

## 5- YEAR LONG-TERM MONITORING OR OPERATIONAL ACTIVITY WORK PLAN

***Changes to this Work Plan are only accepted via an Approved Addendum.***

| General Information   |  |
|---|--|
| <b>Monitoring Category:</b><br><i>(From OSM long-term plan;<br/>choose from drop-down menu)</i>   | Biotic Response Monitoring   |
| <b>Strategic Monitoring Objective:</b><br><i>(From OSM long-term plan;<br/>choose from drop-down menu)</i>                                | Objective: Detect and report biotic response in relation to Oil Sands Developments                                     |
| <b>Work Plan Unique Identifier:</b>   | B-MD-7-1718  |
| <b>Monitoring Activity Title:</b>   | Biotic Health and Biodiversity Monitoring:<br>Method development to establish a long-term monitoring design            |
| <b>Geographic Location</b> <i>(choose from drop-down menu, if Project Location is in more than one area choose from second drop-down)</i> | Location Not Applicable  |
| <b>Monitoring Site(s) Coordinates</b><br><i>(latitude and longitude)</i>  | N/A  |
| <b>Monitoring Organization and Responsible Manager:</b>   | Alberta Environment and Parks      Dan Farr  |
| <b>Date Monitoring initiated:</b>   | 2017   |
| <b>Specific Monitoring Objective:</b><br><i>(State the monitoring objective addressed through this monitoring)</i>                        | The objective of this activity is to complete a strategic plan for biotic response monitoring in the oil sands region. |
| <b>Deliverables (Annual):</b><br><i>What Data Reports will be produced and when?</i>  | Strategic plan for biotic response monitoring in the oil sands region  |

**Monitoring Plan Summary:** *Please summarize the monitoring including relevant information such as background, objectives, monitoring area, methods/monitoring design, assumptions, outcomes, and references. These should align with the information provided in Appendix 1: Annual Monitoring Schedule.*

### *Summary*

A strategic plan to guide the design of biotic response monitoring is required to ensure effective use of limited resources. We propose to write a 5-year plan that encompasses a broad spectrum of terrestrial and aquatic biotic receptors, and the stressors that may cause undesirable effects (land disturbance, hydrological disruption and contaminants). This would be a high-level plan that considers existing project plans, but challenges project leads to complement the work of other leads and avoid gaps and duplication.

The plan would engage OSM project leads that currently monitor populations of numerous taxonomic groups, along with those that monitor ecosystem function, community composition, and those that study contaminant loadings in tissue and their physiological effects.

We propose to complete this plan by December 2018 with the help of a senior scientist familiar with a breadth of biotic response research relevant to the oil sands region.

### *Rationale*

Many of the environmental effects of oil sands activity on biological end points of interest are reasonably well documented. Land disturbance and fragmentation affects populations of woodland caribou, landbirds, and likely numerous other species. Contaminants released into the atmosphere and aquatic ecosystems alter the physiology of sentinel wildlife species, the composition of benthic assemblages, and the productivity of wetland and forest ecosystems. Hydrological disruption associated with open pit mines, and also possibly in situ road development, has the potential to affect a wide range of biota and ecological processes.

While much has been learned about the biotic effects of oil sands activity, these findings are limited in terms of their geographic extent, the nature and magnitude of their impact on ecological function, and their relevance to Indigenous communities and non-Indigenous stakeholders. In other words, there is still a lot of work to do.

Planning this work requires dedicated effort, and while all OSM project leads and collaborators do this for their individual projects, I propose that we devote resources to a senior scientist to develop a comprehensive and integrated plan. That person would write a strategic plan for a 5-year period (2019-24) to guide all biotic response monitoring in the oil sands region funded primarily by OSM.

The main improvement from this work would be a strong scientific foundation for future biotic response monitoring in the oil sands region. It would be positioned as nested within, and complementing, the Science Plan for the Environmental Monitoring and Science Division of Alberta Environment and Parks, and any other approved high-level monitoring plans.

## Appendix 1 – Annual Monitoring Schedule

(Please provide detailed information on the specifics of your monitoring schedule including – **locations, schedule, methods, SOPs, QA/QC data release, references**)

| <b><u>Sampling Locations/Sites</u></b> | <b><u>Sampling Schedule (timing/frequency)</u></b> | <b><u>Compounds to be Analyzed</u></b> | <b><u>SOPs to be Consulted</u></b><br><i>(hyperlinks accepted)</i> | <b><u>QA/QC Complete &amp; Date Data to be Released</u></b> |
|--|--|--|--|---|
| NA                                     | NA   | NA                                     | NA   | NA  |

## Appendix 2 – Detailed Multi-Year Financial Breakdown: if changes are to be made then an Addendum must be Complete and Approved.

