		
Project Leadership / Contact information			
Project Title *	Key Words (max 10) *		
Groundwater Monitoring	groundwater, water quality, water quantity, field work, lab analysis		
Surname *	Given Name *	Title *	
McClain	Cynthia	Dr.	
Organization *	Department	Division	
Alberta Provincial	Alberta Environment and Parks	Environmental Monitoring and Science	
Branch *	Section/Unit (if applicable)	Phone *	
Science	Watershed	587-226-2551	
Email *	Mailing Address	City	
cynthia.mcclain@gov.ab.ca	3115 -12 Street NE	Calgary	
Postal Code	EMSD Executive Owner (If Applicable)		
T2E 7J2	Monique Dube		
Project Information			
Project Objective(s) (Bullet Form) *	<ul style="list-style-type: none"> - Continue groundwater quantity and quality monitoring and data gathering activities in the Cold Lake Beaver River (CLBR), South Athabasca Oil Sands (SAOS), North Athabasca Oil Sands (NAOS) using existing design of strategic/surveillance/investigative/operational wells - Continue to review and update existing components of the groundwater program (standard operating procedures, field sheets, parameter lists, laboratory contracts, laboratory electronic data deliverables, databases) to create efficiency and begin aligning with the new Monitoring Evaluation and Reporting plan - Improve scientific integrity of groundwater level program by surveying wellhead elevations, and updating this information in our WISKI database - Find, organize, prepare and begin importing historical groundwater data into relevant databases - Report on historical groundwater data 		
Plain Language Overview (100 words) *	<p>The objective of the groundwater monitoring program is to measure the current state of ambient groundwater in the Athabasca Oil Sands Area to enable assessment of potential changes in ambient groundwater quality and groundwater level over time and space. This program includes monitoring up to ~80 wells in three sub-regions: Cold Lake Beaver River (CLBR), South Athabasca Oil Sands (SAOS), North Athabasca Oil Sands (NAOS). Attention is given to water quality parameters with the potential to limit future use of groundwater including organic compounds, metals and nutrients. This project includes the planning, fieldwork (well inspection, manual water level measurements, continuous water level data acquisition, and discrete water quality samples), equipment maintenance, laboratory analysis, data upload and validation, and database updating associated with groundwater quantity and quality.</p>		
Project Duration *	Project Original Start Date *	Estimated Completion Date *	
Multi-Year	1/4/2009	Ongoing	
Specify Objectives This Project Will Address in 2018/2019. *	<ul style="list-style-type: none"> - Continue groundwater quantity and quality monitoring and data gathering activities in the Cold Lake Beaver River (CLBR), South Athabasca Oil Sands (SAOS), North Athabasca Oil Sands (NAOS) using existing design of strategic/surveillance/investigative/operational wells - Continue to review and update existing components of the groundwater program (standard operating procedures, field sheets, parameter lists, laboratory contracts, laboratory electronic data deliverables, databases) to create efficiency and begin aligning with the new Monitoring Evaluation and Reporting plan - Improve scientific integrity of groundwater level program by surveying wellhead elevations, and updating this information in our WISKI database - Find, organize, prepare and begin importing historical groundwater data into relevant databases - Report on historical groundwater data 		
Specify Objectives This Project Will Address Beyond 2018/19 (if multi-year). *	<ul style="list-style-type: none"> - Continue groundwater quantity and quality monitoring and data gathering activities in the Cold Lake Beaver River (CLBR), South Athabasca Oil Sands (SAOS), North Athabasca Oil Sands (NAOS) using existing design of strategic/surveillance/investigative/operational wells - Continue to review and update existing components of the groundwater program (standard operating procedures, field sheets, parameter lists, laboratory contracts, laboratory electronic data deliverables, databases) to create efficiency and begin aligning with the new Monitoring Evaluation and Reporting plan - Improve scientific integrity of groundwater level program by surveying wellhead elevations, and updating this information in our WISKI database - Find, organize, prepare and begin importing historical groundwater data into relevant databases - Report on historical groundwater data 		
List Key Questions/Hypotheses Related to Each Objective Stated Above. *	<ol style="list-style-type: none"> 1. What is the current state of groundwater quantity and quality in the Oil Sands Area of Alberta? 2. Is ambient groundwater quality changing? 3. Are groundwater levels changing? 4. How can the scientific integrity and efficiency of the groundwater monitoring program be improved to create alignment with the MER plan? 5. Are existing field methods appropriate, consistent with internationally accepted protocols, and well documented as Standard Operating Procedures? 6. What is the elevation of the top of casing of the wells? 7. What is the duration, quality, and accessibility of historical groundwater data? 		

