PROPOSED APPLICATION REQUIREMENTS

FOR THE

HEIDELBERG MATERIALS CANADA LTD.

SCOTT PIT PROJECT

Rocky View County and the City of Calgary

ISSUED BY: **Natural Resources Conservation Board**

DATE: **February 18, 2025**

PURPOSE AND SCOPE OF THE APPLICATION REQUIREMENTS

The purpose of this document is to identify for Heidelberg Materials Canada Ltd. (the Proponent), the public, Indigenous communities, and appropriate stakeholders the information required by government agencies for an application under the *Natural Resources Conservation Board Act* (NRCBA) for the Scott Pit Project (the Project). The Project is proposed to consist of an aggregate extraction site located in Rocky View County and a conveyor route extending from the site to the Proponent's Spy Hill processing facility located in the City of Calgary.

The Proponent will prepare and submit an application report that describes the socio-economic and environmental effects of its proposed Project and associated activities related to the Project. The final submission will be based upon these Application Requirements, issues raised during the public consultations, and in consideration of requirements for applicable provincial and federal legislation, codes of practice, guidelines, standards, policies, and directives[1].

The application report will include an executive summary, a table of contents, a glossary of terms, and a list of abbreviations to assist the reader in understanding the material presented. The application report will include a concordance table that cross-references sections of the report to these application requirements and to any applications submitted pursuant to acquiring municipal, provincial or federal permits necessary for the Project.

The application report will form part of the Proponent's application to the Natural Resources Conservation Board (NRCB).

PROJECT BACKGROUND

The proposed Project includes an aggregate (sand and gravel) mine located at 05-26-02 W5M within Rocky View County that is located on private land owned by the Proponent. The extraction site contains an estimated 50M tonnes of sand and gravel, which is proposed to be mined at 2M tonnes per year over a 25 – 30 year period. Conglomerated aggregate is proposed to be broken down by either mechanical breaking equipment or drilling and blasting. The Project site will include extraction areas, stockpiles, and a range of infrastructure and surface mining equipment.

The Project is located in close proximity to Heidelberg's existing Spy Hill processing site within the City of Calgary. The Spy Hill site includes an aggregate processing plant, concrete batch plant and pipe manufacturing facility. As part of the Project, the aggregate extracted from the Scott Pit is proposed to be transported to the Spy Hill site for processing via a 4.5 km overland conveyor system. The proposed conveyor system crosses portions of Sections 27, 28 and 33-25-02 W5M in the City of Calgary and portions of Sections 04 and 05-26-02 W5M in Rocky View County.

Public impacts are proposed to be mitigated by shrouding the primary processing equipment and overland conveyor to reduce dust and noise and constructing landscaped berms around the

[1] Project reviews under the NRCBA are intended to inform a public interest decision. Sufficient information should be present to characterize and estimate impacts of a project. However, additional information may be required for regulatory permitting processes that follow NRCB project reviews.

extraction areas to reduce public visibility and access. Upon completion of aggregate operations, the Proponent indicated its objective is to work with the local community, Rocky View County, the City of Calgary, and other regional stakeholders on an end use strategy.

CONTENT OF THE APPLICATION

1 PUBLIC ENGAGEMENT AND INDIGENOUS CONSULTATION

1. Document the public engagement program implemented for the Project including:
    a. a list of meetings and the specific comments or issues raised at the meetings;
    b. a description and documentation of concerns and issues expressed by the public, the Proponent's analysis of those concerns and issues, and the actions taken to address those concerns and issues; and,
    c. how public input was incorporated into the Project development, impact mitigation and monitoring.
2. Document the Indigenous consultation program implemented for the Project including:
    a. a list of meetings and the specific comments or issues raised at the meetings;
    b. a description and documentation of concerns and issues expressed by Indigenous communities and groups, the Proponent's analysis of those concerns and issues, and the actions taken to address those concerns and issues;
    c. a description of how Indigenous values are considered in the framework of decision making;
    d. how Indigenous knowledge helped shape Project development, impact mitigation and monitoring; and,
    e. a description of the meaningful and robust consultation undertaken with Indigenous communities and groups with respect to how traditional ecological knowledge and land use of the project area has affected project design.
3. Describe plans to maintain the public engagement and Indigenous consultation process following completion of the application report to ensure that the public and Indigenous peoples will have an appropriate forum for expressing their views on the ongoing development, operation and reclamation of the Project.
4. Provide the presentation materials and associated documents (e.g., agendas, minutes, briefings) used for public meetings and Indigenous consultations.

2 REGULATORY AND PLANNING FRAMEWORK

1. Identify all pertinent municipal, provincial and federal legislation, policies, approvals and current multi-stakeholder planning initiatives applicable to the review of the Project including, but not limited to:
    a. applicable municipal plans (e.g., municipal development plans, area structure plans, intermunicipal development plans) for Rocky View County and the City of Calgary;
    b. applicable *Alberta Land Stewardship Act* Regional Plan or sub-regional plans;
    c. provincial legislation or regulations, such as the *Water Act, Public Lands Act*, *Environmental Protection and Enhancement Act* (EPEA) and the Code of Practice for Pits;

d. federal legislation that may lead to permitting requirements, such as the *Species at Risk Act* and the *Migratory Birds Convention Act*;
e. voluntary planning initiatives, such as economic development action plans and watershed management plans; and,
f. land use policies and resource management initiatives that pertain to the Project.

