# 2022-2023 OSM WORK PLAN APPLICATION

*This form will be used to assess the merits of the proposed work plan and its fit with the Oil Sands Monitoring (OSM) Program mandate and strategic priorities. Applicants must complete the form in its entirety. Applicants that fail to use this form and complete all sections in the timeframe will not be considered.*

| | |
|---|---|
| *OSM Work Plan Submission Deadline: The deadline for submission of proposed work plans is* ***October 5, 2021 at 4:30 PM Mountain Standard time.*** | ***October 5, 2021*** *4:30 PM MST* |
| ***Decision Notification*** | *Mid to Late January 2022* |

*The OSM Program is governed by the Freedom of Information and Protection of Privacy Act (FOIP) and may be required to disclose information received under this Application, or other information delivered to the OSM Program in relation to a Project, when an access request is made by anyone in the public. Applicants are encouraged to familiarize themselves with FOIP. All work plans are public documents.*

## WORK PLAN COMPLETION

*Please* ***Enable Macros*** *on the form when prompted.*

The applicant is required to provide information in sufficient detail to allow the evaluation team to assess the work plan. Please follow the requirements/instructions carefully while at the same time being concise in substantiating the project's merits. *The OSM Program is not responsible for the costs incurred by the applicant in the preparation and submission of any proposed work plan.*

When working on this form, please maintain Macros compatibility by always saving your draft and your final submission as a **Microsoft Word Macro-Enabled Document**, failure to do so will result in loss of form functionality**.** This form was created using Microsoft word 2016 on a PC and may not have functionality on other versions of Microsoft on PC or MACS.

All work plans under the OSM Program require either a government lead or a government coordinator. This will ensure that the financial tables (for Alberta Environment and Parks & Environment and Climate Change Canada) are completed accurately for work plan consideration. ***However,*** *if an* ***Indigenous community, environmental nongovernmental organization*** *or any other* ***external partner*** *is completing a work plan proposal, they would* ***only*** *complete the* ***grant or contract budget component*** *of the* ***Human Resources & Financials Section*** *for their project. The government coordinator within Alberta Environment & Parks would be responsible for completing the remaining components of the Human Resources and Financial Section of this Work Plan Application, as they are responsible for contract and grant facilitation of successful submissions. All other sections outside of* ***Human Resources & Financials Section*** *of this work plan proposal are to be completed in full by all applicants.*

*The OSM Program recognizes that majority of work planning submissions are a result of joint effort and monitoring expertise. Should the applicant wish to submit supplemental materials in addition to their application additional resources are available in the Work Planning Form and Distribution Package, accessible here:* **Work Planning Form and Distribution Package**

*Should you have any* ***questions*** *about completing this work planning form or uploading your final submission documents, please send all inquiries by email to:* **OSM.Info@gov.ab.ca**.

# Work Plan Submission

*Upon completion of this application, please submit the appropriately named work plan (**Microsoft Word Macro-Enabled Document**) and all supporting documents to the link provided below. Failure to follow the naming convention provided may result in oversight of your application.*

*Please upload (by drag and dropping) the **WORK PLAN SUBMISSION & ALL SUPPORTING DOCUMENTS** here:*

**WORK PLAN SUBMISSION LINK (CTRL+CLICK HERE)**

**Please use the following file naming convention when submitting your WORK PLAN:**

**202223_wkpln_WorkPlanTitle_ ProjectLeadLastNameFirstName**

**Example:**

*202223_wkpln_OilSandsResiduesinFishTissue_SmithJoe*

If applicable, **please use the following file naming convention when submitting your supplementary or supporting files.** Please number them according to the guidance and examples provided:

**202223_sup##_WorkPlanTitle_ ProjectLeadLastNameFirstName**

**Examples:**

*202223_sup01_OilSandsResiduesinFishTissue_SmithJoe*

*202223_sup02_OilSandsResiduesinFishTissue_SmithJoe*

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*202223_sup10_OilSandsResiduesinFishTissue_SmithJoe*

**Do not resave your work plan or documents under any other naming conventions.** *If you need to make revisions and resubmit before the work planning deadline of October 5, 2021, **DO NOT** rename your submission. When resubmitting, simply resubmit with the exact naming convention so that it replaces the original submission. **DO NOT** add any additional components such as versioning or dates to the file naming convention. Please direct any questions regarding the submission or naming of submissions to **OSM.Info@gov.ab.ca**.*

# Work Plan Application

| PROJECT INFORMATION | |
|---|---|
| **Project Title:** | OSM Surface Water Quality Monitoring |
| **Lead Applicant, Organization, or Community:** | environment Climate Change Canada and Alberta Environment and Parks |
| **Work Plan Identifier Number:** *If this is an on-going project please fill the identifier number for 20/21 fiscal by adjusting the last four digits:* ***Example:*** *D-1-2020 would become D-1-****2022*** | W-LTM-S-2022-23 |
| **Project Region(s):** | Oil Sands Region |
| **Project Start Year:** *First year funding under the OSM program was received for this project (if applicable)* | 2018 |
| **Project End Year:** *Last year funding under the OSM program is requested* ***Example: 2022*** | 2023 |
| **Total 2022/23 Project Budget**: *For the 2022/23 fiscal year* | $5,698,858.00 |
| **Requested OSM Program Funding:** *For the 2022/23 fiscal year* | $5,698858.00 |
| **Project Type:** | Longterm Monitoring |
| **Project Theme:** | Surface Water |
| **Anticipated Total Duration of Projects (Core and Focused Study (3 years))** | Year 5 |
| **Current Year** | **Focused Study:** Choose an item. |
| | **Core Monitoring:** Year 5 |

| CONTACT INFORMATION | |
|---|---|
| **Lead Applicant/ Principal Investigator:** Every work plan application requires one lead applicant. This lead is accountable for the entire work plan and all deliverables. | Nancy Glozier |
| **Job Title:** | Section Manager, Arctic Athabasca Watershed |
| **Organization:** | Environment and Climate Change Canada |
| **Address:** | 11 Innovation Blvd, Saskatoon SK S7N 3H5 |
| **Phone:** | 306-260-3298 |
| **Email:** | nancy.glozier@ec.gc.ca |

## PROJECT SUMMARY

*Should your application be successful, The OSM Program reserves the right to publish this work plan application.* Please check the box below to acknowledge you have read and understand:

☐ *I acknowledge and understand*

*In the space below please provide a summary (300 words max) of the proposed project that includes a brief overview of the project drivers and objectives, the proposed approach/methodology, project deliverables, and how the project will deliver to the OSM Program objectives. The summary should be written in plain language.*

The OSM Surface Water Quality Monitoring Program is an adaptive core program that operates on a five-year cycle. The initial water quality monitoring program design (in 2012) incorporated activities led and conducted by an independent contractor (RAMP), the Government of Alberta, and the Government of Canada. In 2015-16 (Year 4 of the initial five-year cycle), data collected during the first 3 years were evaluated and reported on in the Water Data Synthesis Reports. Informed by this effort, the surface water quality monitoring network design was revisited and revised; in 2017-18, the Surface Water Quality Monitoring Program began its second five-year cycle.

The OSM Surface Water Quality Monitoring Program is designed to:
1) define baseline water quality in advance of development operations within a watershed;
2) quantify the natural input of bitumen-derived parameters to regional surface waters;
3) understand the mass balance of water quality parameters within watersheds impacted by oil sands mining and upgrading operations;
4) meet the water quality information needs of other core monitoring activities (e.g., Benthos, Fish);
5) define water quality within reference watersheds for comparison with watersheds in which (5.1) development activities precede the onset of monitoring or (5.2) suitable reference sites cannot be found within the watershed.

Monitoring, evaluation and reporting activities conducted as part of this work plan are delivered jointly by Alberta Environment and Parks (AEP) and Environment and Climate Change Canada (ECCC). Currently, ECCC delivers the majority of monitoring activities that occur on the mainstem Peace, Athabasca, and Slave Rivers, and in smaller river systems that drain into the Peace-Athabasca Delta (PAD). AEP delivers the majority of monitoring activities that occur within tributaries to the Athabasca River, and within the Cold Lake Deposit.