Main Assumptions, Constraints, Dependencies.	This project assumes that 1 new OSM FTE will be hired to conduct the outlined work. This project assumes new staff hired would be very familiar with groundwater quality sampling, and EMSD's methods such that minimal training would be required. This project assumes that the wells (and assets within the wells) can be accessed and maintained in good working condition, despite the fact that not all have written land use agreements or road access agreements on file. This project assumes that the reduced number of wells that are monitored as a part of the groundwater monitoring program (focused on "strategic" subnetwork which monitors baseline conditions) provide a representative sample of groundwater quality/quantity in the Oil Sands Area of Alberta. Specifically, this assumes that the selected wells are suitable for monitoring trends with time, meaning they are in good physical condition, and in aquifers where one may expect to see changes over time. This project also assumes that the wells sampled (although often clustered spatially) represent the spatial variability in groundwater conditions of the many hydrostratigraphic units of the region. This project is constrained by the budget, which has also necessitated a cut back on parameters to be analyzed including likely omission of PAHs and age dating. Note that naphthenic acids and phenols will also not be analyzed, in line with the surface water monitoring program. This project is constrained by the fact that the WDS database targeted to store water quality information cannot house all of our data because it is not set up to accommodate isotope data. Therefore, these isotope data are stored in Excel. This project is constrained by the fact that there are currently limited written QA/QC plans and few SOPs. This work assumes that a total of 100% of an FTE (spread between ~2 different roles) from AEP's Corporate Services Division- Informatics-Data Management would be available to contribute to this project. Some tasks in this project depend on completion of tasks in the provincial groundwater monitoring program, provincial SOP work plan, and OSM/provincial MER work plans.	
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 * Classical Science	Location (select all that apply) * <input checked="" type="checkbox"/> Office or Laboratory <input checked="" type="checkbox"/> Sub-regional <input checked="" 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)		
Human Relationship with the Environment Sustainability of Water Resources for Human Use		
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)	No	No
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	1, 2, 7, 21, 24	
AEP ONLY: How This Project Will Address Each Strategic Theme Selected Above.	Our monitoring program provides information on water levels and water quality in key aquifers. Albertans rely on having a supply of high quality groundwater for industrial uses, drinking, agriculture and other human uses. The monitoring network may also inform whether anthropogenic activities influence the supply and quality of groundwater.	
Project Methodology		
List the Key Project Phases and Provide Bullets for Each Major Task Under Each Project Phase. *	<p>Preparation for Fieldwork</p> <ul style="list-style-type: none"> - Identify which draft SOPs can be used, revise or write SOPs where necessary - Review and modify field sheets, and lab Electronic Data Deliverables (EDDs) (based on updated parameter list) - Review and modify databases (e.g., WISKI, WDS) as necessary to accommodate data generated as a part of the groundwater monitoring program - Update databases (e.g., WISKI) or data streams with new data verification and validation process (if a data verification and validation process has been written as a part of the to-be-developed MER Plan) - Assign monitoring duties to team of technologists - Schedule fieldwork and accommodations - Coordinate site access (roads, well sites) - Order, assemble and prepare equipment (e.g., obtain bottles, clean tubing, calibrate instruments, sample labels, CoC's) - Maintain equipment and sampling trailer on an ongoing basis <p>Fieldwork</p> <ul style="list-style-type: none"> - Record field notes and data on updated field sheet - Survey well head elevation (dependent on SOP finalization and training) - Perform well inspection (e.g., with camera) and document potential well integrity issues (dependent on SOP finalization and training) - Manually measure water levels - Download water level data loggers - Collect water quality samples and send with CoC's to laboratory - Clean equipment <p>Laboratory Analysis and Invoicing</p> <ul style="list-style-type: none"> - Receive samples, perform requested analyses, submit data to EMSD - Verify data requested of labs was submitted and certify invoices <p>Data Upload and Validation</p> <ul style="list-style-type: none"> - Upload field data and lab EDDs to WDS (or KIWQGM) - Upload water level data to WISKI - Upload pictures etc. to shared drive - Consider requesting up-to-date data and metadata from operator wells as per current program design; format data - Verify and validate water level and water quality data (if a data verification and validation process has been written as a part of the to-be-developed MER Plan, and at least partially automated) <p>Historical Data Work and Database Improvement</p> <ul style="list-style-type: none"> - Update asset database and training on KISTERS products (e.g., WISKI, KIWQGM) - Make plan for and organize files on shared drive - Create GIS layers (ArcMap and GoogleEarth) with well locations and metadata to facilitate planning - Find, organize, format, summarize and begin importing historical water level data into WISKI - Begin finding, organizing, formatting, and summarizing historical water quality data to prepare for upload into WDS and/or KIWQGM - Report on previously evaluated groundwater quality data (peer reviewed manuscripts) 	
Describe How Changes in Environmental Condition Will Be Assessed. *	Groundwater levels and quality are measured over space and time as a part of this monitoring program, and may be compared to historical data to identify whether there have been changes in environmental condition.	
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". *	Triggers exist for certain water quality indicator parameters as specified in the LARP Groundwater Management Framework, however these are drafts and are currently under revision.	

