

**Environmental Risks and Plan Response for the North Saskatchewan Regional Plan**

**DRAFT (prepared by the Environmental Law Centre)**

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| Risk Category | Nature of environmental risks | Short to medium terms risks | Risk characterization  (long term) | Risk mitigation | Regional Plan options |
| Water quality | Loading of contaminants/nutrients (land, air, internal)   * Regulated vs. unregulated inputs * Land use- water connectivity * Surface-groundwater connectivity   Quantity  (climate) | Acute risks of effluent streams reliant of dilution effect (ammonia/pH)  Bacterial risks for potable consumption  Sediment (storm/runoff water)  P/N risks (short and long term) on ecological outcomes  Decreased assimilative capacity (with increased diversions or reduced supply due to climate variability) | Accelerated Eutrophication (with related risks)  Chronic and cumulative impacts on ecosystems (all pollutants) | Loading management/regulation  Load assessments  Effluent approvals/renewals conditions  Preservation of flows to maintain dilutive capacity  Reduce runoff | Outcome: Maintain or restore water quality  Guiding Principle: Pollution prevention  New activities to be load neutral  Programming to address nutrient exports (in unregulated or “under-regulated” areas)  Monitoring efficacy for discerning acute, chronic and cumulative effects (background, forecasting, backcasting)  Wetland restoration for water quality purposes |
| Water quantity | Supply (climate)  Regulated flows for IFN  Groundwater-surface water interactions | Diversions may result in ecological impacts  Diminished flows resulting in decreased dilutive capacity | Degraded ecological systems  Degraded water quality | Demand management  Conservation initiatives (regulatory/voluntary/market) | Outcome: maintain or restore environmental flows  Crown licencing of Water Conservation Objective (with timeframe)  Demand management principles  Conservation mechanism for environmental flows |
| Infrastructure related contamination of land, air and water | Point source contamination & emissions (and acute impacts on land, air and water) | Infrastructure failures  Remediation failure  Abandonment failures <http://www.albertasurfacerights.com/upload/files/SBachuTWatson%20%20Potential%20Wellbore%20Leakage.pdf>  Pipeline infrastructure and repair (particularly at or near water crossings) | Long term risks associated with abandoned wells | Long term security/fund to deal with future abandonment and reclamation/remediation failures  Abandonment audit  Standardizing stringent abandonment criteria | Assessment of enforcement effectiveness  Mechanisms to increase stringency/due diligence near waterways (technical review and standards for monitoring and maintenance)  Regional remediation, reclamation and abandonment assessment & audit |
| Biodiversity | Species at Risk  Habitat/footprint management (conversion, degradation, fragmentation)  Species introduction  Climate change  Overexploitation/direct human caused mortality | Change in biotic and abiotic factors that support biodiversity | Decreased biodiversity (richness and relative abundance)  Extinction and extirpation  Decrease in genetic diversity | Species at risk planning and mitigation.  Habitat protection and restoration of SAR.  Biodiversity management framework  Progressive reclamation (regulatory) | Formalize species assessment and decision making criteria for AB Energy/AER and AESRD tenure allocations in areas of important habitat.  Precautionary principle to be applied by decision makers  Protected/conservation area |
| Air quality | Health and ecological impacts related to air quality  Substances of primary concern:   * NO2 * SO2 * Particulate matter * Ozone   Volatile Organic Compounds and other potential air quality contaminants may also be a significant concern. | Particulate matter is a particular concern in the region due to past exceedances.  Risks associated with primary and secondary PM (+NO2) | Regional acidifying emissions  Chronic environmental and health effects | Air quality framework  Response to un-regulated or minimally regulated contributors (non-point, vehicles, fugitive emissions)  Response to regulated (point and approved) contributions | Outcome: maintain and restore regional air quality  Guiding Principle: Pollution prevention  NO2 and PM regulatory and policy plan (w/timelines) - regulatory revision of approvals  Investigate cap and trade systems |
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