Important evaluation and reporting activities this year will be focused on:

1. Begin the planning process and contribute adaptive monitoring objectives;
2. Supporting the OSM data management team within AEP;
3. Support status and trend and state of the environment reporting;
4. Providing data for modeling activities;
5. Provide data and collaborate with the OSM WQ Evaluation and Reporting Workplan.

## 1.0 Merits of the Work Plan

*All work plans under the OSM Program must serve the mandate of the program by determining (1) if changes in indicators are occurring in the oil sands region and (2) if the changes are caused by oil sands development activities and (3) the contribution in the context of cumulative effects. In the space below please provide information on the following:*

- *Describe the key drivers for the project identifying linkages to the EEM framework particularly as it relates to surveillance, confirmation and limits of change (as per OC approved Key Questions).*
- *Explain the knowledge gap as it relates to the EEM framework that is being addressed along with the context and scope of the problem as well as the Source – pathway – Receptor Conceptual Models .*
- *Describe how the project meets the mandate of the OSM Program*
- *Discuss results of previous monitoring/studies/development and* what has been achieved to date.

This workplan serves the mandate of the OSM program by addressing the three key OSM Program questions (above) with a focus on surface water quality. The geographic scope of this program covers all three oil sands deposits (the Cold Lake Deposit, the Athabasca Deposit, and the Peace River Deposit). Any watersheds impacted by either in-situ or open-pit (or both) bitumen extraction activities, and all surface water systems (i.e., both rivers and lakes), are similarly in scope for this program. Water quality parameters measured include those known to be enriched in bitumen (e.g., polycyclic aromatic compounds, vanadium, selenium, etc.), parameters known to influence the transport and cycling of key contaminants of concern (e.g., carbon), as well as parameters known to be released to aquatic ecosystems during periods of landscape disturbance or as tracers of altered watershed hydrology (e.g., nutrients, measures of dissolved and suspended solids, major ions, etc.). Water quality is measured and evaluated as concentrations (e.g., mg.L), loads (e.g., kg/year), and yields (e.g., kg/km2/year).

The Surface Water Quality Program revolves around answering a series of eight key questions (Cooke et al. 2018). These key questions are:

1. Is the waterbody a drinking water supply?
2. Does the McMurray Formation outcrop within the watershed?
3. Does oil sands development occur within the watershed?
4. Are areas within the watershed leased or are there plans for future development within the watershed?
5. Is monitoring within the watershed required to quantify regional mass balance for the Lower Athabasca River?
6. Is monitoring within the watershed required to meet the information needs of another long-term monitoring component?
7. Is the monitoring station forward looking (i.e., 5–10 years pre-development)?
8. Is monitoring required as a reference site or to establish baseline conditions within a watershed?

In many cases, water quality monitoring at a particular station can be used to answer more than one of these questions. For example, monitoring near the mouth of the Muskeg River occurs both downstream of development and supports regional hydrologic mass balance calculations. Importantly, sampling frequency is also tied to these key questions. For example, understanding the cumulative impacts of multiple mine operators (and distinguishing these from other non-oil sands stressors, e.g., pulp and paper mills, municipal effluent discharge, etc.) requires sampling frequently enough to accurately quantify episodic mass transport in response to high-magnitude events (e.g., during spring freshet). The importance of this approach has been highlighted in publications (Chambers et al. 2018; Kerr et al. 2018).

This work plan is ADAPTIVE in the sense that the key questions and objectives are revisited (and revised) on a five-year cycle. A five-year cycle in necessary to allow AEP and ECCC sufficient time to obtain (and retain) the necessary capital and human resources to deliver the program. Five years of data are also necessary to quantify the range of natural variability; watershed response can change depending upon ambient conditions. The work plan content is at the direction of the Surface Water Technical Advisory

Committee (TAC), with contributions and input from key core monitoring activities (e.g., Water Quantity Monitoring), and from communities through the Aquatic Ecosystem Health Community-Based Monitoring work plan.

## 2.0 Objectives of the Work Plan

List in point form the Objectives of the 2022/23 work plan below

1. Collect water quality samples at the stations listed in the monitoring schedule attachd to this work plan;
2. Conduct water quality sampling at a frequency sufficient to generate the data needed to answer the eight key surface water quality questions listed above;
3. Assist the OSM data management team within AEP in properly curating the data and in making the data publically available;
4. Assist in OSM data integration team (or other teams/organizations) in advancement of adaptive monitoring;
5. Support water quality data requirements for other long-term core and focused studies;
6. Provide support, technical and scientific expertise as need to the CBM work plan;
7. Continue evaluation and reporting activities.

## 3.0 Scope

**Evaluation of Scope Criteria (Information Box Only- No action required)**
Your workplan will be evaluated against the criteria below. A successful workplan would:

- be in scope of the OSM Program (e.g., regional boundaries, specific to oil sands development, within boundaries of the Oil Sands Environmental Monitoring Program Regulation)
- integrate western science with Indigenous Community-Based Monitoring
- addresses the EEM framework particularly as it relates to surveillance, confirmation and limits of change as per approved Key Questions.

have an experimental design that addresses the Pressure/Stressor, Pathway/Exposure, Response continuum

- produce data/knowledge aligned with OSM Program requirements and is working with Service Alberta
- uses Standard Operating Procedures/ Best Management Practices/ Standard Methods including for Indigenous Community-Based Monitoring

## 3.1 Sub Theme

*Please select from the dropdown menu below the theme(s) your monitoring work plan relates to:*

Surface Water

## 3.2 Core Monitoring or Focused study

*Please select from the dropdown menu below if the monitoring in the work plan is "core monitoring" and/or a "focused study". Core monitoring are long term monitoring programs that have been in operation for at least 3 years, have been previously designated by the OSM program as core, and will continue to operate into the future. Focused studies are short term projects 1-2 years that address a specific emerging issue. For the purposes of 2022/23 work planning all Community Based Monitoring Projects are Focused Studies.*

Core Monitoring

## 3.3 Sub Theme Key Questions

Please select from the dropdown menus below the sub-theme(s) your monitoring work plan relates to and address the Key Questions:

### 3.3.1 Surface Water Theme

#### 3.3.1.1. Sub Themes:

| |
|---|
| Quality |

#### 3.4.1.2 Surface Water Key Questions

Explain how your surface water monitoring program addresses the key questions below.

1. Are changes occurring in water quality, biological health (e.g., benthos, fish) and/or water quantity/flows, to what degree are changes attributable to oil sands activities, and what is the contribution in the context of cumulative effects?

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|---|
| Spatial and temporal changes in surface water quality as a result of oil sands activities have been reported in the surface mineable area and in the Cold Lake Region where in-situ extraction activities are the main method of extraction. Evidence includes the episodic acidification of river water (Alexander et al. 2017) as well as changes in both river (Kelly et al. 2009; Kelly et al. 2010; Schwalb et al. 2014; Alexander and Chambers 2016; Wasiuta et al. 2020) and lake (Kurek et al. 2013; Cooke et al. 2017) water chemistry. The spatial and temporal extent of reported change depends upon the parameter; not all water quality parameters have been evaluated. Some changes have been reported that may be a result of cumulative effects of multiple stressors along the Athabasca River (Glozier et al., 2018). |

2. Are changes in water quality and/or water quantity and/or biological health informing Indigenous key questions and concerns?

