2023-2024 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 31, 2022 at 4:30 PM Mountain Standard time.** Late submissions will not be accepted.*	**October 31, 2022** *4:30 PM MST*
Decision Notification	*Mid to Late March 2023*

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.*

Privacy: *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.*

Technical Requirements: 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.

Government Lead/Coordinator: 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.

Supplemental Materials: *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 Package accessible here:* **2023-24 Work Planning Package (Ctrl+CLICK)**

*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 <u>appropriately named</u> 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:

> **202324_wkpln_WorkPlanTitle_ ProjectLeadLastNameFirstName**

Example:

202324_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:

> **202324_sup##_WorkPlanTitle_ ProjectLeadLastNameFirstName**

Examples:

202324_sup01_OilSandsResiduesinFishTissue_SmithJoe
202324_sup02_OilSandsResiduesinFishTissue_SmithJoe

.

.

.

202324_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 31, 2022, **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:	Fort McKay Metis Nation (FMMN) Community-Based Environmental Monitoring Program (CBEMP): Data Tool
Lead Applicant, Organization, or Community:	Adi Isaac Adiele, Fort McKay Metis Nation
Work Plan Identifier Number: *If this is an on-going project please fill the identifier number for 22/23 fiscal by adjusting the last four digits: Example: D-1-2223 would become D-1-2324*	fmmn-01-23
Project Region(s):	Oil Sands Region
Project Start Year: *First year funding under the OSM program was received for this project (if applicable)*	2023/24
Project End Year: *Last year funding under the OSM program is requested Example: 2024*	2029
Total 2023/24 Project Budget: *For the 2023/24 fiscal year*	$295,550.00
Requested OSM Program Funding: *For the 2023/24 fiscal year*	$295,550.00
Project Type:	Community Based Monitoring
Project Theme:	Data Mgmt, Analytics and Prediction
Anticipated Total Duration of Projects (Core and Focused Study (3 years))	3
Current Year	**Focused Study:** Choose an item.
	Core Monitoring: Choose an item.

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.	Adi Isaac Adiele
Job Title:	Manager, Environment & Land Use Sustainability
Organization:	Fort McKay Metis Nation (FMMN)
Address:	Box 119, Riverstone PO, Fort McMurray, Alberta, T9K 2Y4
Phone:	403-397-1015
Email:	aadiele@fortmckaymetis.com

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 proposed Community-based Environmental Monitoring Program (CBEMP) Data Tool is an initiative to establish one platform to store, manage, analyze, and interpret CBEMP data collected by the Fort MacKay Métis Nation (FMMN). CBEMP by FMMN complements the OSMP by directly addressing the FMMN's concerns about cumulative effects in their traditional territory.

FMMN is proposing to develop a Data Tool that can hold and manage various geospatially referenced CBEMP monitoring data related to the quality of berries, groundwater, surface water (in rivers, creeks, wetlands), air (odour), soil, as well as wilidfe and vegetation populations and habitat data. The tool will also be designed to manage other types of data related to cultural indicators that could be identified in the future. The Data Tool will be designed to meet the OSM data management standards and guidance.

The Data Tool will allow FMMN to store, query, map, visualize, statistically analyse and interpret CBEMP data to support risk-based decision making by FMMN. The Data Tool will also provide comparisons to applicable federal and provincial environmental quality and health guidelines. The Data Tool will include statistical capabilities, such as assessing temporal data trends and spatial variations. The Tool visualizations will be accessible and in a format that members can understand. Data Tool will provide the community an overview of the current state of the environment and previous state of the environment around the Fort McKay Metis traditional territory, which can be used to support State of the Environment reporting within the OSMP, at the discretion of FMMN.

The resulting Data Tool will serve as a crucial step in the management and analysis of FMMN's CBEMP data. The Data Tool also allows for modifications and additions in the future with as a result of its open source components.

