

Environmental Assessment Program

**Guide to Preparing
Environmental Impact Assessment
Reports in Alberta**

Updated March 2013

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1 INTRODUCTION

Alberta Environment and Sustainable Resource Development (ESRD) is responsible for ensuring that large-scale industrial and resource development projects do not adversely affect Alberta's environmental quality. They do this by managing the provincial environmental assessment process which includes the review of Environmental Impact Assessment (EIA) reports prepared by Proponents. (See ESRD's website for more information on the environmental assessment process - <http://www.environment.alberta.ca/01495.html>).

1.1 Using This Guide

This Guide is referenced in the Terms of Reference for the Project and as such Proponents must give careful consideration to its content.

Requirements of this Guide that use the words *must* or *shall* or *will* indicate content that is expected in the EIA report or procedures and methods the Proponent is expected to follow. Proponents can expect to receive Supplemental Information Requests if any of this material is not present or the processes or methods were not followed. **This could result in significant delays in the Project review.**

Requirements in this Guide that use the words *should* or *may* indicate best practices or issues that frequently result in Supplemental Information Requests. Proponents are strongly encouraged to include this material in their EIA report.

2 EIA REPORT PREPARATION

2.1 Study Area

The Study Area for an EIA report includes the Project Area, all of the Local Study Areas (LSA) and Regional Study Areas (RSA) assessed by the Proponent. The size and shape of the Project Area, Local Study Area and Regional Study Area should not be restricted by political boundaries.

TIP

Proponents should provide data, results and analysis for each of the Project Area, Local Study Area and Regional Study Area. Proponents should provide rationale if a different approach is taken.

2.1.1 Project Area

The Project Area includes all lands subject to direct disturbance from the project and associated infrastructure. Proponents should provide rationale for their decision to exclude any associated infrastructure from the project and the Project Area. Proponents should also indicate if such exclusions are included in the Planned Development Case, and if not provide a rationale.

For the Project Area, Proponents must provide:

- the legal land description;
- a map which shows the mineral tenure and surface ownership of all lands (this will include lands under public land disposition or private lands leased or owned by the Proponent); the location of all proposed development activities and facilities; and the proposed Regulatory Board approval area; and
- a topographic map of appropriate scale showing the area proposed to be disturbed in relation to existing township grids, wetlands, watercourses, and waterbodies.

2.1.2 Local and Regional Study Areas

The Local Study Area is the area surrounding and including the Project Area, where there is a reasonable potential for immediate environmental impacts due to ongoing project activities.

The Regional Study Area is the area where there is the potential for cumulative and socio-economic effects, and that will be relevant to the assessment of any wider-spread effects of the project.

There are frequently different Local Study Areas and Regional Study Areas for the various media (air, water, land) and social impacts for a project. Proponents must provide the scientific

rationale used to define the spatial and temporal aspects of each Local Study Area and Regional Study Area.

Proponents must identify Local Study Area and Regional Study Area boundaries on maps of appropriate scale that show: existing township grids, communities, wetlands, watercourses, waterbodies, protected areas and topographic features.

2.2 Assessment Scenarios

Unless stated otherwise in the Terms of Reference, Proponents are expected to address impacts at all stages of the project (construction, operation, decommissioning and reclamation).

The EIA report will address three development scenarios – Baseline Case, Application Case and Planned Development Case. Additional scenarios will be dictated by special circumstances specific to individual projects. When this happens, the Terms of Reference will define the additional scenarios.

2.2.1 Baseline Case

The Baseline Case establishes the conditions that exist or would exist prior to development of the project or the conditions that would exist if the project were not developed. In areas with little or no prior industrial or resource development, it describes environmental conditions in the absence of development.

However, in more developed areas, such as the Regional Municipality of Wood Buffalo or Strathcona County, it describes environmental conditions that include the effects resulting from existing and approved projects or activities.

Proponents must present sufficient data, from detailed and current field surveys or existing databases, to provide a clear description of current environmental conditions in the area that will be directly and indirectly affected by the project.

Proponents should ensure that all resource delineation disturbances for the project (e.g., seismic lines and exploration operations) are included in the Baseline Case assessment.

2.2.2 Application Case

The Application Case describes the Baseline Case with the effects of the project added. The Application Case provides information that is valuable to regulators in determining how project operations would need to be controlled to meet provincial environmental management requirements. In areas where local or regional environmental limits have been set (e.g., air emissions or water use) the Application Case shows if the project can operate within the limits.

2.2.3 Planned Development Case

The Planned Development Case describes the environmental conditions that would exist as a result of the interaction of the proposed project, other existing projects and other planned projects that can be reasonably expected to occur.

Proponents will assess cumulative environmental effects in accordance with the Information Letter *Cumulative Effects Assessment in Environmental Impact Assessment Reports under the Alberta Environmental Protection and Enhancement Act* (<http://environment.alberta.ca/documents/CEA-in-EIA-Reports-Required-under-EPEA.pdf>).

For projects that will also be subject to an environmental assessment under the *Canadian Environmental Assessment Act, 2012*, Proponents should consider the need to address cumulative effects assessment requirements under that federal legislation. Proponents are encouraged to consult the Canadian Environmental Assessment Agency's *Cumulative Effects Assessment Practitioners' Guide* (<http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=43952694-1&offset=&toc=hide>).

For the purposes of defining the scenarios, *approved* means approved by any federal, provincial or municipal regulatory authority. *Planned* means any project or activity that has been publicly disclosed up to six months prior to the submission of the Proponent's Application and EIA report.

Proponents must clearly describe how they addressed the impacts of associated

infrastructure developments (e.g., pipelines, transmission lines, borrow pits, aerodromes, camps, compensation lakes) and future resource delineation disturbances (e.g., seismic and exploration operations).

TIP
Proponents should use the terms Baseline Case, Application Case and Planned Development Case in their EIA reports. Consistent terminology makes reports easier to read.

2.3 Assessment Methodology

2.3.1 Environmental Attributes/Indicators

A description of and rationale for the selection of environmental attributes, parameters, or properties examined is required. Adherence to Regional Plans under the Land Use Framework and any thresholds contained within those plans must be discussed.

For projects in the Regional Municipality of Wood Buffalo, key indicator resources, criteria and thresholds developed by the Cumulative Environmental Management Association (<http://www.cemaonline.ca/>), Wood Buffalo Environmental Association (<http://www.wbea.org/>) and the Regional Aquatics Monitoring Program (<http://www.ramp-alberta.org/RAMP.aspx>) should be used. If these are not used, Proponents must provide rationale for alternatives.

Proponents must present biophysical information in a manner that enables ecological land classification maps to be completed to the ecosite classification level¹.

2.3.2 Effects and Their Significance

A description of the techniques used to identify and evaluate the environmental effects and criteria used to determine the significance of those effects is essential. The report must provide a sufficient base for the prediction of positive and negative impacts and the extent to which negative impacts will be mitigated by

planning, project design, construction techniques, operational practices and reclamation techniques. Impact significance will be quantified where possible and assessed including consideration of spatial, temporal and cumulative aspects.

Proponents should explain the scientific rationale for their impact rating system, and clearly identify the different impact rating systems for each Valued Ecosystem Component or Key Indicator Resource. Proponents should be aware that ratings based on a percentage of the LSA or RSA affected often generate a considerable number of Supplemental Information Requests (SIRs) related to the appropriateness of the rating (e.g., rating can be affected by changing size of LSA or RSA).

Some projects may potentially have a direct effect or transboundary effect on special protected areas, such as National Parks, National Historic Sites, National Marine Conservation Areas, Canadian Heritage Rivers, UNESCO World Heritage Sites, Ramsar Convention Wetlands of International Importance, Provincial Parks, Provincial Wilderness Parks, as well as the transition zones around these areas. In those cases, Proponents should use the relevant objectives, management plans, principles, criteria, targets, and thresholds for those areas in determining effects.