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|---|
| The current list of key questions that guide surface water quality monitoring are informed by previous discussions with communities. However, it is anticipated that communities may have new questions that are currently out of scope for the program. Moreover, communities not previously engaged in OSM (or its predecessor, JOSM) may not yet have had an opportunity to provide input into the specific key questions that currently guide surface water quality monitoring activities. Therefore, this year, as we begin preparing for the next five-year cycle of water quality monitoring, we will make a concerted effort to engage communities in defining the specific key question for surface water quality monitoring. This will be accomplished in collaboration with the Community Based Monitoring Workplan. |

3. Are data produced following OSM Program requirements and provided into the OSM Program data management system?

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|---|
| Data are produced following OSM Program requirements and are posted publically after QA/QC checks have been completed. Data are available on the Canada-Alberta Oil Sands data portal (https://www.canada.ca/en/environment-climate-change/services/oil-sands-monitoring.html) and the AEP OSM Data Portal (https://aws.kisters.net/OSM/applications/public.html?publicuser=Guest). Data posted to the OSM Data Portal are available in near real time. Requests for un-validated data are also routinely distributed. |

4. Do methodologies use relevant Standard Operating Procedures/ Best Management Practices/ Standard Methods?

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|---|
| Yes. Information on Standard Operating Procedures and Best Management Practices are available at the following link http://environmentalmonitoring.alberta.ca/resources/standards-and-protocols/ |

5. How does the monitoring identify integration amongst projects, themes or with communities?

Samping Locations that are CORE and INTEGRATED are highlighted in the Monitoring Schedule. Of the 52 sampling locations in rivers 46 are active stations for 2022-23, and 36 are integrated with at least one other OMS component (Benthos, Fish, Hyrdrology). Details are in the file attached to the work plan. The water quality core monitoring program in this work plan is integrated with the fish and benthos core programs, as described in Cooke et al., 2018 with Question 6 - Is monitoring within the watershed required to meet the information needs of another long-term monitoring component? Thus the current water quality monitoring has been adapted to integrate and establish a core set of reaches within the lower Athabasca River (LAR) and extended geographic area (EGA) where intense, long-term water quality monitoring could be used to inform and integrate with other programs. It also integrates with the air program as snow deposition of contaminants potentially impacts water quality. There is also an effort for the Enhanced Monitoring Program to link up with core water quality mainstem monitoring (M3/M7) in terms of endpoints and linking up sample collection weeks/SPMD exposures. Sites M3 and M7 were selected as part of the Enhanced study design.

6. 7.6. Where does the monitoring fit on the conceptual model within the EEM framework for the theme area and relative to the conceptual model for the OSM Program theme area? How will this work advance understanding transition towards of the conceptual model EEM framework?

Surface water quality monitoring is explicitly listed on the theme area conceptual model. It also provides information on stressors (e.g., PACs, heavy metals, nutrients, etc.) as well as hydrologic transport. Monitoring data are used to quantify the contribution of relevant pressures on stressor water concentrations, loads and yields, and as key environmental drivers of biotic receptors (e.g., benthic macroinvertebrates and fish). All of these conceptual model components also appear on the OSM Programmatic model. This work will continue to provide necessary data for linking stressors to responses and determine the relative impact of various pressures on surface water quality.

7. Is the work plan contributing to Programmatic State of Environment Reporting?

Yes, monitoring from previous iterations of this work plan are being used in the Programmatic State of Environment reporting. Project team members from this work plan contributed data, analyses, figures, and text to the 2021 SoE report, and will continue to do as required.

### 3.3.2 Groundwater Theme

#### 3.3.2.1 Sub Themes:

Choose an item.

#### 3.3.2.2 Groundwater Key Questions

Explain how your groundwater monitoring program addresses the key questions below.

1.Are changes occurring in groundwater quality and/or quantity, to what degree are changes attributable to oil sands activities, are changes affecting other ecosystems, and what is the contribution in the context of cumulative effects?

Click or tap here to enter text.

2. 2. Are changes in groundwater quality and/or quantity informing Indigenous key questions and concerns Indigenous concerns and health?

Click or tap here to enter text.

3. Are data produced following OSM Program requirements and provided into the OSM Program data management system?

Click or tap here to enter text.

4. Do methodologies use relevant Standard Operating Procedures/ Best Management Practices/ Standard Methods?

Click or tap here to enter text.

5. How does the monitoring identify integration amongst projects, themes or with communities?

Click or tap here to enter text.

6. Where does the monitoring fit within the EEM framework and relative to the theme area? How will this work advance transition towards the EEM framework?

Click or tap here to enter text.

7. Where does the monitoring fit on the conceptual model for the theme area and relative to the conceptual model for the OSM Program? How will this work advance understanding of the conceptual model?

Click or tap here to enter text.

8. Is the work plan contributing to Programmatic State of Environment Reporting?

Click or tap here to enter text.

### 3.3.3 Wetlands Theme

#### 3.3.3.1 Sub Themes:

Choose an item.

#### 3.3.3.2 Wetland - Key Questions

Explain how your wetland monitoring program addresses the key questions below.

1. Are changes occurring in wetlands due to contaminants and hydrological processes, to what degree are changes attributable to oil sands activities, and what is the contribution in the context of cumulative effects?

Click or tap here to enter text.

2. Are changes in wetlands informing Indigenous key questions and concerns?

Click or tap here to enter text.

3. Are data produced following OSM Program requirements and provided into the OSM Program data management system?

Click or tap here to enter text.

4. Do methodologies use relevant Standard Operating Procedures/ Best Management Practices/ Standard Methods?

Click or tap here to enter text.

5. How does the monitoring identify integration amongst projects, themes or with communities?

Click or tap here to enter text.

6. Where does the monitoring fit within the EEM framework and relative to the theme area? How will this work advance transition towards the EEM framework?

Click or tap here to enter text.

7. Where does the monitoring fit on the conceptual model for the theme area and relative to the conceptual model for the OSM Program? How will this work advance understanding of the conceptual model?

Click or tap here to enter text.

8. Is the work plan contributing to Programmatic State of Environment Reporting?

Click or tap here to enter text.

### 3.3.4 Air Theme

#### 3.3.4.1 Sub Themes:

Choose an item.

#### 3.3.4.2 Air & Deposition - Key Questions

Explain how your air & deposition monitoring program addresses the key questions below.

1. Are changes are occurring in air quality, to what degree are changes attributable to oil sands emissions, and what is the contribution in the context of cumulative effects?

Click or tap here to enter text.

2. Are changes informing Indigenous key questions and concerns?

Click or tap here to enter text.

3. Are data produced following OSM Program requirements and provided into the OSM Program data management system?

Click or tap here to enter text.

4. Do methodologies use relevant Standard Operating Procedures/ Best Management Practices/ Standard Methods?

Click or tap here to enter text.

5. How does the monitoring identify integration amongst projects, themes or with communities?

Click or tap here to enter text.

6. Where does the monitoring fit within the EEM framework and relative to the theme area? How will this work advance transition towards the EEM framework?

Click or tap here to enter text.

7. Where does the monitoring fit on the conceptual model for the theme area and relative to the conceptual model for the OSM Program? How will this work advance understanding of the conceptual model?

Click or tap here to enter text.

8. Is the work plan contributing to Programmatic State of Environment Reporting? (Answer Box)

Click or tap here to enter text.

### 3.3.5 Terrestrial Biology Theme

#### 3.3.5.1 Sub Themes:

Choose an item.

#### 3.3.5.2 Terrestrial Biology - Key Questions

Explain how your terrestrial biological monitoring program addresses the key questions below.

1. Are changes occurring in terrestrial ecosystems due to contaminants and landscape alteration, to what degree are changes attributable to oil sands activities, and what is the contribution in the context of cumulative effects?

Click or tap here to enter text.

2. Are changes in terrestrial ecosystems informing Indigenous key questions and concerns?

Click or tap here to enter text.

3. Are data produced following OSM Program requirements and provided into the OSM Program data management system?

Click or tap here to enter text.

4. Do methodologies use relevant Standard Operating Procedures/ Best Management Practices/ Standard Methods?

Click or tap here to enter text.

5. How does the monitoring identify integration amongst projects, themes or with communities?

Click or tap here to enter text.

6. Where does the monitoring fit within the EEM framework and relative to the theme area? How will this work advance transition towards the EEM framework?

Click or tap here to enter text.

7. Where does the monitoring fit on the conceptual model for the theme area and relative to the conceptual model for the OSM Program? How will this work advance understanding of the conceptual model?

Click or tap here to enter text.