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 Adaptive Monitoring 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 Adaptive Monitoring 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 or areas of limited knowledge is the work being designed to answer with consideration for the TAC specific Scope of Work Document (attached) and the Key Questions (attached)?*
- *Discuss results of previous monitoring/studies/development and what has been achieved to date. Please identify potential linkages to relevant sections of the State of Environment Report.*

FMMN's CBEMP data are valuable and require systematic approach to data management and analysis that is controlled by the community. The main drivers for the proposed Data Tool are to allow FMMN to use data collected under the CBEMP to systematically evaluate cumulative effects in its traditional territory and allow for the efficient and transparent analysis of the western science data collected under the CBEMP. With the Data Tool, CBEMP data collected by FMMN are consistently and reproducibly managed and quality controlled, and data are available to FMMN for evaluation and analysis in a timely manner. The Data Tool will allow the CBEMP scientists to communicate and display the analytical findings in a simple and intuitive way to the FMMN community and various stakeholders. The Data Tool will allow for efficient grouping and filtering of the data. Data will be logically arranged and equipped with adequate labels (e.g., popups, information boxes) to best inform the users and make the usage of the Data Tool intuitive and self-explanatory.

The Data Tool will be designed to manage and monitor privileged access to the data and data analysis to ensure that the community and their consultants have the appropriate level of access to the data they need. The proposed open source-based Data Tool design components allow flexibility for any future modifications of the tool.

2.0 Objectives of the Work Plan

List in point form the Objectives of the 2023/24 work plan below

A Data Tool will be developed to provide the following high-level data management and analysis benefits: reproducibility, scalability, ease of use, flexibility, processing speed, and security.

Objectives of the FMMN CBEMP Data Tool project are as follows:
- Develop a list of desired data visualizations with FMMN data users to understand key drivers for the Data Tool design (2023/24)
- Compile existing FMMN CBEMP data, including berry chemistry, groundwater quality, surface water quality, wetland water quality, air quality (odor), soil quality, and wildlife monitoring (2023/24)
- Develop an integrated database and data visualization tool (i.e., Data Tool), which allows for inclusion of past CBEMP data, upload of future CBEMP data by FMMN, and data visualization and analysis (2023/24)
- Present a Data Tool demo version to FMMN for storage and visualization of chemistry data (2023/24)
- Continue the customization of the Data Tool with additional data inputs (e.g., wildlife) (2024/25)
- Manage and host Data Tool for 5 years (2025-2029)

3.0 Scope

<div style="border: 1px solid; background-color: #e2efda; padding: 10px;">

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)
- consider the TAC-specific Scope of Work document and the key questions
- integrate western science with Indigenous Community-Based Monitoring)
- address the Adaptive Monitoring 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

</div>

3.1 Sub Theme

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

Cross Cutting

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 2023/24 work planning all Community Based Monitoring Projects are Focused Studies.

Focused Study (includes Community-Based 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:

Choose an item.

3.4.1.2 Surface Water Key Questions

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

1. Has baseline been established? Have thresholds or limits of change been identified?

Click or tap here to enter text.

2. Are changes occurring in water quality, biological health (e.g., benthos, fish) and/or water quantity/flows relative to baseline? If yes, is there evidence that the observed change is attributable to oil sands development? (Describe source-pathway-receptor and/or conceptual models and what is the contribution in the context of cumulative effects?

Click or tap here to enter text.

3. Are there unanticipated results in the data? If yes, is there need for investigation of cause studies?

Click or tap here to enter text.

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

Click or tap here to enter text.

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

Click or tap here to enter text.

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

Click or tap here to enter text.

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

Click or tap here to enter text.

8. With consideration for adaptive monitoring, where does the proposed monitoring fit on the conceptual model for the theme area relative to the conceptual model for the OSM Program?

Click or tap here to enter text.

9. How will this work advance understanding transition towards adaptive monitoring?

Click or tap here to enter text.

10. Is the work plan contributing to Programmatic State of Environment Reporting? If yes, please identify potential linkages to relevant sections of the State of Environment Report.