For projects in the Industrial Heartland area the thresholds, limits and principles outlined on ESRD's website (<http://environment.alberta.ca/01768.html>) shall form the basis for the assessment.

TIP
For in-situ projects where there are significant, recent local and regional ecological resource assessments already completed, Proponents may be able to use this existing data for impact analysis of their proposed project. Proponents who are looking to explore this option should contact the EA Coordinator to set up a meeting with ESRD to discuss.

¹ These maps are generally presented in the Vegetation and Terrain and Soils sections.

2.3.3 Sources of Information

The EIA report must contain a discussion of the sources of information used in the assessment including:

- a summary of previously conducted environmental assessments related to a Proponent's operations;
- literature;
- previous EIA reports and environmental studies;
- operating experience from current, similar operations;
- industry study groups;
- traditional knowledge;
- government sources; and
- limitations or deficiencies that the information places on the analysis or conclusions in the EIA report.

Professional judgement is a critical component of any Environmental Impact Assessment. However, conclusions based on professional judgement must be backed by a clear rationale and Proponents must provide information (e.g., data, observations, references) to support their conclusions. Stakeholders and reviewers prefer to see examples of calculations used to determine impacts (e.g., emission rates, water use and disposal rates, Human Health Risk Assessment worked example).

Proponents should describe the criteria used in any constraints mapping approaches to siting project infrastructure and selecting project alternatives. Environmental, socio-economic and traditional use criteria should be considered.

2.4 Modeling

When using models or modeling techniques other than those prescribed by regulators to predict project impacts, Proponents must clearly demonstrate that the proposed model is applicable to the circumstance in which it will be used. Models in previous EIA reports can be used as supporting evidence but Proponents should carefully review the type and nature of

SIRs generated by use of the model² and should use the most recent version of the model.

Assumptions, model inputs and data sets used to obtain modeling predictions in the EIA report must be documented, a rationale for their selection provided and a discussion of the potential implications of their use in terms of confidence in the resulting impact predictions.³

The EIA report must clearly identify the limitations of the models including sources of error and relative accuracy. The EIA report should also indicate what statistical confidence limits or other quantitative measurements of uncertainty were used to describe the relative accuracy of the model.

TIP

Proponents should discuss models, assumptions and data sets that will be employed with the appropriate regulators prior to conducting modeling, particularly if the Proponent intends to use a different model or unique assumptions or data sets.

2.4.1 Air Quality Modeling

Air quality modeling shall be conducted in accordance with the latest edition of the *Air Quality Model Guideline (AQMG)* (<http://environment.alberta.ca/01004.html>) published by ESRD. As per the AQMG, Proponents are required to provide all model input, output and control data files in a usable format.

All emissions from the project are to be considered in the dispersion modeling and when discussing control technologies. The emissions include, but are not limited to: sulphur dioxide (SO₂), hydrogen sulphide (H₂S), oxides of nitrogen (NO_x), greenhouse gases, volatile organic compounds (VOC), polycyclic aromatic hydrocarbons (PAH), heavy metals, particulate

² For example, there are numerous SIRs related to use of the NONROAD model for emissions predictions from mine equipment.

³ For example, there are often SIRs asked about the specific MM5 dataset used.

matter (PM_x), carbon monoxide (CO) and ammonia (NH₃).

The AQMG addresses only primary substances directly emitted from a source. Some substances are formed in the atmosphere as a result of the interaction of primary substances with substances from either natural or industrial sources. These are known as secondary substances. Concentrations of secondary substances must be estimated by other means acceptable to ESRD.

Proponents must discuss all model control options chosen that may impact the model predictions.

Where Potential Acid Input (PAI) is an issue, Proponents shall provide deposition data from all areas shown by the model to be above 0.17 keq/ha/yr PAI.

Any changes to air quality model results will likely require reassessment of impacts to water, soil and human health.

2.4.2 Wildlife and Fish Habitat Modeling

Proponents should discuss modeling plans with Alberta Environment and Sustainable Resource Development and Environment Canada prior to starting field work.

Proponents should modify and/or calibrate habitat models by comparing the model predictions with data from the Study Area. If the field data do not correlate with the habitat model, the habitat model parameters should be revised (at a minimum) and the data collection process should be revisited. Models should be appropriately validated (see Muir *et al*, 2011).

3 EIA REPORT CONTENT

3.1 General Content Requirements

Proponents and their consultants should refer to recent EIA reports, and in particular to recent Supplemental Information Request packages, to help identify current expectations for EIA report content.

3.2 Project Description

Proponents must describe the activities and components of the project that are proposed for the duration of the project. If the scope of

information varies among components or phases of the project, Proponents shall demonstrate that the information is sufficient for the purposes of the EIA report.

Proponents must clearly outline alternatives to the Project or components of the Project that were considered and discuss environmental performance, safety and the technical and economic feasibility of the alternatives.

To demonstrate their understanding of the regulatory implications and obligations associated with a proposed project, Proponents must identify the legislation, policies, approvals, and current multi-stakeholder planning initiatives applicable to the Project.

TIP

Proponents should discuss potential impacts of any draft legislation or policies they are aware of that would apply to the Project. If this information is not in the EIA report an SIR may be generated asking for the information.

3.2.1 Infrastructure

Proponents with projects involving construction of dams requiring a licence should contact ESRD's Dam Safety Branch early on in their project planning cycle. A dam is defined as *any barrier at least 2.5 metres or more in height, that provides for storage capacity of 30,000 m³ of water, including water containing any other substance*,⁴ – thus, it includes tailings/waste impoundments and some compensation lakes, as well as traditional water dams. The Dam Safety Branch can describe the design documents and drawings required for licensing, safety issues that must be addressed and the licensing process.

For transportation infrastructure, Proponents should meet with Alberta Transportation early in the project planning to discuss:

- traffic impacts and necessary highway improvements required as a result of the

⁴ See section 1(1)(h) of the Water (Ministerial) Regulation (http://www.qp.alberta.ca/574.cfm?page=1998_205.cfm&leg_type=Regs&isbncln=9780779744510)

Project (Traffic Impact Assessment Guideline <http://www.transportation.alberta.ca/613.htm>);

- Alberta Transportation’s planning studies, construction schedules and funding; and
- who will be required to pay for any required highway improvements.

If the project will result in the “breakdown” of an intersection on a provincial highway, the Alberta Government and the municipality will not approve the development application.

3.2.2 Air Emissions Management

Proponents must include an estimate of greenhouse gas emissions for the Planned Development Case scenario.

3.2.3 Water and Wastewater

Proponents must include all sources (e.g., groundwater and surface water runoff) and all losses (e.g., evaporation, seepage and surface water runoff to the environment) in their water balances. Annual water balances are required and Proponents should describe any seasonal differences in water balances that will exist. Proponents should consider the potential effects of climate change on water supply and design flows.

When describing navigable waterways, Proponents should refer to Transport Canada’s *Navigable Waters Protection Act - Application Guide* (<http://www.tc.gc.ca/eng/marinesafety/oep-nwpp-guide-2053.htm>).

If the Project is an expansion or modification of an existing activity the Proponent shall identify source, quantity and composition of existing wastewater streams as well as the streams associated with the Project. Discussion of sewage treatment and disposal should include information on the quality of wastewater effluent.

3.2.4 Waste Management

Proponents must discuss how all waste streams will be handled, especially if the facility produces a steady stream of waste over the life of the project.

Proponents should include discussions of management strategies for sulphur and coke in this section.