8. Is the work plan contributing to Programmatic State of Environment Reporting?

Click or tap here to enter text.

### 3.3.6 Cross-Cutting Across Theme Areas

#### 3.3.6.1 Sub Themes:

Choose an item.

If "Other" was selected from the drop down list above please describe below:

Click or tap here to enter text.

#### 3.3.6.2 Cross-Cutting - Key Questions

Explain how your cross-cutting monitoring program addresses the key questions below.

1. Is data produced following OSM Program requirements and provided into the OSM Program data management system?

Click or tap here to enter text.

2. Do methodologies use relevant Standard Operating Procedures/ Best Management Practices/ Standard Methods?

Click or tap here to enter text.

3. How does the monitoring identify integration amongst projects, themes or with communities?

Click or tap here to enter text.

4. Where does the monitoring fit within the EEM framework and relative to the theme area? How will this work advance transition towards the EEM framework?

Click or tap here to enter text.

5. Where does the monitoring fit on the conceptual model for the theme area and relative to the conceptual model for the OSM Program? How will this work advance understanding of the conceptual model?

Click or tap here to enter text.

6. Is the work plan contributing to Programmatic State of Environment Reporting?

Click or tap here to enter text.

## 4.0 Mitigation

**Evaluation of Mitigation Criteria (Information Box Only- No action required)**
Your workplan will be evaluated against the criteria below. A successful workplan would potentially inform:

- efficacy of an existing regulation or policy
- an EPEA approval condition
- a regional framework (i.e., LARP)
- an emerging issue

Explain how your monitoring program informs management, policy and regulatory compliance. As relevant give consideration for the EEM framework and the approved Key Questions.

Efficacy of an existing regulation or policy
The Surface Water Quality Program generates the information required by AEP to fulfill the 2015 Bilateral Agreement between Alberta and NWT. Specifically, the site on the Slave River at Fort Fitzgerald (M11A) is used for assessment related to Transboundary Objectives, while 10 other sites are identified in the agreement as key for long term regional and basin level monitoring to inform transboundary conditions. An additional 33 locations are listed as sites of interest.

An EPEA approval condition
The Surface Water Quality Program:
- generates the information required to assess the potential acidification of surface waters due to the emission and deposition of acidifying agents;
- contains a description of each of the monitoring sites that is sufficient to be used by the Alberta Energy Regulator to deem compliance with individual EPEA approval conditions;
- contains a description of quality assurance and quality control program that is sufficient to be used by the Alberta Energy Regulator to deem compliance with individual EPEA approval conditions;
- contains a list of water quality parameters measured by the program that is sufficient to be used by the Alberta Energy Regulator to deem compliance with individual EPEA approval conditions;
- generates the monitoring data necessary to assess the status and trends of the measured water quality parameters;
- generates the water quality data required to conduct chemical mass balance for individual watersheds impacted by oil sands extraction and processing activities (note this activity is also dependent upon the Water Quantity Monitoring Program) that is sufficient to be used by the Alberta Energy Regulator to deem compliance with individual EPEA approval conditions.

A regional Framework (i.e., LARP 2012)
Data collected as part of the surface water quality monitoring program is used as part of AEP's reporting requirements and management response under LARP. Specifically, this program will generate the data needed to:
- monitor at surface water quality stations M3 and M7 stations to support future expansion of an amended Surface Water Quality Management Framework (SWQualMF); and
- monitor PAHs in the water column at surface water quality stations M3, M7 and M9 to support future expansion of amended SWQualMF.
Other sites linked to LARP that are monitored as part of this work plan include: M0, M2, M9A as well as several sites on the Muskeg River.

## 5.0 Indigenous Issues

**Evaluation of Indigenous Issues Criteria (Information Box Only- No action required)**
Your workplan will be evaluated against the criteria below. A successful workplan would potentially:

- Investigate Indigenous communities key questions and concerns
- Includes culturally relevant receptor(s) and indicator(s)
- Include or be driven by Indigenous communities (participatory or collaborative)
- Develop capacity in Indigenous communities
- Include a Council Resolution or Letter of Support from one or more Indigenous communities
- Describe how ethics protocols and best practices regarding involvement of Indigenous peoples will be adhered to
- Provide information on how Indigenous Knowledge will be collected, interpreted, validated, and used in a way that meets community Indigenous Knowledge protocols

Explain how your monitoring activities are inclusive and respond to Indigenous key questions and concerns and inform the ability to understand impacts on concerns and inform Section 35 Rights

This work plan monitors a wide range of contaminants (e.g., PACs, trace metals) that are of concern to communities. There are potential impacts of contaminants on wildlife health (e.g., fish) and human health through consumption of country foods. Surface water quality monitoring data are also used to assess ecological changes to wetlands and to understand the interaction between surface and ground water resources, which are relevant to communities. Participatory community involvement is being discussed and will be facilitated through the Athabasca University Facilitation Centre.

Project team members will participate in an All TAC meeting with ICBMAC and the Athabasca University Facilitation Centre, and support a consistent approach and implementation of engagement and/or integration of Indigenous community based monitoring, where appropriate.

Does this project include an Integrated Community Based Monitoring Component?

No

## 6.0 Measuring Change

**Evaluation of Measuring Change Criteria (Information Box Only- No action required)**
Your workplan will be evaluated against the criteria below. A successful workplan would potentially:

- assess changes in environmental conditions compared to baseline (e.g., validation of EIA predictions)
- report uncertainty in estimates and monitoring is of sufficient power to detect change due to oil sands development on reasonable temporal or spatial scales
- include indicators along the spectrum of response (e.g., individual, population, community)
- focus on areas of highest risk (where change is detected, where change is greater than expected, where development is expected to expand (collection of baseline)
- measure change along a stressor gradient or a stressor/reference comparison

Explain how your monitoring identifies environmental changes and can be assessed against a baseline condition. As relevant give consideration for the EEM framework and the approved Key Questions.

This workplan will generate the surface water quality data necessary to assess environmental condition relative to baseline. These data will include the concentrations of a suite of chemical parameters in key surface water quality systems impacted by both open-pit and in-situ bitumen extraction and processing activities. The TAC will formalize definitions for "baseline" and "limits of change" to assess the extent to which change has occurred. Temporal changes have been assessed for a broad suite of parameters within both the Athabasca River (e.g., Glozier et al. 2018) and tributaries to the Athabasca River (e.g., Chambers et al. 2018; Alexander and Chambers 2016). Spatial patterns have also been assessed and compared with snowpack chemistry in rivers (e.g., Wasiuta et al. 2019) and with modeled emissions and deposition patterns in lakes (Emmerton et al. 2018).

## 7.0 Accounting for Scale

**Evaluation of Accounting for Scale Criteria (Information Box Only- No action required)**
Your workplan will be evaluated against the criteria below. A successful workplan would potentially be:

- appropriate to the key question and indicator of interest
- relevant to sub-regional and regional questions
- relevant to organism, population and/or community levels of biological organization
- where modelled results are validated with monitored data
- where monitoring informs on environmental processes that occur at a regional scale. e.g. Characterizing individual sources to gain a regional estimate of acid deposition and understand signal from individual contributing sources.

Explain how your monitoring tracks regional and sub-regional state of the environment, including cumulative effects. As relevant give consideration for the EEM framework and the approved Key Questions.

This work plan collects the data necessary to inform evaluation and reporting activities focused on answering the key questions. The program design spans multiple spatial scales, from small watersheds like the Muskeg River watershed, up to collecting the information to understand mass balance loading to the Peace-Athabasca River and the Slave River Delta. The data collected have (and will continue to be) used by modelling efforts to predict watershed response to future development (e.g., Eum et al. 2016), and data collected by this program are relied upon by other components of aquatic ecosystem health (i.e., benthic macroinvertebrates and fish) to assess environmental condition.