Click or tap here to enter text.

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. Has baseline been established? Have thresholds or limits of change been identified?

Click or tap here to enter text.

2. Are changes occurring in groundwater quality and/or quantity relative to baseline? If yes, is there evidence that the observed change is attributable to oil sands development? *(Describe source-pathway-receptor and/or conceptual models)* and what is the contribution in the context of cumulative effects?

Click or tap here to enter text.

3. Are there unanticipated results in the data? If yes, is there need for investigation of cause studies?

Click or tap here to enter text.

4. 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.

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

Click or tap here to enter text.

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

Click or tap here to enter text.

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

Click or tap here to enter text.

8. With consideration for adaptive monitoring, where does the proposed monitoring fit on the conceptual model for the theme area relative to the conceptual model for the OSM Program?

Click or tap here to enter text.

9. How will this work advance understanding transition towards adaptive monitoring?

Click or tap here to enter text.

10. Is the work plan contributing to Programmatic State of Environment Reporting? If yes, please identify potential linkages to relevant sections of the State of Environment Report.

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 Wetlands - Key Questions

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

1. Has baseline been established? Have thresholds or limits of change been identified?

Click or tap here to enter text.

2. Are changes occurring in wetlands due to contaminants and hydrological processes? If yes, is there evidence that the observed change is attributable to oil sands development? (Describe source-pathway-receptor and/or conceptual models) and what is the contribution in the context of cumulative effects?

Click or tap here to enter text.

3. Are there unanticipated results in the data? If yes, is there need for investigation of cause studies?

Click or tap here to enter text.

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

Click or tap here to enter text.

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

Click or tap here to enter text.

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

Click or tap here to enter text.

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

Click or tap here to enter text.

8. With consideration for adaptive monitoring, where does the proposed monitoring fit on the conceptual model for the theme area relative to the conceptual model for the OSM Program?

Click or tap here to enter text.

9. How will this work advance understanding transition towards adaptive monitoring?

Click or tap here to enter text.

10. Is the work plan contributing to Programmatic State of Environment Reporting? If yes, please identify potential linkages to relevant sections of the State of Environment Report.

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. Has baseline been established? Have thresholds or limits of change been identified?

Click or tap here to enter text.

2. Are changes occurring in air quality? If yes, is there evidence that the observed change is attributable to oil sands development? (Describe source-pathway-receptor and/or conceptual models) and what is the contribution in the context of cumulative effects?

Click or tap here to enter text.

3. Are there unanticipated results in the data? If yes, is there need for investigation of cause studies

Click or tap here to enter text.

4. Are changes in air quality informing Indigenous key questions and concerns?

Click or tap here to enter text.

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

Click or tap here to enter text.

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

Click or tap here to enter text.

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

Click or tap here to enter text.

8. With consideration for adaptive monitoring, where does the proposed monitoring fit on the conceptual model for the theme area relative to the conceptual model for the OSM Program?

Click or tap here to enter text.

9. How will this work advance understanding transition towards adaptive monitoring?

Click or tap here to enter text.

10. Is the work plan contributing to Programmatic State of Environment Reporting? If yes, please identify potential linkages to relevant sections of the State of Environment Report.

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. Has baseline been established? Have thresholds or limits of change been identified?

Click or tap here to enter text.

2. Are changes occurring in terrestrial ecosystems due to contaminants and landscape alteration? If yes, is there evidence that the observed change is attributable to oil sands development? (Describe source-pathway-receptor and/or conceptual models) and what is the contribution in the context of cumulative effects?

Click or tap here to enter text.

3. Are there unanticipated results in the data? If yes, is there need for investigation of cause studies?

Click or tap here to enter text.

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

Click or tap here to enter text.

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

Click or tap here to enter text.

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

Click or tap here to enter text.

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

Click or tap here to enter text.

8. With consideration for adaptive monitoring, where does the proposed monitoring fit on the conceptual model for the theme area relative to the conceptual model for the OSM Program?

