Joint Canada-Alberta Implementation Plan for Oil Sands Monitoring

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Credible, comprehensive, scientifically-rigorous, environmental monitoring is key to assuring the responsible development of the oil sands

- Multiple reviews by independent scientific panels have concluded that more rigorous environmental monitoring is needed to adequately detect potential impacts, particularly cumulative effects on water, air and biodiversity.
- The lack of credible comprehensive, integrated environmental monitoring leaves industry vulnerable to criticisms of its environmental performance that are difficult to prove or refute.
- The Governments of Alberta and Canada are ready to put in place an environmental monitoring system for the oil sands that will be among the very best in oil exporting countries.
- The <u>Joint Canada-Alberta Implementation Plan for Oil Sands</u> <u>Monitoring</u> has been developed, outlining a collaborative approach towards implementation.

Objectives of the Joint Implementation Plan

The *Implementation Plan* lays out a path forward for the Governments of Alberta and Canada to put in place a world-class monitoring system – providing assurance of environmentally responsible development.

The Plan will:

- Support sound decision-making by governments and industry;
- Ensure transparency through accessible, comparable and quality-assured data;
- Enhance science-based monitoring for improved characterization of the state of the environment and collect the information necessary to understand cumulative effects;
- Improve analysis of existing monitoring data to develop a better understanding of historical baselines and changes, and;
- Reflect the trans-boundary nature of the issue and promote collaboration with the Governments of Saskatchewan and the Northwest Territories.

The Implementation Plan Approach

- The plan will ensure monitoring is integrated into existing and future provincial and federal monitoring systems
- The two governments will jointly manage and be accountable for the system:
 - Co-led by ADMs responsible for science & environmental monitoring
 - Stakeholders will be engaged throughout implementation
 - The monitoring would undergo periodic scientific peer review
 - There would also be internal review of scope, operations and cost
 - Data from the monitoring system will be made public on an ongoing basis

Adaptive Management

- > The system will be managed in an adaptive manner.
- Plans and activities will evolve based on consultations with industry and other stakeholders, initial implementation experience, results over time and increased understanding
 - Activities can be increased if important changes are detected, OR, reduced where repeated sampling has shown no significant changes are occurring and no new activity is planned.

The *Joint Implementation Plan* describes a path forward to world-class monitoring

- The Plan covers:
 - 1. Air: Air quality, emissions, transport and deposition of contaminants
 - 2. Water: Surface and shallow groundwater quality, acid-sensitive lakes, downstream rivers and aquatic biodiversity
 - 3. Biodiversity: Impacts of habitat disruption, contaminants on wildlife
- The importance of quality assurance, data management and data accessibility is directly addressed to ensure that information is made freely available to all
- The Plan would enhance environmental monitoring through:
 - Increased coverage (more sites)
 - Greater sampling frequency
 - More substances examined
- Emphasis would be put on integrating the different components of the monitoring system to provide a comprehensive perspective

Air Quality Component

- Will address the fate of contaminants from point of emission to point of deposition into aquatic and terrestrial ecosystems
- Includes:
 - Enhanced efforts to determine emissions from stacks, mobile and area sources
 - Incorporation of satellite images, remote sensing and air quality models to integrate the data
 - Short-term studies to guide the monitoring and to address knowledge gaps
- Additional ground-level monitoring sites will be installed
- Upon implementation, the monitoring for air quality will:
 - Span a larger spatial range, from upwind sites to long-range transboundary sites
 - Allow distinction between natural, point and non-point sources of emissions
 - Allow better understanding of the long-range effects of air emissions downwind, such as on acid sensitive lakes and terrestrial vegetation
 - Provide better linkages to the water quality and aquatic biota components through integration of data

Acid Sensitive Lakes and Aerial Deposition

- Monitoring of snow pack and acid sensitive lakes to assess the linkages between atmospheric deposition and water quality
- Key area of integration between the air quality and water quantity/quality components
- Where possible, baseline conditions will be determined to detect changes in atmospheric deposition, biological and chemical changes
- Upon implementation, monitoring will include:

- Continued monitoring of lakes under existing programs and expansion of monitoring
- Assessment of existing data to inform long-term monitoring
- Lake survey to identify additional acid sensitive lakes

Water Quantity & Quality Component

- Water monitoring to quantify and assess sources, transport, loadings, fate, types of oil sands contaminants and their effects on key aquatic ecosystem components in the Athabasca River system:
- A mass-balance approach was used to define the network of sites
- Upon implementation, water quantity and quality monitoring will:
 - Significantly increase the scope and coverage of monitoring over a number of years (see next slide); including downstream receiving environments (Peace-Athabasca delta, Lake Athabasca. Slave R).
 - Expand on the current water quality and quantity monitoring sites; hydrometric and suspended and bed sediment measurements
 - Provide better quantification of historical backgrounds
 - Allow improved estimates of atmospheric contributions

Representation of key sampling sites for Water Component - Lower Athabasca



2011/12

2014/15

Aquatic Ecosystem Health Component

- Chemicals from oil sands activities may have an effect on the healthy functioning of the aquatic ecosystem
- Monitoring will focus on:
 - Fish population health and benthic communities in the lower Athabasca Region
 - Development of a baseline for assessing future change
 - Establishment and comparison to reference sites
 - Fish population health in high use areas, incidences of fish abnormalities
 - Trends in contaminant concentrations in fish
- Upon implementation, monitoring of aquatic ecosystem health will:
 - Expand upon monitoring under existing programs at additional sites for fish health, species diversity and fish toxicology
 - Establish a sampling program for lake health, riverine in-situ bioassays

Wildlife Toxicology Component

- Monitoring to assess the health of sensitive wildlife species that may be exposed to oil sands-generated contaminants
- Monitoring will focus on:
 - Identification and selection of wildlife indicator species
 - Monitoring species occupying different positions in the food web to provide a broader understanding of impacts
 - Measuring a broad range of oil sands-related contaminants
 - Identification of wildlife populations at risk of health impairment
- Upon implementation, monitoring will:
 - Expand the geographical coverage
 - Improve understanding of impacts on monitored species

Terrestrial Biodiversity and Habitat Disturbance Component

- Oil sands development can alter landscape and result in habitat degradation or loss, as well as impact conservation efforts
- > Upon implementation, monitoring of this component will:
 - Expand the geographic coverage and increase the monitoring sensitivity, especially for species at risk
 - Improve the understanding of status and trends of species in the oil sands area, and the effects of land disturbance on terrestrial biodiversity, both individual and cumulative
 - Identify cause-effect relationships between stressors and targets
 - Provide information to inform and to assess the efficacy of conservation, mitigation and planning efforts

Existing Monitoring in 2011



Proposed Monitoring – 2015



Management of Data

- The Governments of Alberta and Canada will develop and implement an integrated data management system
- Phased implementation that will address the full scope of data to be managed
- Allow open and transparent public access to a single source of credible oil sands monitoring data and supporting information
- Establish a framework outlining core data management policies

Thank you