(Complete the following detailed financial breakdown; add or delete categories as required)

| Budget requirements   | Year 1 (2017- 2018) |                  | Year 2 (201X- 201Y) |                  | Year 3 (201X- 201Y) |                  | Year 4 (201X- 201Y) |                  | Year 5 (201X- 201Y) |                  |
|---|---------------------|------------------|---------------------|------------------|---------------------|------------------|---------------------|------------------|---------------------|------------------|
|   | OSM Funding         | External Funding | OSM Funding         | External Funding | OSM Funding         | External Funding | OSM Funding         | External Funding | OSM Funding         | External Funding |
| 1) Salaries and benefits  |                     |                  |                     |                  |                     |                  |                     |                  |                     |                  |
| a) Appendix 3 - Totals  | 50,000              |                  | 50,000              |                  |                     |                  |                     |                  |                     |                  |
| 2) Operations and Maintenance                                       |                     |                  |                     |                  |                     |                  |                     |                  |                     |                  |
| a) Vehicles and Transportation                                      |                     |                  |                     |                  |                     |                  |                     |                  |                     |                  |
| b) Helicopter   |                     |                  |                     |                  |                     |                  |                     |                  |                     |                  |
| c) Lab analysis   |                     |                  |                     |                  |                     |                  |                     |                  |                     |                  |
| d) Data management  |                     |                  |                     |                  |                     |                  |                     |                  |                     |                  |
| e) Field work   |                     |                  |                     |                  |                     |                  |                     |                  |                     |                  |
| 3) Consumable Materials and supplies                                |                     |                  |                     |                  |                     |                  |                     |                  |                     |                  |
| a) <i>(Describe Consumable Supply)</i>                              |                     |                  |                     |                  |                     |                  |                     |                  |                     |                  |
| 4) Travel   |                     |                  |                     |                  |                     |                  |                     |                  |                     |                  |
| a) Conferences and meetings<br><i>(identify conference/meeting)</i> |                     |                  |                     |                  |                     |                  |                     |                  |                     |                  |
| b) Field work - travel  |                     |                  |                     |                  |                     |                  |                     |                  |                     |                  |



|  |        |  |        |  |  |  |  |  |  |  |
|--|--------|--|--------|--|--|--|--|--|--|--|
| c) Project-related travel                |        |  |        |  |  |  |  |  |  |  |
| 5) External Contracts                    |        |  |        |  |  |  |  |  |  |  |
| a) <i>(Describe External Contractor)</i> |        |  |        |  |  |  |  |  |  |  |
| <b>Grand Total</b>                       | 50,000 |  | 50,000 |  |  |  |  |  |  |  |

### Appendix 3 – Staffing Plan

(Complete the following detailed staffing plan; add or delete categories as required)

| Responsible Role  | Year 1 – Budget Allocation |                  | Year 2 – Budget Allocation |                  | Year 3 – Budget Allocation |                  | Year 4 – Budget Allocation |                  | Year 5 – Budget Allocation |                  |
|---|----------------------------|------------------|----------------------------|------------------|----------------------------|------------------|----------------------------|------------------|----------------------------|------------------|
|   | OSM Funding                | External Funding | OSM Funding                | External Funding | OSM Funding                | External Funding | OSM Funding                | External Funding | OSM Funding                | External Funding |
| <b>Science Expertise</b><br>AEP wage hire               | 50,000                     |                  | 50,000                     |                  |                            |                  |                            |                  |                            |                  |
| <b>Technical/Field Staff</b>                            |                            |                  |                            |                  |                            |                  |                            |                  |                            |                  |
| <b>Administrative and Program Coordination</b>          |                            |                  |                            |                  |                            |                  |                            |                  |                            |                  |
| <b>Grand Total</b><br><i>(inserted into Appendix 2)</i> | \$50,000                   | \$               | \$50,000                   | \$               | \$                         | \$               | \$                         | \$               | \$                         | \$               |

## Appendix 4 - Approvals

|   |            |  |
|---|------------|--|
| <b>Project Submitted by:</b>  |            |  |
| Name:   |            |  |
| Organization:   | Signature: | Date:  |
| <b>Project Approved by:</b>   |            |  |
| Dr. Monique Dubé (AEP)  |            | Dr. Kevin Cash (ECCC)  |
| Signature   |            | Signature  |
|  |            |  |
| Date  |            | Date   |