3.2.5 Conservation and Reclamation

Proponents should include tables and graphs showing the area (ha) of disturbance and reclamation. The data should be provided annually for the first 10 years of the project and at appropriate intervals for the remaining life of the project. Proponents should be aware that First Nations and other stakeholders have indicated a preference to see status descriptions for shorter intervals rather than longer ones. Proponents should discuss progressive reclamation options where applicable.

Discussion of the revegetation plan shall include identification of the species types that will be used for seeding or planting, and the vegetation management practices to return disturbed areas to a state capable of supporting a self-sustaining vegetative community capable of ecological succession equivalent to pre-disturbance conditions, considering factors such as biological capability and diversity, natural disturbance regimes and end land use objectives.

Discussion of post-development land-capability for mines and quarries should include how the proposed end-pit lakes and wetlands will be designed to function as viable self-sustaining ecosystems similar to other water bodies in the area and how they will support desired future land uses.

Discussion of constraints to reclamation should clearly identify if the constraints are due to project design, environmental conditions or reclamation technology limitations.

Discussion of uncertainties related to the conceptual reclamation plan should include information on the success of the proposed methods in other projects.

Oil sands mine conservation and reclamation plans for new disturbances must be developed based on the requirements in the most recent *Environmental Protection and Enhancement Act* (EPEA) approvals, rather than on historical soil salvage and reclamation practices.

For mines and quarries, indicate how adjacent lease reclamation plans are integrated (e.g., hydrology, vegetation, wildlife habitat and corridors) and the relative timing of the reclamation at the lease boundaries.

3.3 Environmental Assessment

For all assessments in the report, Proponents must include a description of the environmental effects of malfunctions or accidents that may occur during the construction, operations or decommissioning and abandonment of the Project. For example: Identify and describe any engineering solutions proposed to prevent high-pressure releases or to prevent aerosolized materials being spread beyond the project footprint.

3.3.1 Air Quality, Climate and Noise

Ambient air quality parameters such as SO₂, CO, H₂S, total hydrocarbons (THC), NO_x, VOC, PAH, individual hydrocarbons of concern in the THC and VOC mixtures, ground-level ozone (O₃), representative heavy metals, particulates (road dust, PM₁₀ and PM_{2.5}) and odours and visibility should be included in this section.

Other pollutants of interest to stakeholders may include total hydrocarbons, individual hydrocarbons of concern and heavy metals.

Project emissions released to the atmosphere need to meet applicable and current regulatory guidelines, (i.e. *CCME National Emission Guidelines* http://www.ccme.ca/publications/list_publications.html and *Alberta Ambient Air Quality Objectives* <http://environment.alberta.ca/01005.html>) and details of the applied emission control technologies or what is being presented as the best available technology are to be provided.

When discussing acidifying emissions, Proponents should include all sulphur and nitrogen emissions unless a rationale is provided for not considering these emissions.

It is understood that baseline odours are difficult to quantify; however, a subjective analysis could be used, for example correlating the odours to ambient H₂S.

The intent of the climate change discussion is to describe the potential effects of climate change on the project and its key elements, and the project's interaction with the surrounding environment. It is not to describe the effects of the project on climate change.

The climate change discussion should include information on the current or potential design of the project to accommodate carbon capture and storage/use technology, including the impacts on greenhouse gas emissions if the capture and storage/use technology were implemented.

Noise prediction results should be presented at each assessment stage in a Noise Contribution Table similar to the one shown in [Appendix A](#)⁵. Noise impacts should include impacts on wildlife.

3.3.2 Hydrogeology

Structure contour maps, geologic cross-sections and isopach maps are useful ways to illustrate depth, thickness and spatial extent of lithology, stratigraphic units and structural features.

For the purposes of the impact assessment, the worst case scenario is typically evaluated with respect to water withdrawal. During the approval process, more detail on water use, make up water, disposal volumes, etc., will be required.

When discussing changes in groundwater quality Proponents must consider solubility changes due to higher temperatures during steaming.

When discussing changes in groundwater flow Proponents must consider locally elevated hydraulic heads as a result of overburden heave due to steaming.

3.3.3 Hydrology

Changes to water quantity and flow will impact aquatic ecology and all impacts noted in the hydrology section must also be assessed for their impact on aquatic ecology and discussed in that section.

⁵ Proponents should contact the Energy Resources Conservation Board (ERCB) for further details on information requirements.

If the project is a quarry, clearly discuss on-site and off-site water management, including detailed information on the alteration to surface flows, pumping, ponding, sedimentation control and quarry fines management.

For mine, quarry and water management projects, discuss the implications for additional evaporative losses resulting from the development of lakes (e.g., pit lakes, compensation lakes) in the reclaimed landscape. This is particularly critical in water-short areas of the province.

Discuss the location, extent, construction and operation timing, and duration of effects for stream crossings, water management structures (including water intakes), and permanent or temporary alterations or diversions to watercourses. Provide the rationale for the type of stream crossing method chosen. Where possible provide detailed design plans for each structure; where this is not possible provide generic designs and indicate the criteria that determine where each design would be used. Indicate when the detailed designs will be available.

Proposed road maintenance and crossing structure engineering solutions should be clearly presented (e.g. barriers along road at crossings to prevent sediment and deleterious substances from entering watercourses, frequent grading to maintain appropriate surface shape, road surface runoff diversions into well-vegetated areas, barriers to prevent erosion on all slopes leading to watercourses). The *Government of Alberta Roadway Watercourse Crossing Inspection Manual* (<http://srd.alberta.ca/LandsForests/LandManagement/WaterCrossings.aspx>) should be used to inform road crossing assessments and proposed monitoring. Monitoring and mitigation for watercourse crossings should be outlined including information on timing, periodicity, reporting and target response times for any remediation work.

Proponents should provide the latitude and longitude locations for each affected watercourse so that a navigability assessment may be conducted. Project components that could affect watercourses include, but are not limited to: crossings associated with access

roads and water pipes, water intakes, and draining of surface water bodies.

Setbacks should be measured from the edge of proposed disturbance to the top of the escarpment for watercourses. Clearly outline the targets, goals and commitments around setbacks from watercourses. Provide a rationale for any infrastructure within 100 metres of the top of the watercourse escarpment.

Any surface water used for winter construction, exploration or dust suppression must be characterized. Information to be provided includes volumes, location of withdrawal, timing (seasonal and over the life of the project) any influence on low and extreme low (7Q10) flows and whether this water use has been included in the *Water Act* application associated with the project.

Where a Water Management Framework restriction has been established for a river or a reach of a river, based on Instream Flow Needs, Proponents must describe contingency plans for water sourcing should flows require reduction or interruption of withdrawals.

3.3.4 Surface Water Quality

Changes to water quality will impact aquatic ecology and all impacts noted in the surface water quality section must also be assessed for their impact on aquatic ecology and discussed in that section.

Water quality should include appropriate parameters such as temperature, pH, conductivity, ion concentrations, metals, dissolved oxygen, suspended and dissolved solids, nutrients and fish tainting compounds.

The assessment of seasonal variations in quality should include under-ice conditions.

If known, Proponents should discuss the location of monitoring sites, the frequency of monitoring, the parameters to be monitored and the implementation of quality assurance programs. However, this level of detail is usually more appropriate for the approval application.

3.3.5 Aquatic Ecology

The aquatic ecology study area must be based on watershed units. Aquatic surveys must be conducted using recognized survey protocols where available. The assessment of aquatic ecology should include benthic invertebrates known to be significantly affected by anthropogenic activities.

Baseline data collection will include:

- Assembling existing information;
- Assessment and articulation of data gaps;
- Collection of new data; and
- Rationalization and inclusion of indicator, priority, and rare and endangered species.

Fish survey methods must be chosen to ensure distribution of local and rare and elusive species is adequately characterized. This may require the use of multiple capture methods and careful consideration of sites to be sampled. Timing of surveys should consider seasonal use potential and life histories of the expected local species assemblage.