Click or tap here to enter text.

9. How will this work advance understanding transition towards adaptive monitoring?

Click or tap here to enter text.

10. Is the work plan contributing to Programmatic State of Environment Reporting? If yes, please identify potential linkages to relevant sections of the State of Environment Report.

Click or tap here to enter text.

3.3.6   Cross-Cutting Across Theme Areas

3.3.6.1 Sub Themes:

Other: (Describe in space below)

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

Data Management AND Integrated Analytics & Cumulative Effects

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?

Yes, FMMN CBEMP conforms with OSM Program requirements. CBEMP data are protected by default and released at the discretion of FMMN because datasets include Indigenous Knowledge.

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

Yes, OSM Standard Operating Procedures/Best Management Practices/Standard Methods for data management, integrated analytics, and cumulative effects will be reviewed and incorporated in the proposed FMMN CBEMP Data Tool.

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

Yes, the proposed Data Tool allows for the consistent management of all types of CBEMP data collected by FMMN, allowing for integration of data across OSM themes. The learnings from the Data Tool development may be shared with other communities, allowing for development of similar tools across the region.

4. With consideration for adaptive monitoring, where does the proposed monitoring fit on the conceptual model for the theme area relative to the conceptual model for the OSM Program?

The proposed Data Tool provides a platform to systematically and transparently analyze CBEMP data and address FMMN community concerns over cumulative effects in their traditional territory.

5. How will this work advance understanding transition towards adaptive monitoring?

The proposed Data Tool integrates data from several theme areas.

6. Is the work plan contributing to Programmatic State of Environment Reporting? If yes, please identify potential linkages to relevant sections of the State of Environment Report.

In addition to benefits to the FMMN for CBEMP data access, the Data Tool will allow FMMN to contribute Indigenous Knowledge and CBEMP data to the State of the Environment reporting.

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 consider adaptive monitoring and the approved Key Questions in your response.

The CBEMP satisfies the FMMN community's needs (i.e., an emerging issues) and fits the philosophy of the ICBM Program Framework as well as the confirmation step of the adaptive monitoring framework. The Data Tool improves timely access to data and allows for efficient data analysis by FMMN and contributes to the State of the Environment reporting.

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

CBEMP was initiated by FMMN and directly responds to the community's concerns and needs regarding impacts of oil sands development in their traditional territory, which are and continue to affect FMMN's ability to exercise their Aboriginal Rights. Managing, analyzing, and interpreting CBEMP data meets FMMN's goals of understanding and mitigating cumulative effects in their traditional territory. The proposed Data Tool will allow FMMN to make risk-based decisions and prioritize monitoring and management to those of the greatest risk and concern to FMMN.

Does this project include an Integrated Community Based Monitoring Component?

No

If YES, please complete the ICBM Work Plan Forms and submit using the link below

Please note that completion of the ICBM template is mandatory if yes is indicated above and must be submitted along with each work plan that includes an integrated CBM component

ICBM WORK PLAN SUBMISSION LINK (CTRL+CLICK HERE)

5.1 Alignment with Interim Ethical Guidelines for ICBM in the OSM Program

1. Are there any community specific protocols that will be followed?

N/A

2. Does the work plan involve methods for Indigenous participants to share information or knowledge (e.g. interview, focus group, survey/structured interview), or any other Indigenous participation? If yes, describe how risks and harms will be assessed, and the consent process that will be used.

N/A

3. Do the activities include any other collecting/sharing, interpreting, or applying Indigenous knowledge? Please describe how these activities will be conducted in alignment with the Interim Ethical Guidelines, and any community-based protocols and/or guidelines that may also apply.

N/A

4. Indicate how Indigenous communities / Indigenous knowledge holders will be involved to ensure appropriate analysis, interpretation and application of data and knowledge.

N/A

5. How are Indigenous communities involved in identifying or confirming the appropriateness of approach, methods, and/or indicators?