## 8.0 Transparency

**Evaluation of Transparency Criteria (Information Box Only- No action required)**
Your workplan will be evaluated against the criteria below. A successful workplan would potentially include:

- a plan for dissemination of monitoring data, including appropriate timing, format, and aligns with OSM program data management plan
- demonstrated transparency in past performance
- identified an annual progress report as a deliverable
- reporting of monitoring results occurs at timing and format that is appropriate for recipient audience.

Explain how your monitoring generates data and reporting that is accessible, credible and useful. As relevant give consideration for the EEM framework and the approved Key Questions.

Monitoring data are made publically available via the AEP OSM Data Portal: (https://aws.kisters.net/OSM/applications/public.html?publicuser=Guest) and via the Environment and Climate Change Canada Oil Sands Data Portal (https://www.canada.ca/en/environment-climate-change/services/oil-sands-monitoring.html).

## 9.0 Efficiency

**Evaluation of Efficiency Criteria (Information Box Only- No action required)**
Your workplan will be evaluated against the criteria below. A successful workplan would include:

- appropriately addressed a risk-informed allocation of resources
- identified the role and justification for each staff member on the proposed work plan
- identified in-kind and leveraged resources (e.g., resources and approaches are appropriately shared with other OSM projects where possible)
- established partnerships (value-added) and demonstrated examples of coordinated efficiencies (e.g., field, analytical)
- identified co-location of monitoring effort
- demonstrated monitoring activities and information collected are not duplicative
- considered sampling/measurement/methods compatibility to other data sources (e.g., AER)

Explain how your monitoring is integrated with other OSM projects and incorporates community-based participation and/or engagement in proposed monitoring activities. As relevant give consideration for the EEM framework and the approved Key Questions.

The allocation of resources in this work plan is focused on surface water quality monitoring where information is required to answer one of the driving questions for the program. Specifically, the majority of staff resources are allocated to field work, including sample submission to the appropriate analytical laboratory and assisting the OSM data management team in the curation and provision of these data. Most surface water quality stations are sampled monthly; however, answering some of the questions requires more frequent sample collection. For example, determining if open-pit mining changes the concentrations, loads, and yields of key water quality parameters within rivers requires sampling frequently enough to quantify parameter transport during high-magnitude, low-frequency events (e.g., during freshet and after large rainfall events) (Chambers et al. 2018; Kerr et al. 2018).

Specific roles are provided in Section 15. There are coordinated efficiencies between AEP and ECCC, such as joint sampling trips and coordinating sampling shipping and laboratory analyses. Most of the surface water quality sampling sites are co-located with sites that are also key monitoring sites for other components of aquatic ecosystem health (e.g., benthic macroinvertebrates and fish). Based on previous workshops and reports there is little-to-no duplicative surface water quality monitoring.

## 10.0 Work Plan Approach/Methods

**10.1** List the Key Project Phases and Provide Bullets for Each Major Task under Each Project Phase *

1. Data Collection
1.1. Preparation for field work (ordering supplies, procuring helicopter support, etc)
1.2. Collection of samples and field measurements and observations recorded
1.3. Shipping and submission to designated laboratory

2. Laboratory analysis
2.1. Acknowledgement of sample arrival from labs
2.2. Analysis of sample for requested parameters
2.3. Laboratory specific quality assurance and quality control
2.4. Delivery of results as both electronic data file and laboratory report (PDF)

3. Data management
3.1. Field and lab data received and uploaded to database
3.2. Review of results including matching with sample metadata and verification and validation of data
3.3. Preparation of data release files in machine readable format (e.g., CSV)
3.4. Review and approval for data release
3.5.5 Public data release

**10.2** Describe how changes in environmental Condition will be assessed *

Changes will be assessed to measured parameters on an ongoing basis. Anomalous changes or unusual trends will be flagged and subject to further investigation. Ongoing data evaluation and reporting products preparation will be achieved through partnerships with academic institutions by providing funding that supports graduate students and postdoctoral fellows focused on answering questions of relevance to this program.

**10.3** Are There Benchmarks Being Used to Assess Changes in Environmental Condition? If So, Please Describe, If Not, State "NONE" *****

Yes, there are both federal Government of Canada (CCME) and provincial Government of Alberta surface water quality guidelines. In addition, triggers and limits have been formally established for 38 indicators under the Surface Water Quality Management Framework for the Lower Athabasca Regional Plan

(e.g., objectives, tiers, triggers, limits, reference conditions, thresholds, etc.)

**10.4** Provide a Brief Description of the Western Science or Community-Based Monitoring Indigenous Community-Based Monitoring Methods by Project Phase *

Sampling methodologies will follow the ECCC and AEP field Standard Operating Procedures (SOPs), as appropriate. Field SOPs include guidelines for obtaining and recording field measurements and observations. Field SOPs are available online. Laboratory methods will be provided by contracted labs and reviewed by AEP and ECCC staff to ensure they are appropriate for the parameters measured.

**10.5** List the Key Indicators Measured, If Not Applicable, State N/A *****

Major ions (e.g., calcium) nutrients (e.g., phosphorus) physical parameters (e.g., total suspended solids), total and dissolved metals (e.g., lead), total and dissolved mercury and methylmercury, total and dissolved polycyclic aromatic hydrocarbons (e.g., phenanthrene), water isotopes, carbon, and naphthenic acids (key sites to be determined and dependent upon the availability of suitable reference material.

## 11.0 Knowledge Translation

***In the space below, please provide the following:***

- *Describe the plan for knowledge transfer and distribution of learnings from the project. This could include workshops, publications, best practice documentation, marketing plan, etc.*
- *Demonstrate that the knowledge transfer plan is appropriate for the intended end-users.*

Over the past several years, standard operating procedures have been developed to sample water quality and the collection of supporting variables as appropriate such as water and sediment chemistry. These documents can be used by other monitoring groups to ensure consistency in sampling regimes and data used to assess change in water quality in the Oil Sands Areas of Alberta. We have published integration documents from the first 3 years of JOSM that include chapters on water quality Chambers et al., 2018; Glozier et al., 2018). A number of peer reviewed scientific documents have been published as well including a recent manuscript on the synthesis of results (Culp et. al., 2020).

## 12.0 External Partners

List by project or project phase each component that will be delivered by an external party (including analytical laboratories) and name the party. Describe and name the associate work plan/grant/contract for these services. * state none if not required

Partners for core monitoring components include:

A number of contracts will be established with external analytical laboratories according to AEP and ECCC procurement processes. This process is ongoing currently and it is anticipated to be complete by the end of this fiscal year.
Contracts with helicopter providers will be established according to AEP and ECCC procurement processes.

*To ensure complete work plan proposal submission, all grants and contracts listed in this section should also be captured in Grants & Contracts.

## 13.0 Data Sharing and Data Management

For 2022-23 the following approach will be taken by the OSM Program related to data sharing.

For all work plans of a **western science** nature funded under the OSM Program, data sharing is a condition of funding and must align with the principle of **"Open by Default"**. In this case, all data is to be shared with the OSM Program as directed by the OSM Program Data Management work plan.

For all work plans involving **Indigenous Knowledge** as defined below and funded under the OSM Program, data sharing is a condition of funding and the Indigenous Knowledge components of the work plan must align with the principle of **"Protected by Default".** In this case, all data as defined as Indigenous Knowledge, are to be retained by the Indigenous community to which the Indigenous Knowledge is held.

*Indigenous Knowledge is defined as:*

> "The knowledge held by First Nations, Inuit and Métis peoples, the Aboriginal peoples of Canada. Traditional knowledge is specific to place, usually transmitted orally, and rooted in the experience of multiple generations. It is determined by an Aboriginal community's land, environment, region, culture and language. Traditional knowledge is usually described by Aboriginal peoples as holistic, involving body, mind, feelings and spirit. Knowledge may be expressed in symbols, arts, ceremonial and everyday practices, narratives and, especially, in relationships. The word tradition is not necessarily synonymous with old. Traditional knowledge is held collectively by all members of a community, although some members may have particular responsibility for its transmission. It includes preserved knowledge created by, and received from, past generations and innovations and new knowledge transmitted to subsequent generations. In international or scholarly discourse, the terms traditional knowledge and Indigenous knowledge are sometimes used interchangeably."