Waterbodies and watercourses should be assumed to be fish-bearing until proven otherwise. If a Proponent chooses to indicate a waterbody or watercourse is not fish-bearing, the method used to determine this must be clearly articulated (e.g. statistical, physical barrier) and the spatial and temporal extent described (e.g. site, reach, or watershed specific, seasonal, annual). Beaver dams are not considered permanent or complete barriers to fish movement.

Assessment of impacts, whether short term (temporary), long term, or permanent to aquatic ecology will include the impacts to fish populations, benthic invertebrates and aquatic habitat from the following:

- Aquatic and riparian habitat degradation and fragmentation resulting from watercourse crossings. Results should be reported as crossings by type (pipeline, road, transmission line) structure/method (bridge, culvert, trenches, open cut, bore) per stream kilometer.
- Changes in water quality. These changes shall be specifically linked to known or

expected potential for developmental or fitness impacts to aquatic ecological receptors (e.g. tetrogenic effects of selenium in coal mines). Consider bioaccumulation, additive, antagonistic and synergistic effects. Assess tainting potential and human consumption implications.

- Current and potential impacts of sedimentation and nutrient inputs on the aquatic ecosystem should be assessed and reported.
- Changes in water flow due to water withdrawals or water releases. If the project is a dam, provide a clear discussion of how the timing and rate of water releases will be structured to minimize impacts on fish and fish habitat.
- Increased fishing pressure. The consequence of increased harvest opportunities must consider both changes to access, and cumulative increases to local and regional populations as a result of the project.
- Groundwater surface water interactions. Proponents must consider changes in surface water quantity and quality, volume, depth or flow direction as a result of groundwater withdrawals, heave and/or subsidence, thermal plumes and wastewater disposal. Any proposed resource extraction under fish-bearing waterbodies shall be clearly outlined and mapped.
- Potential invasive aquatic species.

3.3.6 Vegetation

The term *vegetation* refers to all types of vegetation (e.g., forested, agricultural, wetland, riparian). Proponents should ensure that all types are discussed in this section.

Vegetation surveys must be conducted using recognized survey protocols where available.

Vegetation descriptions must include a description of vegetation ecotypes (e.g., wetlands), old growth forests, rare plants and those species and communities important for traditional food, medicinal and cultural uses. Descriptions of non-native species (type, location and abundance) should be provided as they will help explain baseline conditions and to

help explain potential limitations to reclamation success.

For each wetland identified Proponents should describe the following:

- Direction of inflow/outflow;
- Location, size, type and condition;
- Ecological community type and the ecological function of the wetland in both the surrounding ecosystem and adjacent land use, including terrestrial and aquatic habitat functions; and
- The contribution of the wetland to the quantity and quality of surface water and groundwater.

Proponents should indicate (in text and on a map) what groundtruthing was used to confirm extrapolations from air photos or other sources.

Rare and endangered plants are listed in *The General Status of Alberta Wild Species* (ESRD - <http://srd.alberta.ca/FishWildlife/SpeciesAtRisk/GeneralStatusOfAlbertaWildSpecies/Default.aspx>) and the Alberta Conservation Information Management System (ACIMS) (<http://www.tpr.alberta.ca/parks/heritageinfocentre/default.aspx>). Locations of rare plant survey points and rare plant finds must be filed with the Alberta Conservation Information Management System.

Proponents should address all legally listed species under the federal *Species at Risk Act* (http://www.sararegistry.gc.ca/approach/act/default_e.cfm) in their assessment.

3.3.7 Wildlife

Further information on assessment methodologies can be found in *Sensitive Species Inventory Guidelines* (<http://srd.alberta.ca/FishWildlife/WildlifeManagement/SensitiveSpeciesInventoryGuidelines.aspx>).

The wildlife study areas shall be selected at a scale appropriate to address all direct and indirect effects on wildlife, including exploration activity undertaken to assess and delineate the resource, project infrastructure, ongoing resource delineation work to support the project once approved, and any monitoring seismic (4D) or wells. The natural home ranges

of Valued Ecosystem Components should also be considered.

Caribou Protection Plans (CPPs) are required for all new exploration and construction activities that fall within caribou ranges. Contact ESRD for information on the provincially-approved caribou land-use referral map.

Proponents operating in woodland caribou range will be expected to develop and undertake a caribou mitigation and monitoring plan as a condition of the *Environmental Protection and Enhancement Act* (EPEA) Approval associated with the project. This plan shall be clearly described in the EIA.

Proponents must describe how they will meet *A Woodland Caribou Policy for Alberta* (<http://srd.alberta.ca/FishWildlife/WildlifeManagement/CaribouManagement/>) and the federal *Recovery Strategy for the Woodland Caribou, Boreal population (Rangifer tarandus caribou) in Canada* (http://sararegistry.gc.ca/document/default_e.cfm?documentID=2253).

Proponents shall specifically describe how the project will influence undisturbed caribou habitat and how the project will affect habitat recovery efforts and meet the overarching goal to achieve and maintain at least 65% of each Caribou Range as undisturbed habitat. Proponents shall present impacts to caribou range, implementing a 500 meter buffer around all disturbances. Maps and summary tables clearly depicting the caribou range area affected by the project shall be provided.

The impact of aboveground pipelines on wildlife movement must be assessed and a clear plan for mitigation of impacts presented. Aboveground pipeline wildlife crossing design standards have been developed and are available from ESRD.

Wildlife resource maps should indicate locations of any Registered Fur Management Areas. Where applicable, Proponents must identify important wildlife areas (e.g., moose wintering areas, waterfowl staging areas), woodland caribou ranges (based on current data), and critical habitat.

The term *core habitat* refers to the areas of habitat required to meet aspects of a species' life history and which allow the species to persist on

the landscape, maintaining a viable population over time.

If Proponents will require additional exploration, seismic (including 4D) and core hole activities to support project development and operations, they should describe the disturbance type, location, length of time and potential impacts to wildlife and wildlife habitat. If these activities are not being proposed or planned, Proponents should clearly state that in their EIA report.

When discussing the potential for the Project Area to be returned to its existing state Proponents should describe the potential, even if it is low, for the original habitat(s) and wildlife communities to reoccupy the Project Area. Proponents should also discuss the potential for the reclaimed sites to provide a similar habitat function in the ecosystem as the existing sites.

3.3.8 Biodiversity

The Alberta Biodiversity Monitoring Institute protocols (<http://www.abmi.ca/abmi/reports/reports.jsp?categoryId=0>) should be used wherever possible to conduct biodiversity assessments.

The biodiversity metrics should represent broad taxonomic assemblages.

Biodiversity potential ranking should be done by combining measures of species richness, overlap in species lists, significance of individual species or associations, uniqueness and other appropriate measures.

3.3.9 Terrain and Soils

For the purposes of the EIA report, soils must be surveyed to at least Survey Intensity Level 2 (SIL 2) in the Project Area (see [Appendix B](#) for SIL information). If the soils have been surveyed to SIL 1 for the approval application those results should be presented in the EIA report. If the survey to SIL 1 has not yet been done, Proponents should indicate when they will conduct the survey. If the Soils Local Study Area is larger than the Project Area then Proponents must provide survey information to SIL 2.

Soils surveys should be done at an adequate level of detail to determine effects of the

project's emissions (with emphasis on PAI) on soil quality. In many cases the Air Local Study Area is surveyed at SIL 2 and the Air Regional Study Area is surveyed at SIL 3. Relevant documented data from previous EIAs/studies will be acceptable. In any case, the surveyed area must include all of the areas where PAI impacts have been modeled. Proponents must provide a rationale for the level of survey (or other methods) used and an indication of their confidence in the predictions based on the level used.

Proponents should indicate (in text and on a map) what groundtruthing was used to confirm extrapolations from air photos or other sources.