N/A

6. How does this work plan directly benefit your community?   How does it support capacity building in your community?

N/A

7. How is the information from this work plan going to be reported back to your community in a way that is accessible, transparent and easy to understand?

N/A

6.0 Measuring Change

Explain how your monitoring identifies environmental changes and how can be assessed against a baseline condition. As relevant, consider adaptive monitoring, the TAC specific Scope of Work document and the Key Questions in your response.

The proposed Data Tool will consolidate western science indicators collected under the CBEMP and will provide data visualization tools for the FMMN. As western science data can be more readily processed, quality controlled, and visualized, creating increased opportunities to incorporate Indigenous Knowledge in the evaluation of cumulative effects.

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, consider adaptive monitoring, the TAC specific Scope of Work document and the Key Questions in your response.

The CBEMP data are directly relevant to subregional concerns raised by the FMMN.

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, consider adaptive monitoring, the TAC specific Scope of Work document and the Key Questions in your response.

The Data Tool allows for FMMN to store, analyze and interpret CBEMP data. The Data Tool allows for FMMN to share CBEMP data for the State of the Environment reporting at FMMN's discretion.

9.0 Efficiency

Explain how your monitoring is integrated with other OSM projects and incorporates community-based participation and/or engagement in proposed monitoring activities. As relevant, consider adaptive monitoring, the TAC specific Scope of Work document and the Key Questions in your response.

CBEMP is fully community-led and executed program. The individual monitoring components (e.g., groundwater, surface water, wetlands, and berries) have been integrated at the TAC-level and ICBMP.

10.0 Work Plan Approach/Methods

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

Phases of the FMMN CBEMP Data Tool project are as follows:

1 Discovery, Design & Architecture (2023/24): Conduct review of CBEMP data, FMMN data consumers' needs, security requirements, and provide Data Tool architecture and recommendations on solution
- One in-person FMMN community engagement meeting will be held to develop a list of key data visualization and analysis needs
- The team will compile and process existing FMMN CBEMP data, including berry chemistry, surface water quality, groundwater quality, wetland water quality, air quality (odour), soil quality, and wildlife monitoring data
- The team will create future data upload formats based on input from FMMN data collectors and consumers, and OSM program data management plan, where applicable
- The team will meet with FMMN monthly to discuss progress and to gain community feedback

2 Data Ingestion & Storage (2023/24): Design and build data ingestion path into a database, build data buckets and tag data, and design and build data integration and database
- Based on the team's experience, the most efficient way to integrate environmental data management and visualization is a web-based R Shiny application with an integrated database
- The team believes that the Apache Parquet file database is the best fit for R Shiny applications, because the file database can serve data intensive applications and dashboards. Apache Parquet is a cross-platform, open source, column-oriented data file format designed for efficient data storage and retrieval. It provides efficient data compression and encoding schemes with enhanced performance to handle complex (i.e., nested) data structures (e.g., projects, sites, samples). Parquet files can be hosted alongside the application (on file servers, or S3 compatible object storage). With all these options, data security and authorization can be set up to protect the data.

3 Data Processing & Serving (2023/24): Build data processing routines for data preparation based on use case and, setup and demonstrate database use
- The team will develop data upload procedures for the different types of CBEMP data and demonstrate their use

4 Data Visualization (2023/24): Demonstrate and develop graphs and visualizations and develop data analysis tool into the platform
- In the team's experience, the most efficient solution for customized data visualizations of multiple types of data is R Shiny web-based application.
- The application will be developed as a modular and extensible software with the following components:
• command line interface, allowing scientific evaluation, transparency and reproducibility
• an interactive application that allows loading and validating the data, and efficient exploration using the command line tool
• administrative interface to manage and authorize users
• an initial hosting platform that restricts access to the data and the application using authentication and authorization; this platform will allow hosting multiple applications for different audiences or data domains