Provide a Brief Description of the Methods By Project Phase. *	See description of tasks above for methods in each project phase	
List the Key Indicators Measured. *	Routine parameters and major ions, nutrients, organic and dissolved inorganic carbon (DIC), total and dissolved trace elements, arsenic speciation, BTEXS, F1-F4. The groundwater samples that are collected as a part of this work plan, may also be analyzed for age dating parameters (tritium, 14C), water isotopes and PAHs.	
Describe Sample Handling Procedures, If Not Applicable, State N/A. *	Samples are collected into bottles from groundwater wells in the field, stored on ice and shipped to laboratories for analysis. Explicit step-by-step sample handling procedures (e.g., gloves, filtering) are under development as a part of the SOP work plan.	
List SOPs that Will Be Used, If Not Applicable, State N/A.*	There are many draft SOPs field technicians use for various aspects of groundwater monitoring that have never been finalized, formally adopted, or published. There is a separate provincial work plan for 2018/2019 to write a groundwater field manual including standard operating procedures and a sampling plan template. We aim to formally adopt SOPs during 2019/2020.	
Describe the QA/QC Plan, If Not Applicable, State N/A. *	No formal QA/QC plan has been developed or documented for groundwater monitoring. Formalizing the groundwater QA/QC plan falls under the 2018/2019 work plans to develop a Monitoring Evaluation and Reporting Plan for Groundwater and write a Field Manual with SOPs. In the interim, we will proceed with status-quo QA/QC from previous years where equipment blanks, field blanks, trip blanks, triplicate splits are collected at a 10% frequency.	
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. *	Laboratory analysis will be conducted by ALS and Innotech (potentially AXYS). Part of the reporting work (2 peer reviewed journal articles based on the 2016 report "Oil Sands Groundwater Monitoring Program Review: Phase II" for AEMERA) associated with the "Historical Data Work and Database Improvement" phase of this work plan aims to be contracted.	
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. *	Contract 18AEM817 to ALS for laboratory analysis (BTEXS and F1-F4, routine parameters, major ions, nutrients and carbon) is valid through 2019/2020. Contract 18AEM818 to Innotech for water isotopes is valid through 2019/2020. Contract 18AEM829 to Innotech for total and dissolved trace elements and arsenic speciation is valid through 2019/2020. Contract 18AEM816 to AXYS for PAHs is valid through 2019/2020. A contract for reporting is not yet in place.	
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.	See monitoring site location tab. Up to ~80 wells will be selected from this list for monitoring pending logistical and budgetary constraints.	
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.	See schedule. Up to ~80 wells will be selected from this schedule pending logistical and budgetary constraints.	
FOR OIL SANDS MONITORING PROJECTS ONLY: Have You Coordinated With Other Project Leads On Field Logistics? If So, Please Specify. *	Yes, discussions underway with ECCC scientists (Greg Bickerton) whether it is feasible to coordinate their efforts to collect a large volume of water at one well for one of their projects, during our visit to that site.	
Other		
Additional Details.	From 2009 until 2016/2017, all groundwater monitoring, data management, and reporting activities in the NAOS and SAOS had been contracted out. In 2017/2018, the work was brought in-house and a reduced number of wells were visited/sampled because groundwater technicians to do the work were not hired until Autumn. Thus, as the budget for this year is similar to last year's we will continue to monitor a reduced number of wells, compared to the number monitored in pre-2017. This poses a risk of data/equipment loss, as we have monitoring equipment (e.g., water level data loggers) requiring regular checking/maintenance in some wells that we will not be able to visit this year due to reduced funding. Additionally, as there is no longer a contract for managing the associated historical or new monitoring data we have begun to do this work in house. In future years a comprehensive data management program for groundwater would be in order.	
Will Capacity Building and Training be a Component of the Project and If So, Explain How. If Not, State N/A.*	Some of the field staff may be learning new field methods (e.g., surveying elevation, well inspection), concepts of hydrogeology and methods for calculating hydrologic properties of porous media (e.g., hydraulic conductivities), and as well as approaches for data compilation, digitizing, organization, validation from the PI and other experienced technicians.	
Environmental Impact and Considerations.	As groundwater in Alberta may contain chemicals/gases harmful to the environment precaution must be taken to ensure field technician safety, and proper disposal of purged water.	
Data Management and Digital Assets		
Will Data be Produced as a Result Of This Project? *	Type of Quantitative Data Variables	Frequency Of Collection
Yes	Other	Other

	Discrete water quality, continuous water levels	Annual water quality, hourly water levels (some real-time)
Data Collection Period:	Timeline For Upload Period:	
Start Date - End Date	Start Date - End Date	
01/04/2018-31/01/2019	01/04/2018-31/02/2019	
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.	WDS and WISKI and Excel	
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 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 Regional Groundwater Quality in the Athabasca Oil Sands Area of Alberta (Canada): Part 1- manuscript draft; Regional Groundwater Quality in the Athabasca Oil Sands Area of Alberta (Canada): Part 2- manuscript draft	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 checked="" 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.

Butterfield et al., History and Findings of Alberta's Athabasca Oil Sands Area groundwater Quality Monitoring Program, GeoEdmonton;		
Choose one	Choose one	Name of Meeting, Year, Location, Dates, Participant Groups and Number of Participants.
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	
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	Annual Progress Report
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
Regional Groundwater Quality in the Athabasca Oil Sands Area of Alberta (Canada): Part 1		
Q2 - Deliverable, Comments	Q2 - Deliverable, Comments	Q2 - Deliverable, Comments
Regional Groundwater Quality in the Athabasca Oil Sands Area of Alberta (Canada): Part 2		
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	
Q4 - Deliverable, Comments	Q4 - Deliverable, Comments	
	Annual Progress Report	
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 Location	
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)	Advisian, 2017, Oil Sands groundwater Monitoring Program- 2016/17- North and South Athabasca Oil Sands Areas
2)	
3)	
4)	
5)	
Conference Presentation	
Required Format: Presenter, Date, Location, Title, Platform or Poster, Conference Name	
1)	C. McClain, June 27, 2017, University of Calgary, Alberta Oil Sands Area Regional Groundwater Quality, Presentation, International Association of Hydrogeologists Characterizing Regional Groundwater Flow Systems Conference.
2)	C. McClain, May 5, 2017, Calgary, AB, Oil Sands Area Regional Groundwater Monitoring Activities 2016/2017 and 2017/2018, Presentation, COSIA Groundwater Workshop.
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
Alex Blanchette- GW Monitoring Technician	AEP- Wage Staff Contract Expires Mar 2018	Plan, prepare for and conduct fieldwork, invoicing, data upload and verification
Louise Rush- GW Monitoring Technician	AEP- Wage Staff Contract Expires Mar 2018	Plan, prepare for and conduct fieldwork, invoicing, data upload and verification
Dr. Cynthia McClain- Hydrogeologist	AEP	PI, SOP writing, contribute to peer-reviewed publications
New OSM GW Monitoring Technician (100% FTE)	AEP	Plan, prepare for and conduct fieldwork, invoicing, data upload and verification
New OSM Hydrogeologist (78% FTE)	AEP	Scheduling and planning, coordinate operational well data access, write well sampling plans, write annual progress report, begin streamlining data management