In 2008, the Record of Site Condition form (<http://environment.alberta.ca/01065.html>) was introduced for all Phase 2 environmental site assessments, remediation reports, and risk management plans submitted to ESRD.

Proponents should include a summary of all Records of Site Condition for the lands in the Project Area and describe any potential impacts on site development arising from the information contained in the Records.

In 2009, ESRD developed the Environmental Site Assessment Repository (ESAR) (<http://environment.alberta.ca/01520.html>). Proponents should review the Repository and include a summary of all records for the lands in the Project Area and describe any potential impacts on site development arising from the information contained in the Records.

For the purpose of assessing non-acidifying nitrogen deposition in the Athabasca Oil Sands Region⁶, the following approach must be adopted:

- 25% of the first 10 kg N ha⁻¹y⁻¹ should be considered acidifying;
- All additional deposited N should be considered acidifying; and
- Deposited N should be recognized as potentially contributing to ecosystem

⁶ Note that this approach is not approved for use in other areas.

eutrophication even though it will not be acidifying.

3.3.10 Land Use

Discussion of access management should indicate how access for traditional users will be maintained. Proponents should also describe programs they will implement to control access and resource use (e.g., fishing, hunting, recreation) by their workers.

For agricultural areas, Proponents should describe the current major agricultural operation types (crops and livestock) in the Project Area that will be removed by the development and provide data on the areal extent of each major type. The impacts of the loss of these operations should be framed in the context of the regional agricultural setting. Loss of specialty agricultural operations (e.g., organic operations, seed farms, apiaries) should be noted.

Similarly, the impacts of emissions in the Local Study Area and the Regional Study Area on agricultural operations must be discussed, especially for areas of sensitive soils or crops.

Unique sites or special features identified as Parks and Protected Areas include Provincial Parks, Wildland Parks, Willmore Wilderness Park, Provincial Recreation Areas, Ecological Reserves, Wilderness Areas Natural Areas and Heritage Rangelands, National Parks, National Historic Sites, and National Marine Conservation Areas. When determining potential impacts to special protected areas, Proponents should take into consideration the high standard of care that is appropriate for those sites.

Environmentally Significant Areas include:

- Areas of provincial significance such as undisturbed upland and valley habitats, important waterfowl production and shorebird staging areas and critical wildlife ranges.
- Areas of national significance including staging habitats with nationally high concentrations of waterfowl and shorebirds, Canadian Heritage Rivers, national parks, habitats for endangered species and concentrations of nationally rare plant and animal species.

- Areas of international significance including sites of globally endangered species, UNESCO World Heritage Sites and Wetlands of International Importance as identified by Ramsar, geological type localities and extremely diverse grassland-valley complexes on international waterways.

Lands with protective notations (PNTs), including Permanent Sample Plots, on public land should be identified. All reservations and notations on public lands should be identified and mapped. The holding agency of the reservation/notation is to be consulted to discuss potential impacts and mitigation strategies.

Proponents should provide an assessment of potential impacts on parks or Crown lands that have been reserved for future designation as parks, and information on how they propose to mitigate those impacts. Proponents should also summarize any consultations with Alberta Tourism, Parks and Recreation regarding potential impacts and mitigation on parks or any other lands of interest (Crown reservations).

Based on input from aboriginal groups, Proponents should identify traditional use areas within the Study Area.

3.3.11 Camps

Proponents need to discuss the rationale for proposing new camps. This includes discussions on all camp alternatives considered, including why existing camps within the area are not being utilized, expanded or enhanced. Proponents must identify:

- The number and type of workers the camp will serve during construction, operation and maintenance and identify the expected life of the camp.
- How the camp will be accessed (i.e. if existing provincial or industry roads will be used or new roads built).
- How the camp will be developed and the related infrastructure.
- The services that will be provided in the camp (e.g., security, recreation and leisure, medical services), including a description of the impacts on Municipal or other external

services. This also includes how water, wastewater, and waste services will be managed at the camp.

- All environmental impacts of the proposed camp development.

3.3.12 Aerodromes

Proponents must discuss the transportation of workers to their site including all alternatives considered and the rationale for the selected method. Where workers will be flown in, outline which aerodromes (private and/or public) in the region were considered and identify all additional infrastructure that would be required if an existing aerodrome was selected.

Provide a discussion on how additional air traffic within the region and potential safety concerns were considered with impacts to road traffic safety when determining the preferred transportation approach.

If a new aerodrome is proposed, Proponents must discuss:

- Why one of the existing aerodromes was not chosen.
- Alternative locations considered for the new aerodrome, as well as the rationale for the selected location, including the design of the airstrip.
- The effects of the construction, operations and decommissioning of the aerodrome on wildlife and the environment, including impacts of noise, light and chemicals (e.g., de-icing fluids).
- The operational characteristics for the aerodrome, including:
 - o Origin of flights,
 - o Number of flights per day/week (by project),
 - o Number of passengers per day/week (by project),
 - o Nature of travel (daily commute versus shift change), and
 - o Future growth plans.

Proponent must also address regional implications of the aerodrome and outline other

existing or proposed projects that could potentially be served by the aerodrome. As well, an update on discussions with the municipal, provincial and federal regulators on the development of any new aerodrome must be provided.

3.3.13 Fish Habitat Compensation

Proponents should discuss proposed fish habitat compensation locations and designs with ESRD in advance of submitting their EIA report.

Alternative locations, and the environmental effects associated with each location, must be identified and assessed for any proposed fish habitat compensation.

The following information should be provided:

- The existing aquatic and terrestrial resources at each alternative location.
- A description of the proposed locations and design alternatives. Present alternatives that have been considered to meet the federal No Net Loss policy for fish.
- The potential effects of each option on the aquatic and terrestrial resources at each alternative location.
- When the activity is expected to be complete and the compensation habitat left for natural processes.

3.4 Historic Resources

TIP
Proponents will require: <ul style="list-style-type: none">• a permit from Alberta Culture to conduct field investigations associated with their footprint (http://culture.alberta.ca/heritage/resourcemanagement/archaeologyhistory/researchpermitmanagementsystem/OPaC.aspx); and• an <i>Historical Resources Act</i> clearance prior to any site preparation or construction work occurring.

Proponents should contact Alberta Culture (AC) prior to starting work on the EIA report to determine the information required for the Historic Resources Impact Assessment (HRIA). The HRIA must cover palaeontological

resources and historic period sites as well as archaeological resources.

Proponents must ensure that the Historic Resources section of the Terms of Reference is addressed within the EIA report. Proponents must provide a consultants report dedicated to historic resources, including the types of Aboriginal traditional use sites considered as historic resources under the *Historical Resources Act* (http://www.qp.alberta.ca/1266.cfm?page=H09.cfm&leg_type=Acts&isbncln=9780779753581). The consultants report should contain a summary of the HRIA studies and results of the studies carried out for the ATS Project footprint and ATS Project Lease Boundary.

Information as outlined in Condition 1.5.3 *Relationship between the project footprint and HRIA studies* and Condition 1.5.4 *Archaeological sensitivity* should be included within the consultants report. Within the EIA report, including the historic resources consultants report, the precise location of historic resource sites is to be masked by the use of appropriate sized icons and mapping scales.

At a minimum, the land-base that must be included within the Historic Resources Impact Assessment Study Area (HRIASA) is the first ten-year development area - *including the currently conceptualized footprint and any adjacent lands that could accommodate modifications to the currently conceptualized footprint*. If the 10-year development area only is assessed, additional baseline studies would be required at a later date for the remaining portions of the Project Area and/or project lease boundaries.

Failure to include sufficient lands within the HRIASA will result in an inefficient historic resources management program for this project – resulting in multiple Historic Resources Impact Assessment level of studies and possible delays in granting *Historical Resources Act* clearance to portions of the finalized first ten year footprint.