5 Present a Data Tool Demo for Discussion (2023/24): present a demo to FMMN and demonstrate compatibility to iPAD, mobile phone, laptop, and desktop
- A demo version of the Data Tool with existing CBEMP data will be delivered to FMMN
- An in-person community meeting will be held to demonstrate Data Tool user interface and capabilities
- Initial demo will prioritize chemistry data, with wildlife monitoring and other biological data to be added for the subsequent versions of the Data Tool

6 Continue Data Tool Development: add wildlife and other biological CBEMP data types to the Data Tool and continue to develop customized data visualizations (2024/25)

7 Host and Manage Data Tool: respond to FMMN's needs for ongoing data management and data analysis for a minimum of 5 years (2025-2029)

8 The Data Tool will allow FMMN to analyze and interpret CBEMP data and contribute CBEMP data to the State of the Environment reporting at FMMN's discretion (2025-2029)

10.2 Describe how changes in environmental Condition will be assessed *

The Data Tool will include CBEMP data visualizations and statistical analysis options, such as trend analysis. These platform characteristics will allow for improved data access by FMMN data users and improved data analysis access.

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

The Data Tool will include applicable federal and provincial environmental quality guidelines to allow for comparison of CBEMP data results to guidelines. In addition, community-based thresholds can be added to the Data Tool.

(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 *

Transparent and reproducible data upload, processing, and quality control steps will be developed for the Data Tool in keeping with the OSM program data management plan, as appropriate.

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

Grounwater and surface water quality chemical and physical parameters, berry contaminants, wetland accessibility, and air (odour) and soil quality parameters

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.*

Knowledge gained through the Data Tool project will be available to the FMMN community via various platforms (e.g., iPhone, laotop, etc.) and in various visual formats. The community may share CBEMP results vis community newsletter and Facebook page. The Data Tool will be used source of information for the community to understand impacts in their traditional territory.

At FMMN's discretion, CBEMP data can also contribute to the State of the Environment reporting. Furthermore, this FMMN-led program may yield scholarly work that will be shared via presentations and peer-reviewed articles.

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

Analythium Solutions Inc., Avanti Environmental Consulting Ltd., and Integrated Toxicology Solutions Ltd.

*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? *

NO

13.2 Type of Quantitative Data Variables**:**

Choose an item

13.3 Frequency of Collection:

Choose an item.

13.4 Estimated Data Collection Start Date:

Click or tap to enter a date.

13.5 Estimated Data Collection End Date:

Click or tap to enter a date.

13.6 Estimated Timeline For Upload Start Date:

Click or tap to enter a date.

13.7 Estimated Timeline For Upload End Date:

Click or tap to enter a date.

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

Choose an Item

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
FMMN CBEMP Database	Data Tool Database will be hosted online by Analythium	Various source file formats, can be exported in various file formats	Protected by Default

14.0 2023/24 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	FMMN CBEMP Data Tool Progress Report delivered by March 31, 2024
Choose an item.	Choose an item.	Click or tap here to enter text.

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.*

The following experienced team members will deliver the FMMN CBEMP Data Tool:

Adi Adiele: FMMN Program Manager

Khalid Lemzouji, PStat, Senior Statistician (Analythium Solutions Inc.): Data Tool Development Lead

Karoliina Munter, MSc, PBiol, Senior Biologist (Avanti Environmental Consulting Ltd.): Environmental Data Consolidation Lead

Mandy Olsgard, Msc, PBiol, Senior Toxicologist (Integrated Toxicology Solutions Inc.): Risk-Based Decision Support

FMMN will lead the Data Tool development with selected consultants. The consultants will design and develop and Data Tool under FMMN's guidance. FMMN be meeting with the project team to provide existing CBEMP data, develop data visualization needs list, and review the demo version of the Data Tool. In addition, monthly progress meetings will be held to oversee Data Tool design and development.

The Analythium team brings award-winning systems architecture and web application building expertise to this project. Analythium has strong capabilities for designing, developing, and delivering data-heavy and statistically sound, interactive web applications, that also encapsulate the scientific rigor expected by the users and stakeholders. Avanti and ITS complement the team with experience in the Oil Sands Region and specific expertise with water quality and toxicology.