AEP ONLY: Additional Human Resources Required from EMSD

Name & Role	Branch - Section	Estimated time (% of annual FTE)
Dr. Cynthia McClain- Hydrogeologist	AEP	40
Alex Blanchette- GW Monitoring Technician	AEP	100
Louise Rush- GW Monitoring Technician	AEP	100
New OSM GW Monitoring Technician	AEP	100

Financial Details and Budget Request

Source of Funding Requested Year 1 - 2018/19		
	AEP ONLY: EMSD	OSM
Salaries and Benefits - AEP Chargeback		48000
Salaries and Benefits - New OSM Staff		360000
Operations and Maintenance		21159
Consumable materials and supplies		2375
Conferences and meetings travel		
Field work travel		31265
Project-related travel		
Engagement		
Reporting		
External Contracts - Organization/Vendor/Suppliers		29201
Overhead		
Grants		
Capital		8000
Total budget request for the year	0	500000
Total budget approved		

Source of Funding Requested Year 2 - 2019/20

	AEP ONLY: EMSD	OSM
Salaries and Benefits - AEP Chargeback		48000
Salaries and Benefits - New OSM Staff		580000
Operations and Maintenance		76350
Consumable materials and supplies		10590
Conferences and meetings travel		6000
Field work travel		86575
Project-related travel		0
Engagement		
Reporting		0
External Contracts - Organization/Vendor/Suppliers		212516
Overhead		
Grants		0
Capital		37500
Total budget request for the year	0	1057531
Total budget approved		

Source of Funding Requested Year 3 - 2020/21


	AEP ONLY: EMSD	OSM
Salaries and Benefits - AEP Chargeback		48000
Salaries and Benefits - New OSM Staff		580000
Operations and Maintenance		76350
Consumable materials and supplies		10590
Conferences and meetings travel		6000
Field work travel		86575
Project-related travel		0
Engagement		
Reporting		0
External Contracts - Organization/Vendor/Suppliers		212516
Overhead		0
Grants		37500
Capital		
Total budget request for the year	0	1057531
Total budget approved		

Source of Funding Requested Year 4 - 2021/22


	AEP ONLY: EMSD	OSM
Salaries and Benefits - AEP Chargeback		48000
Salaries and Benefits - New OSM Staff		580000
Operations and Maintenance		76350
Consumable materials and supplies		10590
Conferences and meetings travel		6000
Field work travel		86575
Project-related travel		0
Engagement		
Reporting		0
External Contracts - Organization/Vendor/Suppliers		212516
Overhead		

Grants		0
Capital		37500
Total budget request for the year	0	1057531
Total budget approved		
Budget Request for the Entire Project	0	3,672,593

Project Approval(s)

Proposal Submitted by		
Surname	Given Name	Organization
McClain	Cynthia	AEP
Signature	Date	
	9/4/2018	