Another option is to have the boundaries of the HRIASA be the same as a larger land-base. Some Proponents use the Project Area as the

HRIASA. Under this option the field studies on lands located outside of the first ten-year footprint would be conducted at the Historic Resources Impact Assessment level, not baseline level. If the field studies are properly developed this approach could result in a larger land-base being the subject of the initial *Historical Resources Act* clearance.

3.5 Traditional Ecological Knowledge and Land Use

In 2003, Alberta developed its *Best Practices Handbook for Traditional Use Studies* (<http://www.assembly.ab.ca/lao/library/egovdoc/s/alaa/2003/138222.pdf>) through sponsorship under the Western Economic Partnership Agreement (federal and provincial funding).

The Canadian Environmental Assessment Agency (CEAA) has developed *Considering Aboriginal Traditional Knowledge in Environmental Assessments Conducted under the Canadian Environmental Assessment Act - Interim Principles* (<http://www.ceaa.gc.ca/default.asp?lang=En&n=4A795E76-1>).

These documents are useful references for Proponents who are collecting and integrating TEK and traditional land use information into their EIA reports.

3.6 Public Health and Safety Assessment

When commenting on the implications for public health and health delivery Proponents should specifically reference implications for individual aboriginal communities and groups.

Follow-up work proposed to assess potential health impacts could include, but is not limited to, risk management strategies and human health monitoring.

For in-situ projects where there are significant, recent, local and regional Human Health Risk Assessments already completed, Proponents may be able to use this existing data for impact analysis of their proposed project. Proponents who are looking to explore this option should contact the EA Coordinator to set up a meeting with Alberta Health to discuss. This should be done prior to starting work on the Human Health Risk Assessment to determine the appropriate data, methods and models to use.

3.7 Socio-Economic Assessment

Proponents are encouraged to identify training, employment and business benefits specifically accruing to aboriginal communities in the Study Area where possible.

4 INTEGRATED APPLICATION FORMAT

Current practice is to submit the EIA report and applications for approvals from the Regulatory Board and ESRD as an Integrated Application package. Information required for public land dispositions may also be included in the Integrated Application.

Proponents are required to provide the approval application content in a stand-alone binder(s) that is separate from the EIA report content. No references to the EIA report can be included in the approval application binder(s). This will facilitate the review of the approval application content and the Environmental Assessment Director's EIA Completeness decision which focuses on the EIA report content.

TIP
The Table of Contents for the EIA report does not need to be the same as the Table of Contents for the Terms of Reference.

4.1 Paper and Electronic Submissions

While ESRD is moving to electronic submissions only, paper versions of EIA Reports and Supplemental Information Responses will still be required. Official receipt occurs once both paper and electronic versions have been submitted to regulatory reviewers.

Paper versions must be provided in binders with each binder clearly labeled on the cover and spine so the reader can see the Proponent name, Project name and the contents.

Binders should have clearly labeled tabs to separate sections and large binders (e.g., 4 inch or larger) must not be used. Information should be split into smaller, logical components and put into separate binders.

Proponents will be asked to provide electronic versions of their EIA report on CDs or flash drives. Electronic versions of EIA reports should include search and copy capabilities (to facilitate requests for supplemental information). Proponents and stakeholders should be aware that if there is a difference between paper version and the electronic version the most recent electronic version is the official document.

When Proponents submit SIR responses or project updates they should combine the information with the original EIA report and place all of the information on one new CD or flash drive.

Proponents are encouraged to place their EIA report on their website. Proponents should update the web versions at the same time the paper and CD versions are updated.

4.2 EIA Report Summary

Proponents must prepare a summary of the EIA report that is a stand-alone document that provides a reader with sufficient information to understand the project and its potential positive and negative effects.

The summary report should include suitable maps, charts and other illustrations to identify the components of the project, the existing conditions, and the environmental and the socio-economic implications of the development.

Regulators and stakeholders find it very useful to have a summary of the commitments the Proponent is making in the EIA report. The summary table need not reference commitments to follow legislated requirements.

TIP
The summary report should be written in layman's terms to allow for the broadest possible understanding of the EIA report's conclusions.

4.3 Concordance Table

The EIA report must contain a concordance table. It allows reviewers to determine if the Proponent has addressed all of the requirements

identified in the Terms of Reference and where that information can be found in an Integrated Application. It significantly aids in determining if an EIA report is complete.

The concordance table must be keyed to the Terms of Reference, preferably to the sub-section level, and must provide sufficient information to readily identify where the required information can be found.

[Appendix C](#) shows an excerpt from a concordance table demonstrating how Terms of Reference information requirements should be cross-referenced.

4.4 Maps, Diagrams and Air Photos

The basic information on maps and diagrams should include:

- Scales;
- “North” orientation arrow;
- Legal land location grid (section, township, range);
- Important geographic or topographic features (e.g., waterbodies, watercourses, roads, rail lines); and
- Important geopolitical locations and boundaries (e.g., cities, towns, Municipal Districts and Counties, parks.)

The information presented on maps and diagrams must be clearly labeled directly on the document or in a legend. This is particularly important on flow diagrams.

Map scale and paper size should be appropriate to the information being conveyed. Information that is too small to interpret will result in Supplemental Information Requests for legible versions.

In some instances, air photo mosaics can be used as an alternative to maps. In addition to the basic requirements, air photo mosaics should include the date or dates of the original air photos. Flight information may also be needed to confirm that photos taken at different times are compatible.

4.5 References

All relevant references should be provided in the EIA report to allow reviewers to confirm information sources. References may be

provided either in the body of the EIA report or in a Reference Section.

4.6 Glossary and Acronyms

A Glossary of technical and unusual terms must be provided as part of the EIA report. As well, all acronyms must be listed in a separate section.

The first time an acronym is used the full text should be provided followed by the acronym in brackets – e.g., Instream Flow Needs (IFN). It would be best to apply this rule at a minimum to each binder of the EIA report – even better would be to each major section of the report.

5 REFERENCE DOCUMENTS

[Appendix D](#) provides a listing of legislation, policy and guidance documents published by provincial and federal regulatory agencies that will assist Proponents in developing their EIA report. Proponents must consult the most recent version of these references in preparing their EIA report.

CITATION

This document will be cited as:

Guide to Preparing Environmental Impact Assessment Reports in Alberta – Updated March 2013. Alberta Environment and Sustainable Resource Development, Environmental Assessment Team, Edmonton, Alberta. EA Guide 2009-2. 26 pp.

ENVIRONMENTAL ASSESSMENT CONTACTS

Further information about Alberta’s Environmental Assessment process can be obtained from:

Environmental Assessment Team
Alberta Environment and Sustainable
Resource Development
111 Twin Atria
4999 – 98 Avenue
Edmonton, Alberta T6B 2X3

Phone: (780) 427-2700 Fax: (780) 427-9102

Email: environmental.assessment@gov.ab.ca

Website:

<http://www.environment.alberta.ca/01495.html>

APPENDIX A – NOISE PREDICTION RESULTS FORMAT

Noise Contribution Table Outline for Each Resident

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Background Measured Nighttime CSL	Permissible Nighttime Sound Level (PSL)	Ambient Nighttime Sound Level (PSL-5dBA)	Existing (Proponent's facility) Noise Contributions	Existing (Proponent) Contributions + Ambient (Column 4+3)	Predicted (Proponent) Expansion Noise Contributions

Column 7	Column 8	Column 9	Column 10	Column 11	Column 12
Entire Noise Contribution from (Proponent) (Column 4+6)	Noise Contributions from Neighboring Facilities	Total Noise Contributions from ERCB Facilities (Column 7+8)	Total Noise Contributions for the Area (Column 9+3)	Predicted Noise Contribution Compared to PSL (Column 2-10)	Predicted Noise Contributions from Other Planned Facilities

* all values in dBA

APPENDIX B – SOIL SURVEY INTENSITY LEVELS (SIL)

The following information was extracted from Table 2, p. 11 of *A Soil Mapping System for Canada Revised* (Agriculture Canada 1981).