*This definition was taken from the Canadian Government's Tri-council Policy Statement for Ethical Research involving Humans (Chapter 9, pg. 113) and is an interim definition specific to the Oil Sands Monitoring Program.*

## Data Sharing and Data Management Continued

**13.1** Has there, or will there be, a Data Sharing Agreement established through this Project? *

YES

**13.2** Type of Quantitative Data Variables:

Both

**13.3** Frequency of Collection:

Other

**13.4** Estimated Data Collection Start Date:

2022-04-04

**13.5** Estimated Data Collection End Date:

2023-03-31

**13.6** Estimated Timeline For Upload Start Date:

2023-05-01

**13.7** Estimated Timeline For Upload End Date:

2024-03-31

**13.8** Will the data Include traditional knowledge as defined by and provided by an Indigenous representative, Community or Organization?

NO

### TABLE 13.9 Please describe below the Location of Data and Data Type:

***Add a Data Source by clicking on the table and then clicking on the blue "+" symbol on the bottom right side of table***

| Name of Dataset | Location of Dataset (E.g.: Path, Website, Database, etc.) | Data File Formats (E.g.: csv, txt, API, accdb, xlsx, etc.) | Security Classification |
|---|---|---|---|
| *AEP Water Quality Data* | AEP Data Portal | Various including CSV | Open by Default |
| *Mainstem and EGA Water Quality Data* | ECCC OS Portal | Various including CSV | Open by Default |

## 14.0 2022/23 Deliverables

***Add an additional deliverable by clicking on the table and then clicking on the blue "+" symbol on the bottom right side of table.***

| Type of Deliverable | Delivery Date | Description |
|---|---|---|
| OSM Program Annual Progress Report (required) | Q4 | Quaterly and annual reporting as required |
| Condition of Environment Report | Q4 | Glozier – As needed and in the SOER work plan, work with ECCC and AEP team members to provide data, advice and interpretation for 2023 SOER updates |
| Technical Report | Q4 | Glozier – Provide final technical report on updated long term trend analyses |
| Technical Report | Q4 | Glozier – Updated ECCC Water Quality Standard Operating Procedures Document V2 |
| Peer-reviewed Journal Publication | Q3 | Levesque & Glozier – Submission and Publication of SPMD dissolved PACs in Lower Athabasca River |
| Technical Report | Q3 | Pippy & Steeves – Provide final technical report on Baseline Conditions in the EGA |
| Key Engagement/Participation Meeting | Q4 | Levesque – As needed and determined in the CBM work plans be available for engagement and training opportunites with community |
| Technical Report | Q4 | Glozier and Su – provide updated results and recomencdation on ECCC WQ QA/QC program |
| Other (Describe in Description Section) | Q4 | ECCC & AEP – provide data from surface water quality data from lakes and rivers sampled in 2022-2023 to OSM data systems. |
| Other (Describe in Description Section) | Q4 | AEP – Update documentation of sampling protocols and methods in OSM surface WQ monitoring |

## 15.0 Project Team & Partners

**In the space below please provide information on the following:**

- *Describe key members of the project team, including roles, responsibilities and expertise relevant to the proposed project.*
- *Describe the competency of this team to complete the project.*
- *Identify any personnel or expertise gaps for successful completion of the project relative to the OSM Program mandate and discuss how these gaps will be addressed.*
- *Describe the project management approach and the management structure.*

Surface Water Quality (ECCC; InKind & VNR)
Project Lead (Work plan PI): Nancy Glozier (Arctic-Athabasca Section Manager) – Mainstem (M2-M9) and EGA water quality study lead
Kerry Pippy (Senior Aquatic Scientist) – EGA water quality study co-lead
Lucie Levesque (Senior Aquatic Scientist) & Julie Roy (Aquatic Scientist) – Lead SPMD data processing, data analysis, interpretation and reporting for Mainstem
Minzhen Su (Data Scientist) – Database management and distribution
Primary Field Technical Staff: Jim Syrgiannis (Senior Field Technician), Erica Keet (Aquatic Technician), Jennifer Maines (Aquatic Technician), Leah Dirk (Aquatic Technician), Brittany Armstrong (Aquatic Technician), John Coughlin (Aquatic Technician).
Vijay Tumber (Senior Aquatic Data Technician) – WQ data tracking and QA for mainstem
Students – two students, one in Saskatoon, one in Yellowknife. There is also support from other WQMS staff from various offices to assist in fieldwork on occasion.
In addition a term Physical Scientist will be hired for 12 months to work on water quality reporting products identified in the deliverables.

Surface Water Quality (AEP)
Project Lead: Dan Farr – Tributary Water Quality study lead
Technical Staff: 5.5 AEP Monitoring Technical staff.

# 16.0 Project Human Resources & Financing

## Section 16.1 Human Resource Estimates

Building off of the competencies listed in the previous section, please complete the table below. Add additional rows as necessary. This table must include **ALL staff involved** in the project, their role and the % of that staff's time allocated to this work plan. The AEP calculated amount is based on an estimate of $120,000/year for FTEs. This number cannot be changed. The OSM program recognizes that this is an estimate.

### Table 16.1.1 AEP

***Add an additional AEP Staff member by clicking on the table and then clicking on the blue "+" symbol on the bottom right side of table. The total FTE (Full Time Equivalent) is Auto Summed (in Table 16.2.1) and converted to a dollar amount.***

| Name (Last, First) | Role | % Time Allocated to Project |
|---|---|---|
| *Surface Water Quality Technologist* | Monitoring and data systems | 100% |
| *Surface Water Quality Technologist* | Monitoring and data systems | 100% |
| *Surface Water Quality Technologist* | Monitoring and data systems | 100% |
| *Surface Water Quality Technologist* | Monitoring and data systems | 100% |
| *Surface Water Quality Technologist* | Monitoring and data systems | 100% |
| *Surface Water Quality Technologist* | Monitoring and data systems | 50% |

### Table 16.1.2 ECCC

***Add an additional ECCC Staff member by clicking on the table and then clicking on the blue "+" symbol on the bottom right side of table. The total FTE (Full Time Equivalent) is Auto Summed in Table 16.2.2***

| Name (Last, First) | Role | % Time Allocated to Project |
|---|---|---|
| *Glozier, Nancy* | In Kind – PI ECCC WQ | 40% |

| | | |
|---|---|---|
| *Pippy, Kerry* | In Kind – Co-Lead EGA WQ | 60% |
| *Levesque, Lucie* | In Kind – Lead SPMD design & analysis | 15% |
| *Roy, Julie* | In Kind – SPMD Data analysis | 40% |
| *Syrgiannis, Jim* | In Kind – Lead Field Technician | 70% |
| *Keet, Erica* | VNR – Primary Field Technician MS | 70% |
| *Maines, Jennifer* | VNR – Primary Field Technician MS | 75% |
| *Dirk, Leah* | VNR – Primary SPMD/Field Technician MS | 80% |
| *Armstrong, Brittany* | VNR – Primary Field Technician EGA | 90% |
| *Coughlin, John* | In Kind – Data management, QAQC and support field technician EGA | 75% |
| *Tumber, Vijay* | In Kind – Data tracking and QAQC MS | 60% |
| *NLET Lab Technician* | VNR – Laboratory Analysis | 100% |
| *NLET Lab Technician* | VNR – Laboratory Analysis | 100% |
| *NLET Lab Technician* | VNR – Laboratory Analysis | 100% |
| *NLET Lab Technician* | VNR – Laboratory Analysis | 50% |

| | | |
|---|---|---|
| **Click or tap here to enter text.** | Click or tap here to enter text. | 0% |

The tables below are the financial tables for Alberta Environment & Parks (AEP) and Environment & Climate Change Canada. All work plans under the OSM Program require either a government lead or a government coordinator.

## Section 16.2 Financing

The OSM Program recognizes that many of these submissions are a result of joint effort and monitoring initiatives. A detailed "PROJECT FINANCE BREAKDOWN" must be provided using the Project Finance Breakdown Template provided, accessible here (ctrl + click the link below). Please note that completion of this Project Finance Breakdown Template is mandatory and must be submitted along with each workplan.