Proposal for OSM Reviewed by

EMSD Executive Director	Signature	Date
John Orwin for Bill Donahue		9/4/2018

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

Region	Station Name and Description	Station Code	OSM Site name (If applicable)	Latitude	Longitude	On First Nation Reserve or Métis Settlement?	On an industry lease?	Notes
NAOS	26 Fort McMurray 13	ABG0233703	GWN-13-26	56.78974175	-111.78979800	No	No	Quality and Quantity
NAOS	1117 Fort MacKay AGS-02	ABG2093611	AGS-02-20	57.04441667	-111.93408900	No	Suncor Energy	Quality and Quantity
NAOS	1123 Fort MacKay AGS-03	ABG2093617	AGS-03-30	57.05891944	-111.86699200	No	Suncor Energy	Quality and Quantity
NAOS	59 Kearn Lake	ABG0233793	GWN-07-59	57.26260870	-111.27597000	No	No	Quality and Quantity
NAOS	44 Fort McMurray 08	ABG0233741	GWN-08-44	57.18263812	-111.12914700	No	No	Quality and Quantity
NAOS	48 Fort McMurray 08	ABG0233783	GWN-08-48	57.18263812	-111.12914700	No	No	Quality and Quantity
NAOS	27 Fort McMurray 13	ABG0233706	GWN-13-27	56.78974175	-111.78979800	No	No	Quantity
NAOS	28 Fort McMurray 13	ABG0233707	GWN-13-28	56.78974175	-111.78979800	No	No	Quantity
NAOS	30 Fort McMurray 13	ABG0233698	GWN-13-30	56.78974175	-111.78979800	No	No	Quantity
NAOS	31 Fort McMurray 13	ABG0233701	GWN-13-31	56.78974175	-111.78979800	No	No	Quantity
NAOS	1119 Fort MacKay AGS-02	ABG2093613	AGS-02-97	57.04441667	-111.93408900	No	Suncor Energy	Quantity
NAOS	1120 Fort MacKay AGS-02	ABG2093614	AGS-02-108	57.04441667	-111.93408900	No	Suncor Energy	Quantity
NAOS	1121 Fort MacKay AGS-03	ABG2093615	AGS-03-WT	57.05891944	-111.86699200	No	No	Quantity
NAOS	1122 Fort MacKay AGS-03	ABG2093616	AGS-03-17	57.05891944	-111.86699200	No	Suncor Energy	Quantity
NAOS	74 Fort McMurray 01	ABG0233982	GWN-01-74	57.32813992	-111.68923000	No	No	Quantity
NAOS	76 Fort McMurray 01	ABG0233990	GWN-01-76	57.32813992	-111.68923000	No	No	Quantity
NAOS	77 Fort McMurray 01	ABG0233986	GWN-01-77	57.32813992	-111.68923000	No	No	Quantity
NAOS	78 Fort McMurray 01	ABG0233999	GWN-01-78	57.32813992	-111.68923000	No	No	Quantity
NAOS	60 Muskeg Creek	ABG0233818	GWN-06-60	57.23730203	-111.45210300	No	No	Quantity
NAOS	61 Muskeg Creek	ABG0233835	GWN-06-61	57.23730203	-111.45210300	No	No	Quantity
NAOS	62 Muskeg Creek	ABG0233822	GWN-06-62	57.23730203	-111.45210300	No	No	Quantity
NAOS	57 Kearn Lake	ABG0233775	GWN-07-57	57.26260870	-111.27597000	No	No	Quantity
NAOS	58 Kearn Lake	ABG0233777	GWN-07-58	57.26260870	-111.27597000	No	No	Quantity
NAOS	43 Fort McMurray 08	ABG0233738	GWN-08-43	57.18263812	-111.12914700	No	No	Quantity
NAOS	45 Fort McMurray 08	ABG0233762	GWN-08-45	57.18263812	-111.12914700	No	No	Quantity
NAOS	46 Fort McMurray 08	ABG0233772	GWN-08-46	57.18263812	-111.12914700	No	No	Quantity
NAOS	47 Fort McMurray 08	ABG0233778	GWN-08-47	57.18263812	-111.12914700	No	No	Quantity
NAOS	49 Fort MacKay Home	ABG162173	Fort MacKay Home	57.174	-111.3868333	No	No	Quantity
NAOS	91 Fort McMurray 19	ABG234016	Fort McMurray 19	57.5193	-111.404	No	No	Quantity
SAOS	1126 Conklin	ABG1421365	Conklin 76-07-24	55.61510278	-111.08447800	No	No	Quality and Quantity
SAOS	1124 Conklin	ABG1421363	Conklin 76-07-67	55.61514722	-111.08447800	No	No	Quantity
SAOS	1125 Conklin	ABG1421364	Conklin 76-07-41	55.61511944	-111.08451100	No	No	Quantity
SAOS	1127 Conklin	ABG1421366	Conklin 76-07-6	55.61510278	-111.08452800	No	No	Quantity
SAOS	1154 Winefred Lake	ABG1270146	Winefred Lake 75-5-17	55.4530401	-110.707298	No	Unknown	Quality and Quantity
SAOS	1155 Winefred Lake	ABG1270145	Winefred Lake 75-5-79	55.4730068	-110.707318	No	Unknown	Quantity
SAOS	1156 Winefred Lake	ABG1270144	Winefred Lake 75-5-158	55.4729752	-110.707334	No	Unknown	Quantity
SAOS	1151 Wiaw Lake	ABG1270139	Wiaw Lake 74-9-76	55.451383	-111.329959	No	No	Quality and Quantity
SAOS	1153 Wiaw Lake	ABG1270142	Wiaw Lake 74-9-15	55.4514162	-111.329631	No	No	Quality and Quantity
SAOS	1150 Wiaw Lake	ABG1270143	Wiaw Lake 74-9-41	55.4513766	-111.329824	No	No	Quantity
SAOS	1152 Wiaw Lake	ABG1270141	Wiaw Lake 74-9-120	55.4513762	-111.32989	No	No	Quantity
SAOS	1142 Waddell Creek	ABG1421356	Waddell Creek 80-09-149	55.95972500	-111.31542800	No	Unknown	Quality and Quantity