Level	Definitive Characteristics		Associated Characteristics		
	Procedure Intensity	Method of Field Checking	Range of (and usual) Publication Scale	Appropriate Levels of Soil Taxonomy	Typical Survey Objectives
1	At least one soil inspection in every delineation. Boundaries checked in the field along entire length in open country, or over 30% in woodland. Approx. 1 to 5 ha represented by each inspection.	Traverses primarily on foot less than 0.5 km apart. Profile descriptions and samples for all soils.	1:14,000 or larger (1:5,000)	Series	Information for very many purposes down to the level of small farms, small stream catchments, conservation areas and urban sub-divisions.
2	At least one soil inspection in over 90% of delineations. Boundaries checked in the field along most of their length in open country, or less than 10% in woodland. Approx. 2 to 30 ha represented by each inspection.	Traverses on foot and by vehicle about 2 km apart. Profile descriptions and samples for all major named soils.	1:5,000 to 1:40,000 (1:20,000)	Series or Family	Information for many purposes down to the level of local planning for groups of farms, stream catchments, large urban subdivisions or small national parks.
3	At least one soil inspection in most (60% to 80%) delineations. Boundaries checked in the field at intervals, but mainly extrapolated from aerial photographs. Approx. 20 to 200 ha represented by each inspection.	Some traverses on foot, many by vehicle, up to 4 km apart. Profile descriptions for all soils, samples from the majority of soils.	1:30,000 to 1:130,000 (1:50,000)	Series, Family or Subgroup	Information for limited number of purposes to the level of farming areas, county planning, major stream catchments and large national parks.

APPENDIX C – SAMPLE CONCORDANCE TABLE

Terms of Reference Section	Topic	Ref. Section in Application	Ref. Section in Supporting Documents
3.6.1 [A] Vegetation	Describe the existing vegetation by mapping communities for each ecosite phase	Volume 1 Application – Sec. 14.4, 15.6 and 15.10	Vol. IIC, Sec.3 and Vol. IID, Sec. 5
3.7.2 [B] a) Wildlife	Describe the potential changes to wildlife: <ul style="list-style-type: none"> • evaluate potential impacts on wildlife populations, habitat use, habitat availability/quality and food supply during all phases of the Project. Consider habitat loss, abandonment, reduced effectiveness, fragmentation or alteration as it relates to movement, reproductive potential and recruitment fro regional wildlife populations over the life of the Project. 	Volume 1 Application Sec. 14.4, 15.6 and 15.10	Vol. IIC, Sec. 4
5. [A] b) Traditional Ecological Knowledge and Land Use	Describe traditional uses including fishing, hunting, nutritional or medicinal plant harvesting, and cultural use by affected aboriginal peoples.	Volume 1 Application Sec. 11.4, 14.4, 15.8 and 15.10	Vol. IID, Sec. 4

APPENDIX D – REFERENCE DOCUMENTS

Approval Related References

Approval Authority	Document Title
ESRD	<i>Guide to the Preparation of Applications and Reports for Coal and Oil Sands Operations</i>
	<i>Guide to Content for Industrial Approval Applications</i>
	<i>Administrative Guide for Approvals to Protect Surface Water Bodies Under the Water Act</i>
	<i>Water Act Factsheet: Approvals and Licences</i>
Alberta Utilities Commission (AUC)	<i>Rule 007: Applications for Power Plants, Substations, Transmission Lines, and Industrial System Designations</i>
Energy Resources Conservation Board (ERCB)	<i>Directive 023: Guidelines Respecting an Application for a Commercial Crude Bitumen Recovery and Upgrading Project</i>
	<i>Directive 056: Energy Development Applications and Schedules</i>
	<i>Directive 061: How to Apply for Government Approval of Coal Projects in Alberta</i>
Natural Resources Conservation Board (NRCB)	<i>Guide to the Board Review Process under the Natural Resources Conservation Board Act</i>

Legislation

Subject	Document Title
Provincial process	<i>Environmental Protection and Enhancement Act (Part 2, Division 1 – Environmental Assessment Process)</i>
	<i>Environmental Assessment Regulation</i>
	<i>Environmental Assessment (Mandatory and Exempted Activities) Regulation</i>
	<i>Water Act (Part 2, Division 2 - Environmental Assessment Process)</i>
	<i>Water (Ministerial) Regulation</i>
	<i>Alberta Utilities Commission Act</i>
	<i>Energy Resources Conservation Act</i>
	<i>Natural Resources Conservation Board Act</i>
	<i>Historical Resources Act</i>
	<i>Oil and Gas Conservation Act</i>
	<i>Oil Sands Conservation Act</i>
<i>Coal Conservation Act</i>	

Subject	Document Title
	<i>Forest and Prairie Protection Act</i>
Federal process	<i>Canadian Environmental Assessment Act, 2012</i>
	<i>Regulations Designating Physical Activities</i>
	<i>Canada Wildlife Act</i>
	<i>Fisheries Act (Canada)</i>
	<i>Migratory Birds Convention Act</i>
	<i>Navigable Waters Protection Act</i>
	<i>Species at Risk Act</i>

Broad Policy Documents

Subject	Document Title
Climate Change	Alberta's 2008 Climate Change Strategy (Alberta Environment and Sustainable Resource Development)
Consultation	The Government of Alberta's First Nation Consultation Policy on Land Management and Resource Development (Alberta Aboriginal Relations)
Energy	Launching Alberta's Energy Future: Provincial Energy Strategy (Alberta Energy)
Land Use	Land-use Framework (Alberta Environment and Sustainable Resource Development)
Oil Sands	Responsible Actions: A Plan for Alberta's Oil Sands (Alberta Treasury Board)
Water	Water for Life: A Renewal (Alberta Environment and Sustainable Resource Development)

Assessment Process Documents

Subject	Document Title
Assessment Process	Alberta's Environmental Assessment Process (Alberta Environment and Sustainable Resource Development)
	Canada-Alberta Agreement for Environmental Assessment Cooperation (Canadian Environmental Assessment Agency and Alberta Environment and Sustainable Resource Development)
	Basics of Environmental Assessment (Canadian Environmental Assessment Agency)
Consultation and public engagement	Alberta's First Nation Consultation Guidelines on Land Management and Resource Development (Note that each department has a separate section related to their specific consultation requirements)
	Energy Development Applications and Schedules – Section 2 Participant Involvement (Energy Resources Conservation Board)

Subject	Document Title
	Public Involvement In Needs Or Facilities Applications (Alberta Utilities Commission)
	Basics of Environmental Assessment (Canadian Environmental Assessment Agency)
	Considering Aboriginal Traditional Knowledge in Environmental Assessments Conducted Under the <i>Canadian Environmental Assessment Act</i> – Interim Principles (Canadian Environmental Assessment Agency)
	Early Aboriginal Engagement: A Guide for Proponents of Major Resource Projects (Major Projects Management Office)
	Aboriginal Consultation and Accommodation – Interim Guidelines for Federal Officials to Fulfill the Legal Duty to Consult (Indian and Northern Affairs Canada)
Assessment of cumulative effects	Information Letter – Cumulative Effects Assessment in Environmental Impact Assessment Reports under the <i>Alberta Environmental Protection and Enhancement Act</i> (Energy Resources and Conservation Board, Alberta Environment and Sustainable Resource Development, Natural Resources Conservation Board)
	Cumulative Effects Assessment Practitioners’ Guide (Canadian Environmental Assessment Agency)
Disclosure	Guide to Using the Project Summary Table (Alberta Environment and Sustainable Resource Development)
	Preparing Disclosure Documents for Environmental Assessment Screenings (Alberta Environment and Sustainable Resource Development)
	Guide to Preparing a Description of a Designated Project under the <i>Canadian Environmental Assessment Act, 2012</i> (Canadian Environmental Assessment Agency)