**PROJECT FINANCE BREAKDOWN TEMPLATE (CTRL+CLICK HERE)**

### Table 16.2.1 Funding Requested BY ALBERTA ENVIRONMENT & PARKS

| Organization – Alberta Environment & Parks ONLY | Total % time allocated to project for AEP staff | Total Funding Requested from OSM |
|---|---|---|
| **Salaries and Benefits** *(Calculated from Table 16.1.1 above)* | **550.00%** | **$660,000.00** |
| **Operations and Maintenance** | | |
| Consumable materials and supplies | | $40,000.00 |
| Conferences and meetings travel | | $1,000.00 |
| Project-related travel | | $201,400.00 |
| Engagement | | $500.00 |
| Reporting | | $1,000.00 |
| Overhead | | $36,585.00 |
| **Total All Grants** *(Calculated from Table 16.4 below)* | | **$0.00** |
| **Total All Contracts** *(Calculated from Table 16.5 below)* | | **$2,364,600.00** |
| **Sub- TOTAL** *(Calculated)* | | **$3,305,085.00** |
| Capital* | | $0.00 |
| **AEP TOTAL** *(Calculated)* | | **$3,305,085.00** |

* The Government of Alberta Financial Policies (*Policy # A600*) requires that all **capital asset** purchases comply with governmental and departmental legislation, policies, procedures, directives and guidelines. **Capital assets** (*Financial Policy # A100*, Government of Alberta, January 2014) are tangible assets that: have economic life greater than one year; are acquired, constructed, or developed for use on a continuing basis; are not held for sale in ordinary course of operations; are recorded and tracked centrally; have a cost greater than $5,000.

Some **examples of capital asset equipment include:** laboratory equipment, appliances, boats, motors, field equipment, ATV's/snowmobiles, stationary equipment (pier/sign/weather), fire/safety equipment, pumps/tanks, heavy equipment, irrigation systems, furniture, trailers, vehicles, etc. (*Financial Policy # A100*, Government of Alberta, January 2014).

### Table 16.2.2 Funding Requested BY ENVIRONMENT & CLIMATE CHANGE CANADA

| Organization – Environment & Climate Change Canada ONLY | Total % time allocated to project for ECCC staff | Total Funding Requested from OSM |
|---|---|---|
| **Salaries and Benefits FTE** *(Please manually provide the number in the space below)* | | |
| Salaries and Benefits | | $942,176.00 |
| **Operations and Maintenance** | | |
| Consumable materials and supplies | | $1,088,622.00 |
| Conferences and meetings travel | | $6,000.00 |
| Project-related travel | | $219,000.00 |
| Engagement | | $10,000.00 |
| Reporting | | $10,000.00 |
| Overhead | | $138,835.00 |
| **ECCC TOTAL** *(Calculated)* | | **$2,414,633.00** |

* ECCC cannot request capital under the OSM program. Any capital requirements to support long-term monitoring under the OSM program should be procured by Alberta and captured in that budget table.

## Table 16.3

### Complete ONE table per Grant recipient.

***Add a Recipient by clicking on the table and then clicking on the blue "+" symbol on the bottom right side of table. The total of all Grants is Auto Summed in Table 16.2.1***

| GRANT RECIPIENT - ONLY: Name | Click or tap here to enter text. |
|---|---|
| GRANT RECIPIENT - ONLY: Organization | Click or tap here to enter text. |
| **Category** | **Total Funding Requested from OSM** |
| Salaries and Benefits | $0.00 |
| **Operations and Maintenance** | |
| Consumable materials and supplies | $0.00 |
| Conferences and meetings travel | $0.00 |
| Project-related travel | $0.00 |
| Engagement | $0.00 |
| Reporting | $0.00 |
| Overhead | $0.00 |
| GRANT TOTAL *(Calculated)* | **$0.00** |

## Table 16.4

### Complete ONE table per Contract recipient.

***Add a Recipient by clicking on the table and then clicking on the blue "+" symbol on the bottom right side of table. This section is only to be completed should the applicant intend to contract components or stages of the project out to external organizations. The total of all Contracts is Auto Summed in Table 16.2.1***

| | |
|---|---|
| CONTRACT RECIPIENT - ONLY: Name | 18AEM818 Laboratory analysis of water quality parameters |
| CONTRACT RECIPIENT - ONLY: Organization | InnoTech Victoria |
| **Category** | **Total Funding Requested from OSM** |
| Salaries and Benefits | $0.00 |
| **Operations and Maintenance** | |
| Consumable materials and supplies | $32,880.00 |
| Conferences and meetings travel | $0.00 |
| Project-related travel | $0.00 |
| Engagement | $0.00 |
| Reporting | $0.00 |
| Overhead | $0.00 |
| CONTRACT TOTAL *(Calculated)* | **$32,880.00** |
| CONTRACT RECIPIENT - ONLY: Name | 22RSD850 – Laboratory analysis of water - Mercury |
| CONTRACT RECIPIENT - ONLY: Organization | Biogeochemical Analytical Service Laboratory University of Alberta |
| **Category** | **Total Funding Requested from OSM** |
| Salaries and Benefits | $0.00 |
| **Operations and Maintenance** | |
| Consumable materials and supplies | $518,195.00 |
| Conferences and meetings travel | $0.00 |
| Project-related travel | 0 |
| Engagement | 0 |
| Reporting | 0 |
| Overhead | 0 |
| CONTRACT TOTAL *(Calculated)* | **$518,195.00** |
| CONTRACT RECIPIENT - ONLY: Name | 22RSD851 – Laboratory analysis of water quality – routines, nutrients and organics |
| CONTRACT RECIPIENT - ONLY: Organization | Bureau Veritas |
| **Category** | **Total Funding Requested from OSM** |
| Salaries and Benefits | $0.00 |
| **Operations and Maintenance** | |
| Consumable materials and supplies | $141,000.00 |
| Conferences and meetings travel | 0 |
| Project-related travel | 0 |

| | |
|---|---|
| Engagement | 0 |
| Reporting | 0 |
| Overhead | 0 |
| CONTRACT TOTAL *(Calculated)* | **$141,000.00** |
| CONTRACT RECIPIENT - ONLY: Name | 22RSD852 Laboratory analysis of water – Trace elements, rare earth elements, napthenic acids and chlorophyll A |
| CONTRACT RECIPIENT - ONLY: Organization | InnoTech Alberta |
| **Category** | **Total Funding Requested from OSM** |
| Salaries and Benefits | $0.00 |
| **Operations and Maintenance** | |
| Consumable materials and supplies | $189,000.00 |
| Conferences and meetings travel | 0 |
| Project-related travel | 0 |
| Engagement | 0 |
| Reporting | 0 |
| Overhead | 0 |
| CONTRACT TOTAL *(Calculated)* | **$189,000.00** |
| CONTRACT RECIPIENT - ONLY: Name | 22RSD853 Laboratoy analysis of water – Polycyclic aromatic compounds |
| CONTRACT RECIPIENT - ONLY: Organization | SGS-AXYS |
| **Category** | **Total Funding Requested from OSM** |
| Salaries and Benefits | $0.00 |
| **Operations and Maintenance** | |
| Consumable materials and supplies | $596,525.00 |
| Conferences and meetings travel | 0 |
| Project-related travel | 0 |
| Engagement | 0 |
| Reporting | 0 |
| Overhead | 0 |
| CONTRACT TOTAL *(Calculated)* | **$596,525.00** |
| CONTRACT RECIPIENT - ONLY: Name | NEW – Helicopter transport |
| CONTRACT RECIPIENT - ONLY: Organization | Various |
| **Category** | **Total Funding Requested from OSM** |
| Salaries and Benefits | $0.00 |
| **Operations and Maintenance** | |
| Consumable materials and supplies | $630,000.00 |
| Conferences and meetings travel | 0 |
| Project-related travel | 0 |
| Engagement | 0 |
| Reporting | 0 |
| Overhead | 0 |
| CONTRACT TOTAL | **$630,000.00** |