SAOS	1143 Waddell Creek	ABG1421357	Waddell Creek 80-09-117	55.95972500	-111.31546100	No	Unknown	Quality and Quantity
SAOS	1144 Waddell Creek	ABG1421358	Waddell Creek 80-09-21	55.95972500	-111.31534700	No	Unknown	Quality and Quantity
SAOS	1145 Waddell Creek	ABG1421359	Waddell Creek 80-09-9	55.95973333	-111.31534700	No	Unknown	Quality and Quantity
SAOS	1133 Mariana Lakes	ABG1421367	Mariana Lakes 80-13-134	55.94905000	-112.02353100	No	No	Quality and Quantity
SAOS	1134 Mariana Lakes	ABG1421368	Mariana Lakes 80-13-112	55.94905833	-112.02335800	No	No	Quality and Quantity
SAOS	1135 Mariana Lakes	ABG1421369	Mariana Lakes 80-13-52	55.94903056	-112.02364200	No	No	Quality and Quantity
SAOS	1136 Mariana Lakes	ABG1421370	Mariana Lakes 80-13-7	55.94900278	-112.02365600	No	No	Quantity
SAOS	1128 House Crossing	ABG1421371	House Crossing 77-15-161	55.71445556	-112.18770800	No	No	Quality and Quantity
SAOS	1129 House Crossing	ABG1421372	House Crossing 77-15-126	55.71446389	-112.18762800	No	No	Quality and Quantity
SAOS	1130 House Crossing	ABG1421373	House Crossing 77-15-82	55.71434444	-112.18792800	No	No	Quality and Quantity
SAOS	1131 House Crossing	ABG1420140	House Crossing 77-15-8	55.71350278	-112.18781900	No	No	Quantity
SAOS	1132 House Crossing	ABG1270149	House Crossing 77-15-231	55.71353611	-112.18911900	No	No	Quantity
SAOS	1157 Anzac	ABG1501921	Anzac 86-07-113	56.4491837	-111.038074	No	Nexen	Quality and Quantity
SAOS	1158 Anzac	ABG1501928	Anzac 86-07-34	56.4491657	-111.03822	No	Nexen	Quantity
CLBR	1138 Plamondon	ABG1421374	N/A	54.91705000	-112.32547500	No	Canadian Natural Resources Ltd.	Quality and quantity
CLBR	1139 Plamondon	ABG1421375	N/A	54.91711111	-112.32552500	No	Canadian Natural Resources Ltd.	Quantity
CLBR	1140 Plamondon	ABG1421376	N/A	54.91715556	-112.32551100	No	Canadian Natural Resources Ltd.	Quantity
CLBR	1141 Plamondon	ABG1421377	N/A	54.91711944	-112.32547800	No	Canadian Natural Resources Ltd.	Quantity
CLBR	192 Marie Lake 82-1	ABG0216875	N/A	54.60617722	-110.25298500	No	No	Quality and quantity
CLBR	193 Marie Lake 82-2	ABG0216877	N/A	54.60620761	-110.25301700	No	No	Quality and quantity
CLBR	246 Truman 84-2	ABG0210941	N/A	54.46390003	-111.29259500	No	No	Quality and quantity
CLBR	247 Truman 84-3	ABG0210941	N/A	54.46237156	-111.29440100	No	No	Quantity
CLBR	248 Truman 84-4	ABG0210945	N/A	54.46400000	-111.29306000	No	No	Quantity
CLBR	945 Moose Lake 07-03	ABG1795185	N/A	54.27677411	-110.90846900	No	No	Quality and quantity
CLBR	947 Kehiwin Lake 07-07	ABG1795187	N/A	53.99153656	-110.88409600	No	No	Quality and quantity
CLBR	948 Manatokan Lake 07-08	ABG1420796	N/A	54.49363547	-110.92027400	No	No	Quality and quantity
CLBR	946 Cold Lake 07-05	ABG1795186	N/A	54.46073664	-110.125486	No	No	Quality and quantity
CLBR	949 Fort Kent 1708-S	ABG1795189	N/A	54.35509225	-110.65756500	No	No	Quality and quantity
CLBR	950 Fort Kent 1708-D	ABG1795188	N/A	54.35509039	-110.65746600	No	No	Quality and quantity
CLBR	186 Lessard 2091E	ABG0155400	N/A	54.48572458	-110.62548300	No	No	Quantity
CLBR	187 Iron River 2079E	ABG0219496	N/A	54.47281508	-110.98472800	No	No	Quantity
CLBR	188 Iron River 2078E	ABG0216494	N/A	54.47280100	-110.98460100	No	No	Quantity
CLBR	189 Esso TH-1	ABG0218055	N/A	54.57333333	-110.45900000	No	Imperial Oil	Quantity
CLBR	190 Rich Lake 2094E	ABG0211617	N/A	54.55965369	-111.58912000	No	No	Quantity
CLBR	191 Rich lake 2095E	ABG211616	N/A	54.55972694	-111.58906400	No	No	Quantity
CLBR	194 Bourque Lake 1772E	ABG0216865	N/A	54.64600000	-110.50883300	No	No	Quantity
CLBR	195 Bourque Lake 1947E	ABG0216866	N/A	54.64656753	-110.50970600	No	No	Quantity
CLBR	196 Bourque Lake 83-1	ABG0216867	N/A	54.64833333	-110.50950000	No	No	Quantity
CLBR	198 Sinclair Lake Bp-Triad	ABG0218055	N/A	54.73628756	-110.70980600	No	No	Quantity
CLBR	197 Sinclair Lake Bp-Triad	ABG0196535	N/A	54.73702800	-110.70538000	No	No	Quantity
CLBR	200 Wolf Lake Grazing	ABG0216825	N/A	54.57597611	-110.81110100	No	Land Owner / Crown Land Reserve	Quantity
CLBR	199 Wolf Lake Grazing	ABG0216822	N/A	54.57514608	-110.80910000	No	No	Quantity
CLBR	250 Marie Lake Esso Seismic 2361E	ABG0216987	N/A	54.62092325	-110.43149800	No	Imperial Oil	Quantity