Khalid Lemzouji will lead the Analythium team in Data Tool design and development, including a database and a data visualization application. Karoliina Munter will support the to design and development of the Data Tool. Karoliina will lead existing CBEMP data compilation and support the Data Tool design and development from a data user's perspective. ITS will support the to design and development of the Data Tool. Mandy Olsgard will support the Data Tool development with health risk considerations, including identificationand integration of risk-based thresholds and statistical methods to support comparison of monitoring data to identified thresholds.

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
Click or tap here to enter text.	Click or tap here to enter text.	0%

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
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)*	0.00%	$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
Total All Grants *(Calculated from Table 16.4 below)*		**$295,550.00**
Total All Contracts *(Calculated from Table 16.5 below)*		**$0.00**
Sub- TOTAL *(Calculated)*		**$295,550.00**
Capital*		$0.00
AEP TOTAL *(Calculated)*		**$295,550.00**

* 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		$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
ECCC TOTAL *(Calculated)*		**$0.00**

* 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	Adi Isaac Adiele
GRANT RECIPIENT - ONLY: Organization	Fort McKay Metis Nation
Category	**Total Funding Requested from OSM**
Salaries and Benefits	$240,000.00
Operations and Maintenance	
Consumable materials and supplies	$0.00
Conferences and meetings travel	$0.00
Project-related travel	$12,500.00
Engagement	$9,000.00
Reporting	$10,000.00
Overhead	$24,050.00
GRANT TOTAL (Calculated)	**$295,550.00**

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	Click or tap here to enter text.
CONTRACT 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
CONTRACT TOTAL *(Calculated)*	**$0.00**
CONTRACT RECIPIENT - ONLY: Name	Click or tap here to enter text.
CONTRACT 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
CONTRACT TOTAL *(Calculated)*	**$0.00**
CONTRACT RECIPIENT - ONLY: Name	Click or tap here to enter text.
CONTRACT 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
CONTRACT TOTAL *(Calculated)*	**$0.00**

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 *Sums totals for salaries and benefits from AEP and ECCC ONLY*	$0.00
Operations and Maintenance	
Consumable materials and supplies *Sums totals for AEP and ECCC ONLY*	$0.00
Conferences and meetings travel *Sums totals for AEP and ECCC ONLY*	$0.00
Project-related travel *Sums totals for AEP and ECCC ONLY*	$0.00
Engagement *Sums totals for AEP and ECCC ONLY*	$0.00
Reporting *Sums totals for AEP and ECCC ONLY*	$0.00
Overhead *Sums totals for AEP and ECCC ONLY*	$0.00
Total All Grants (from table 16.2.1 above) *Sums totals for AEP Tables ONLY*	$295,550.00
Total All Contracts (from table 16.2.1 above) *Sums totals for AEP Tables ONLY*	$0.00
Sub- TOTAL	$295,550.00
Capital* *Sums total for AEP*	$0.00
GRAND PROJECT TOTAL	$295,550.00

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.*

Project management will include careful tracking of the budget associated with each of the subcontractors. The scope and budget for each of the consultants will be confirned as part of the contracting process and they will all be fixed budgets. All consultants will be requested to provide updates if they anticipate being underspent, or if they think the scope needs to be adjusted to remain within budget.

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)
Click or tap here to enter text.	Click or tap here to enter text.	$0.00

	TOTAL	$0.00

19.0 Consent & Declaration of Completion

Lead Applicant Name

Adi Isaac Adiele

Title/Organization

Fort McKay Metis Nation

Signature

Click or tap here to enter text.

Date

Click or tap to enter a date.

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

Click or tap here to enter text.

Title/Organization

Click or tap here to enter text.

Signature

Click or tap here to enter text.

Date

Click or tap to enter a date.

P<small>ROGRAM</small> O<small>FFICE</small> U<small>SE</small> O<small>NLY</small>

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.