Technical Documents

Subject	Document Title
Acid deposition	Application of Critical, Target, and Monitoring Loads for the Evaluation and Management of Acid Deposition (Clean Air Strategic Alliance and Alberta Environment and Sustainable Resource Development)
Air emission management	Alberta Ambient Air Quality Objectives (Alberta Environment and Sustainable Resource Development)
	AENV Interim Emission Guidelines for Oxides of Nitrogen (NOx) for New Boilers, Heaters and Turbines using Gaseous Fuels for the Oil Sands Region in the Regional Municipality of Wood Buffalo North of Fort McMurray based on a Review of Best Available Technology Economically Achievable (BATEA)
	Canadian Council of Ministers of the Environment (CCME) National Emission Guidelines for Stationary Combustion Turbines

Subject	Document Title
	Canada Wide Standards for Particulate Matter (PM) and Ozone (Canadian Council of Ministers of the Environment)
	ERCB Interim Directive 2001-03 - Sulphur Recovery Guidelines
	CCME National Emission Guideline for Commercial/Industrial Boilers and Heaters
Air quality modeling	Air Quality Model Guideline (Alberta Environment and Sustainable Resource Development)
Biodiversity	Canadian Biodiversity Strategy (Federal – Provincial – Territorial Biodiversity Working Group)
	A Guide on Biodiversity in Environmental Assessment (Canadian Environmental Assessment Agency)
	Alberta Biodiversity Monitoring Institute Protocols
Groundwater	Lower Athabasca Region Groundwater Management Framework (Alberta Environment and Sustainable Resource Development)
	Water Conservation and Allocation Guideline for Oilfield Injection (Alberta Environment and Sustainable Resource Development)
	Alberta Environment Guide to Groundwater Authorization (Alberta Environment and Sustainable Resource Development)
Habitat Model Validation	Muir, J.E. V.C. Hawkes, K.N. Tuttle, and T. Mochizuki. 2011. Synthesis of Habitat Models used in the Oil Sands Region. Cumulative Environmental Management Association, Fort McMurray, AB. CEMA Contract No. 2010-0034 RWG. 61 pp.
Hydrocarbon storage	ERCB Directive 055 - Storage Requirements for the Upstream Petroleum Industry
Noise management	ERCB Directive 038 - Noise Control
Oil sands tailings	ERCB Directive 074 - Tailings Performance Criteria and Requirements for Oil Sands Mining Schemes
Public health and safety	Guidance on Human Health Risk Assessment for Environmental Impact Assessment In Alberta (Alberta Health)
	Federal Contaminated Site Risk Assessment in Canada, Part I: Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA), . (Health Canada)
	Richardson, G.M. 1997. Compendium of Canadian Human Exposure Factors for Risk Assessment. O'Connor Associates Environmental Inc.
	Human Health Risk Assessment Protocol (HHRAP) for Hazardous Waste Combustion Facilities (US EPA, Office of Solid Waste and Emergency Response. EPA520-R-05-006)
	Exposure Factors Handbook (U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-09/052F, 2011)

Subject	Document Title
Roadway Watercourse Crossing	Government of Alberta Roadway Watercourse Crossing Inspection Manual (Alberta Environment and Sustainable Resource Development)
Soil and water remediation	Alberta Tier 1 Soil and Groundwater Remediation Guidelines (Alberta Environment and Sustainable Resource Development)
	Alberta Tier 2 Soil and Groundwater Remediation Guidelines (Alberta Environment and Sustainable Resource Development)
	Environmental Site Assessment Repository (ESAR)
Soils	Soil Survey Handbook, Volume 1 (Agriculture and Agri-Food Canada)
	The Canadian System of Soil Classification (Agriculture and Agri-Food Canada)
	Land Capability Classification System for Forest Ecosystems (Cumulative Environmental Management Association)
	Soil Quality Criteria Relative to Disturbance and Reclamation (Alberta Agriculture and Rural Development)
	Record of Site Condition User Guide (Alberta Environment and Sustainable Resource Development)
Surface water quality	Surface Water Quality Guidelines for Use in Alberta (Alberta Environment and Sustainable Resource Development)
	CCME Canadian Water Quality Guidelines
Traditional knowledge	Best Practices Handbook for Traditional Use Studies (Alberta Aboriginal Relations)
	Considering Aboriginal Traditional Knowledge in Environmental Assessments Conducted under the <i>Canadian Environmental Assessment Act</i> – Interim Principles (Canadian Environmental Assessment Agency)
	Guidelines for Incorporating Traditional Knowledge in Environmental Impact Assessment (Mackenzie Valley Environmental Impact Review Board)
Transportation	Traffic Impact Assessment Guideline (Alberta Transportation).
	Application Guide – Navigable Water Protection Program (Transport Canada)
Vegetation	The Field Guide to Ecosites of Northern Alberta (Beckingham and Archibald)
	Alberta Vegetation Inventory Standards (AVI)(Alberta Environment and Sustainable Resource Development)
Waste classification	Alberta Environment User’s Guide for Waste Managers (Alberta Environment and Sustainable Resource Development)
Waste management	Hazardous Waste Storage Guidelines (Alberta Environment and Sustainable Resource Development)

Subject	Document Title
	ERCB Directive 058 - Oilfield Waste Management Requirements for the Upstream Petroleum Industry (Energy Resources Conservation Board)
	ERCB Directive 050 - Drilling Waste Management (Energy Resources Conservation Board)
Wetlands	Provincial Wetland Restoration/Compensation Guide (Alberta Environment and Sustainable Resource Development)
	Alberta Vegetation Inventory Interpretation Standards (Alberta Environment and Sustainable Resource Development)
	Wetlands Environmental Assessment Guideline (Environment Canada)
Wildfire	FireSmart Guidebook for the Oil and Gas Industry (Alberta Environment and Sustainable Resource Development)
Wildlife	General Status of Alberta Wild Species (Alberta Environment and Sustainable Resource Development)
	Alberta Conservation Information Management System (ACIMS)(Alberta Tourism, Parks and Recreation)
	Sensitive Species Inventory Guidelines (Alberta Environment and Sustainable Resource Development)
	A Woodland Caribou Policy for Alberta (Alberta Environment and Sustainable Resource Development)
	<i>Canada Wildlife Act</i> (Environment Canada)
	<i>Migratory Birds Convention Act</i> (Environment Canada)
	<i>Species at Risk Act</i> (Environment Canada)
	Recovery Strategy for the Woodland Caribou, Boreal population (<i>Rangifer tarandus caribou</i>) in Canada (Environment Canada)
	Canadian Wildlife Species at Risk (Committee on the Status of Endangered Wildlife in Canada)
	Migratory Birds Environmental Assessment Guideline (Environment Canada)
	Environmental Assessment Guideline for Forest Habitat of Migratory Birds (Environment Canada)
	Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada (Environment Canada)
	Addressing <i>Species at Risk Act</i> Considerations under the <i>Canadian Environmental Assessment Act</i> for Species under the Responsibility of the Minister responsible for Environment Canada and Parks Canada (Environment Canada)
	The <i>Species at Risk Act</i> Environmental Assessment Checklists for Species under the Responsibility of the Minister Responsible for Environment Canada and Parks Canada (Environment Canada)

Subject	Document Title
	Synthesis of Habitat Models used in the Oil Sands Region (Muir <i>et. al.</i> , 2011)