CLBR	242 Cushing Lake 2406E	ABG0206706	N/A	54.06098333	-110.40851700	No	No	Quantity
CLBR	243 Cushing Lake 2411E	ABG0206710	N/A	54.06089353	-110.40846800	No	No	Quantity

Oil Sands Monitoring Program - Field Sampling Schedule
 Last updated: 05/04/2018
 Project Workplan Identifier Number: GW-11M-5.3-1819
 Project Lead and Contact Information: Cynthia McCain, cynthia.mccain@gov.ab.ca
 Completed by: Jackson Weston
 A confirmed field program schedule is necessary to better support our interactions with stakeholders including industry.
 This schedule will be provided to stakeholders. Please enter information at the best of your knowledge at this time. We
 will be updating it recognizing that changes are inevitable and a part of normal process. We will be supporting program
 leads with changes and updates. Parameters and indicators measured on particular dates will not be included in this
 schedule.

Region	Station Name and Description	Station Code	OMS Site name (if applicable)	Latitude	Longitude	On-foot Station Reserve or M605 Settlement?	On an industry lease?	Notes	Date of Sampling (please enter the days by station within the cell for each month)													
									2018						2019							
									April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar		
NAOS	26 Fort McMurray 13	AB02031703	GMN 13-26	56.78974175	-111.78978900	No	No	Quality and Quantity			1											
NAOS	1117 Fort Mackay AGS-02	AB04209811	AGS-02-20	57.04444667	-111.93408900	No	Sunior Energy	Quality and Quantity				1										
NAOS	1123 Fort Mackay AGS-03	AB04209817	AGS-03-30	57.05899344	-111.86699200	No	Sunior Energy	Quality and Quantity				1										
NAOS	59 Kent Lake	AB02031793	GMN-09-59	57.25268970	-111.27597000	No	No	Quality and Quantity				1										
NAOS	46 Fort McMurray 08	AB02031741	GMN-08-44	57.18326812	-111.12944700	No	No	Quality and Quantity				1										
NAOS	48 Fort McMurray 08	AB02031782	GMN-08-46	57.18326812	-111.12944700	No	No	Quality and Quantity				1	2									
NAOS	27 Fort McMurray 13	AB02031702	GMN-13-27	56.78974175	-111.78978900	No	No	Quantity			1											
NAOS	28 Fort McMurray 13	AB02031707	GMN-13-28	56.78974175	-111.78978900	No	No	Quantity			1											
NAOS	30 Fort McMurray 13	AB02031698	GMN-13-30	56.78974175	-111.78978900	No	No	Quantity			1											
NAOS	31 Fort McMurray 13	AB02031700	GMN-13-31	56.78974175	-111.78978900	No	No	Quantity			1											
NAOS	1119 Fort Mackay AGS-02	AB04209813	AGS-02-07	57.04444667	-111.93408900	No	Sunior Energy	Quantity				1										
NAOS	1120 Fort Mackay AGS-03	AB04209814	AGS-03-108	57.04444667	-111.93408900	No	Sunior Energy	Quantity				1										
NAOS	1121 Fort Mackay AGS-03	AB04209815	AGS-03-WT	57.05899344	-111.86699200	No	No	Quantity				1										
NAOS	1123 Fort Mackay AGS-03	AB04209816	AGS-03-17	57.05899344	-111.86699200	No	Sunior Energy	Quantity				1										
NAOS	74 Fort McMurray 01	AB02031682	GMN-01-74	57.32813992	-111.68921000	No	No	Quantity				1										
NAOS	76 Fort McMurray 01	AB02031690	GMN-01-76	57.32813992	-111.68921000	No	No	Quantity				1										
NAOS	77 Fort McMurray 01	AB02031686	GMN-01-77	57.32813992	-111.68921000	No	No	Quantity				1										
NAOS	78 Fort McMurray 01	AB02031692	GMN-01-78	57.32813992	-111.68921000	No	No	Quantity				1										
NAOS	80 Muskeg Creek	AB02031818	GMN-08-80	57.17370203	-111.45210300	No	No	Quantity				1										
NAOS	81 Muskeg Creek	AB02031813	GMN-08-81	57.17370203	-111.45210300	No	No	Quantity				1										
NAOS	83 Muskeg Creek	AB02031882	GMN-08-83	57.17370203	-111.45210300	No	No	Quantity				1										
NAOS	87 Mandel Lake	AB02031775	GMN-01-87	57.18268970	-111.25970000	No	No	Quantity				1										
NAOS	88 Kent Lake	AB02031777	GMN-01-88	57.18268970	-111.25970000	No	No	Quantity				1										
NAOS	43 Fort McMurray 08	AB02031738	GMN-08-43	57.18326812	-111.12944700	No	No	Quantity				1										
NAOS	45 Fort McMurray 08	AB02031739	GMN-08-45	57.18326812	-111.12944700	No	No	Quantity				1										
NAOS	46 Fort McMurray 08	AB02031772	GMN-08-46	57.18326812	-111.12944700	No	No	Quantity				1										
NAOS	47 Fort McMurray 08	AB02031776	GMN-08-47	57.18326812	-111.12944700	No	No	Quantity				1										
NAOS	49 Fort McMurray Home	AB01211713	Fort Mackay Home	57.1174	-111.368333	No	No	Quantity					1									
NAOS	91 Fort McMurray 19	AB02340216	Fort McMurray 19	57.5183	-111.404	No	No	Quantity					1									
SAOS	1128 Conklin	AB01421365	Conklin 76-07-28	55.61510728	-111.08478000	No	No	Quality and Quantity				1										
SAOS	1124 Conklin	AB01421363	Conklin 76-07-47	55.61514722	-111.08478000	No	No	Quantity				1										
SAOS	1125 Conklin	AB01421364	Conklin 76-07-41	55.61511944	-111.08471000	No	No	Quantity				1										
SAOS	1127 Conklin	AB01421366	Conklin 76-07-46	55.61510728	-111.08478000	No	No	Quantity				1										
SAOS	1154 Windfall Lake	AB01370146	Windfall Lake 75-5-17	55.43300000	-110.70728	No	Unknown	Quality and Quantity						1								
SAOS	1153 Windfall Lake	AB01370145	Windfall Lake 75-7-29	55.43300000	-110.707318	No	Unknown	Quantity						1								