| | |
|---|---|
| *(Calculated)* | |
| CONTRACT RECIPIENT - ONLY: Name | NEW – Helicopter with floats – acid lakes |
| CONTRACT RECIPIENT - ONLY: Organization | Various |
| **Category** | **Total Funding Requested from OSM** |
| Salaries and Benefits | $0.00 |
| **Operations and Maintenance** | |
| Consumable materials and supplies | $15,000.00 |
| Conferences and meetings travel | 0 |
| Project-related travel | 0 |
| Engagement | 0 |
| Reporting | 0 |
| Overhead | 0 |
| CONTRACT TOTAL *(Calculated)* | **$15,000.00** |
| CONTRACT RECIPIENT - ONLY: Name | NEW – Float plane |
| CONTRACT RECIPIENT - ONLY: Organization | Various |
| **Category** | **Total Funding Requested from OSM** |
| Salaries and Benefits | $0.00 |
| **Operations and Maintenance** | |
| Consumable materials and supplies | $62,000.00 |
| Conferences and meetings travel | $0.00 |
| Project-related travel | 0 |
| Engagement | 0 |
| Reporting | 0 |
| Overhead | 0 |
| CONTRACT TOTAL *(Calculated)* | **$62,000.00** |
| CONTRACT RECIPIENT - ONLY: Name | NEW – Freezer Storage |
| CONTRACT RECIPIENT - ONLY: Organization | Versacold |
| **Category** | **Total Funding Requested from OSM** |
| Salaries and Benefits | 0 |
| **Operations and Maintenance** | |
| Consumable materials and supplies | $35,000.00 |
| Conferences and meetings travel | 0 |
| Project-related travel | 0 |
| Engagement | 0 |
| Reporting | 0 |
| Overhead | 0 |
| CONTRACT TOTAL *(Calculated)* | **$35,000.00** |
| CONTRACT RECIPIENT - ONLY: Name | 22TDRRSD866 Laboratory analysis of SPMD film – Polycyclic aromatic hydrocarbons |
| CONTRACT RECIPIENT - ONLY: Organization | SGS-AXYS |
| **Category** | **Total Funding Requested from OSM** |

| | |
|---|---|
| Salaries and Benefits | $0.00 |
| **Operations and Maintenance** | |
| Consumable materials and supplies | $75,000.00 |
| Conferences and meetings travel | 0 |
| Project-related travel | 0 |
| Engagement | 0 |
| Reporting | 0 |
| Overhead | 0 |
| CONTRACT TOTAL *(Calculated)* | **$75,000.00** |
| CONTRACT RECIPIENT - ONLY: Name | Geochemical Laboratory Analysis |
| CONTRACT RECIPIENT - ONLY: Organization | TBC |
| **Category** | **Total Funding Requested from OSM** |
| Salaries and Benefits | $0.00 |
| **Operations and Maintenance** | |
| Consumable materials and supplies | $70,000.00 |
| Conferences and meetings travel | $0.00 |
| Project-related travel | 0 |
| Engagement | 0 |
| Reporting | 0 |
| Overhead | 0 |
| CONTRACT TOTAL *(Calculated)* | **$70,000.00** |

## Table 16.5 GRAND TOTAL Project Funding Requested from OSM Program

*The table below is auto calculated, please do not try to manually manipulate these contents.*

| Category | Total Funding Requested from OSM |
|---|---|
| **Salaries and Benefits**<br>***Sums totals for salaries and benefits from AEP and ECCC ONLY*** | $1,602,176.00 |
| **Operations and Maintenance** | |
| **Consumable materials and supplies**<br>*Sums totals for AEP and ECCC ONLY* | $1,128,622.00 |
| **Conferences and meetings travel**<br>*Sums totals for AEP and ECCC ONLY* | $7,000.00 |
| **Project-related travel**<br>*Sums totals for AEP and ECCC ONLY* | $420,400.00 |
| **Engagement**<br>*Sums totals for AEP and ECCC ONLY* | $10,500.00 |
| **Reporting**<br>*Sums totals for AEP and ECCC ONLY* | $11,000.00 |
| **Overhead**<br>*Sums totals for AEP and ECCC ONLY* | $175,420.00 |
| **Total All Grants (from table 16.2.1 above)**<br>*Sums totals for AEP Tables ONLY* | $0.00 |
| **Total All Contracts (from table 16.2.1 above)**<br>*Sums totals for AEP Tables ONLY* | $2,364,600.00 |
| **Sub- TOTAL** | $5,719,718.00 |
| **Capital***<br>*Sums total for AEP* | $0.00 |
| **GRAND PROJECT TOTAL** | $5,719,718.00 |

Some **examples of capital asset equipment include:** laboratory equipment, appliances, boats, motors, field equipment, ATV's/snowmobiles, stationary equipment (pier/sign/weather), fire/safety equipment, pumps/tanks, heavy equipment, irrigation systems, furniture, trailers, vehicles, etc. (*Financial Policy # A100*, Government of Alberta, January 2014).

## 17.0 FINANCIAL MANAGEMENT

***The OSM Program reserves the right to reallocate project funding during the current fiscal year on the basis of project performance and financial overspend or underspend.***

☐ *Please check this box to acknowledge you have read and understand*

**In the space below please describe the following:**

- *Discuss how potential cost overruns and cost underruns will be managed.*
- *If this is a continuing project from last year, identify if this project was overspent or underspent in the previous year and explain why.*
- *Describe what risks and/or barriers may affect this project.*

Glozier and a representative from AEP will perform quarterly reviews of budgets and deliverables. Deviations from the proposed workplan will be reported to the OSM program office, and management actions may be taken to facilitate meeting of budget and deliverable expectations.

Foreseeable risks to the program include (i) delays in hiring, grants, and contracts and (ii) integration with CBM projects. AEP and ECCC currently have limited capacity and expertise for community engagement and capacity building.

# 18.0 Alternate Sources of Project Financing – In-Kind Contributions

## Table 18.1 In-kind Contributions

***Add an In Kind Contribution by clicking on the table and then clicking on the blue "+" symbol on the bottom right side of table.***

| DESCRIPTION | SOURCE | EQUIVALENT AMOUNT ($CAD) |
|---|---|---|
| Science Expertise | ECCC | $232,470.00 |
| Technical Expertise | ECCC | $213,098.00 |
| | **TOTAL** | **$445,568.00** |

## 19.0 Consent & Declaration of Completion

**Lead Applicant Name**

Nancy Glozier

**Title/Organization**

Section manager, Arctic Athabasca Watershed/Environment and Climate Change Canada

**Signature**

Click or tap here to enter text.

**Date**

2021-10-05

**Government Lead / Government Coordinator Name** (if different from lead applicant)

Click or tap here to enter text.

**Title/Organization**

Environment and Climate Change Canada

**Signature**

Click or tap here to enter text.

**Date**

Click or tap to enter a date.

# PROGRAM OFFICE USE ONLY

***Governance Review & Decision Process***

*this phase follows submission and triggers the Governance Review*

***TAC Review (Date):***

Click or tap to enter a date.

***ICBMAC Review (Date):***

Click or tap to enter a date.

***SIKIC Review (Date):***

*Click or tap to enter a date.*

***OC Review (Date):***

*Click or tap to enter a date.*

***Final Recommendations:***

***Decision Pool:***

*Choose an item.*

***Notes:***

*Click or tap here to enter text.*

***Post Decision: Submission Work Plan Revisions Follow-up Process***

*This phase will only be implemented if the final recommendation requires revisions and follow-up from governance*

**ICBMAC Review (Date):**

Click or tap to enter a date.

**SIKIC Review (Date):**

Click or tap to enter a date.

**OC Review (Date):**

Click or tap to enter a date.

**Comments:**

**Decision Pool:**

Choose an item.

**Notes & Additional Actions for Successful Work Plan Implementation:**

Click or tap here to enter text.