SAOS	1156 Windfall Lake	AB01370144	Windfall Lake 75-5-158	55.43300000	-110.707318	No	Unknown	Quantity						1								
SAOS	1155 Wau Lake	AB01370139	Wau Lake 74-9-76	55.451183	-111.329599	No	No	Quality and Quantity				1										
SAOS	1153 Wau Lake	AB01370142	Wau Lake 74-9-15	55.451183	-111.329581	No	No	Quantity				1										
SAOS	1150 Wau Lake	AB01370143	Wau Lake 74-9-41	55.4511786	-111.329824	No	No	Quantity				1										
SAOS	1152 Wau Lake	AB01370141	Wau Lake 74-9-20	55.4511762	-111.32989	No	No	Quantity				1										
SAOS	1142 Waddell Creek	AB01421356	Waddell Creek 80-09-149	55.85977500	-111.51547000	No	Unknown	Quality and Quantity							1							
SAOS	1143 Waddell Creek	AB01421357	Waddell Creek 80-09-117	55.85977500	-111.51547000	No	Unknown	Quality and Quantity							1							
SAOS	1144 Waddell Creek	AB01421358	Waddell Creek 80-09-21	55.85977500	-111.51547000	No	Unknown	Quality and Quantity							1							
SAOS	1145 Waddell Creek	AB01421359	Waddell Creek 80-09-9	55.85977500	-111.51547000	No	Unknown	Quality and Quantity							1							
SAOS	1113 Mariana Lakes	AB01421367	Mariana Lakes 80-13-134	55.94900500	-112.02353100	No	No	Quality and Quantity						1								
SAOS	1114 Mariana Lakes	AB01421368	Mariana Lakes 80-13-112	55.94900500	-112.02353100	No	No	Quality and Quantity						1								
SAOS	1115 Mariana Lakes	AB01421369	Mariana Lakes 80-13-52	55.94900500	-112.02353100	No	No	Quality and Quantity						1								
SAOS	1116 Mariana Lakes	AB01421370	Mariana Lakes 80-13-7	55.94900500	-112.02353100	No	No	Quantity						1								
SAOS	1122 House Crossing	AB01421371	House Crossing 77-15-161	55.71445166	-112.18718000	No	No	Quality and Quantity							1							
SAOS	1129 House Crossing	AB01421372	House Crossing 77-15-129	55.71445166	-112.18718000	No	No	Quality and Quantity							1							
SAOS	1130 House Crossing	AB01421373	House Crossing 77-15-82	55.71445166	-112.18718000	No	No	Quality and Quantity							1							
SAOS	1131 House Crossing	AB01420140	House Crossing 77-15-8	55.71302278	-112.18718000	No	No	Quantity							1							
SAOS	1132 House Crossing	AB01370149	House Crossing 77-15-231	55.71351611	-112.18911900	No	No	Quantity							1							
SAOS	1157 Anzac	AB01501921	Anzac 86-07-113	56.4493187	-111.038078	No	Neuman	Quality and Quantity								1						
SAOS	1158 Anzac	AB01501928	Anzac 86-07-34	56.4491657	-111.03812	No	Neuman	Quantity								1						
CLBR	1138 Plamondon	AB01421374	N/A	54.91705000	-112.32547500	No	Canadian Natural Resources Ltd	Quality and quantity								1						
CLBR	1139 Plamondon	AB01421375	N/A	54.91711111	-112.32525100	No	Canadian Natural Resources Ltd	Quantity								1						
CLBR	1140 Plamondon	AB01421376	N/A	54.91715556	-112.32551100	No	Canadian Natural Resources Ltd	Quantity								1						
CLBR	1141 Plamondon	AB01421377	N/A	54.91719444	-112.32547800	No	Canadian Natural Resources Ltd	Quantity								1						
CLBR	191 Manx Lake 82-1	AB02016875	N/A	54.60617723	-110.32086500	No	No	Quality and quantity														
CLBR	193 Manx Lake 82-2	AB02016874	N/A	54.60620761	-110.24301700	No	No	Quality and quantity														
CLBR	246 Turnan 84-2	AB02010941	N/A	54.46390203	-111.29219500	No	No	Quality and quantity								1						
CLBR	247 Turnan 84-1	AB02010943	N/A	54.46217156	-111.29405100	No	No	Quantity								1						
CLBR	248 Turnan 84-4	AB02010945	N/A	54.46400000	-111.29306000	No	No	Quantity								1						
CLBR	840 Moose Lake 07-03	AB01370139	N/A	54.7167411	-110.80846000	No	No	Quality and quantity														
CLBR	197 Johnson Lake 07-07	AB01370187	N/A	55.79151866	-110.84676000	No	No	Quality and quantity														
CLBR	848 Manxman Lake 07-08	AB01420796	N/A	54.49381547	-110.93027400	No	No	Quality and quantity														
CLBR	845 Cold Lake 07-05	AB01370186	N/A	54.60718664	-110.121486	No	No	Quality and quantity														
CLBR	949 Fort Kent 1708-5	AB01370185	N/A	54.35500225	-110.65766500	No	No	Quality and quantity														
CLBR	950 Fort Kent 1708-D																					

Contract For: Reporting: 2 peer-reviewed journal articles
 Alberta Innovates / U of A
Contract With: SGS AXYS Analytical Services Ltd.
Contract Number: 18AEM816
Contract Began In: 2017/2018
Contract Valid Through: 2019/2020

Lab Analysis- PAHs
 Lab Analysis- Trace Elements
 Lab Analysis- Non-PAH Organics
 Lab Analysis- Isotopes
 Lab Analysis- Routines, Major Ions, Nutrients
 Innotech-Vegerville
 ALS
 Innotech-Victoria
 ALS
 18AEM829
 18AEM817
 18AEM818
 18AEM817
 2017/2018
 2017/2018
 2017/2018
 2017/2018
 2019/2020
 2019/2020
 2019/2020
 2019/2020

Salaries and Benefits	18000					
Operations and Maintenance			5046	755	680	2720
Consumable materials and supplies						
Conferences and meetings travel						
Field work travel						
Project-related travel	2000					
Engagement						
Reporting						
External Contracts - Organization/Vendor/Suppliers						
Overhead						
Grants						
Capital						
Total budget request for the year	20,000	0	5,046	755	680	2,720

29,201