2. List the major components of the Project that will be applied for and constructed under the pertinent municipal plans, provincial legislation and federal legislation. Describe the primary focus of the regulatory requirements for each component, such as resource allocation, environmental protection, and land use development.
3. Describe the processes required for securing municipal development permits (e.g., land use redesignation) for the Project.
4. Describe any municipal requirements for the project as they relate to:
    a. hours of operation;
    b. buffers or setbacks;
    c. nuisance concerns (dust and noise); and,
    d. traffic control and haul routes.

3 PROJECT DESCRIPTION

3.1 Overview

1. Provide a description of the Project, including the purpose and scope of the Project and an overview of the site infrastructure.
2. Identify the legal entity that is the champion for the Project, the legal entities that will develop, design, and construct the Project, and the legal entity that will manage and operate the completed Project and hold the operating approvals.
3. Describe and provide maps, drawings and/or preliminary/conceptual engineering plans on the components of the Project including, but not limited to:
    a. recoverable aggregate resource volume, estimated depth below ground surface and thickness of the aggregate resource, and the portions above and below the estimated water table;
    b. buildings and infrastructure, transportation, utilities and access routes;
    c. water management infrastructure and temporary structures;
    d. waste and debris storage area and disposal sites;
    e. borrow pits;
    f. aggregate primary processing facilities including, but not limited to:
        i. size, type and capacity of the primary processing area;
        ii. number of sorters and sizing of the materials;
        iii. power requirements and methods; and,
        iv. water requirements and sources for processing;
    g. aggregate conveyance structures including, but not limited to:
        i. type of power supply and location of driver systems;
        ii. capacity and daily transport rate;
        iii. routing of the conveyance infrastructure;

iv. locations of and methods for transportation route crossings (e.g., tunnels, bridges);
v. location of and methods for waterbody crossings;
vi. public safety measures including fencing, berms, shrouding, etc.; and,
vii. operating hours and days.

h. a project development plan and schedule showing the progression of project development, overburden and soil stockpile areas, storage areas and other site improvements; and,
i. total land area disturbed annually and cumulatively during the life of the Project.

4. Provide details on the aggregate extraction process at the Project area including, but not limited to:
    a. size, type and capacity of heavy equipment use to extract the aggregate;
    b. type of drilling and blasting equipment required to loosen aggregate materials;
    c. storage and handling of explosives; and,
    d. expected frequency and scheduling of drilling and blasting activities.
5. Describe the process and factors (including exploration activities) that were considered in evaluating and delineating the limits of the aggregate reserves and discuss how this might affect initial and future pit development and disturbance activities.
6. Provide a generalized project phasing and construction schedule for the Project, including a discussion on site development that includes, but is not limited to, timber salvage, debris disposal, salvage of topsoil and subsoil, source of material for site development, perimeter berm construction, and disposal of debris from construction.
7. Describe the capital and operating costs for construction, operations, prolonged shutdown, and decommissioning phases (including any proposed legacy projects, such as recreational assets), disaggregated by major categories (e.g., labour, energy, materials, payments to government, etc.). Describe the anticipated locations of suppliers, disaggregating by local, regional, provincial, national, and international suppliers.
8. Describe the labour requirements for the Project for construction, operations, prolonged shutdown, and decommissioning phases, in terms of both number of full-time equivalents (FTEs) and person-years (PY), and skillsets required. Describe quantitatively the anticipated residency location of labour and indicate the extent of use of any temporary non-local labour.
9. Describe the expected payments to government and any other public benefits over the Project's lifespan (e.g., taxes, royalties, etc.).
10. Describe any public funding, subsidies, or other financial, in-kind, or other direct or indirect support of the Project by government or taxpayers over the Project's lifespan.
11. Describe the aggregate market that the Project is intended to enter into, including:
    a. Current and anticipated future demand for aggregate, including likely uses and target markets for the aggregate resource;
    b. existing and anticipated supply of aggregate excluding that which would be provided by the Project;
    c. current and anticipated future prices for aggregate;
    d. any substitutes or alternatives to local aggregates, and how such may affect the market for local aggregate materials; and,

    e. market drivers and uncertainties that may affect future demand, supply, and prices.

12. Describe how the Project will integrate into the current and future operations at the existing Spy Hill operation owned and operated by the Proponent. Justify the need for the additional aggregate resource in the context of current and planned operations at these sites.
13. Provide an analysis of the alternatives considered for carrying out the Project, with the criteria and rationale for selecting the proposed option including, but not limited to:
    a. a description and locations of economically recoverable aggregate resources that are within reasonable proximity to satisfy the target markets; and,
    b. transportation routes and requirements from the recoverable aggregate resource to the destination processing facilities.
14. Provide the rationale for selecting the Project and how technical, geotechnical and environmental criteria and stakeholder input were considered in decision-making.
15. Identify whether additional development phases will be considered at this site in the future and how the proposed plans for the Project take this into consideration.
16. Provide contingency plans if major components of the Project prove to be unfeasible.
17. Discuss the implications of a delay in proceeding with the Project, or any phase of the Project, or not going ahead with the Project.
18. Discuss how any changes to the Project will be communicated to the public, stakeholders and decision makers once this review is in progress.

3.2 Water Management

1. Describe the water supply requirements for all phases of the Project, including:
    a. process, sanitary and potable water requirements;
    b. the source, volume, and uses of water; and,
    c. the need for water treatment, including a description of water treatment methods, chemicals used, and measures considered for ensuring efficient use of water such as water use minimization, recycling, conservation, and technological improvements.
2. Describe the surface water management strategy for all stages of the Project, including, but not limited to:
    a. site drainage;
    b. run-on management;
    c. run-off management;
    d. geotechnical stability concerns;
    e. pit dewatering;
    f. wetland dewatering; and,
    g. conveyor infrastructure drainage and dewatering.
3. Detail any permanent or temporary alterations, realignments, or creation of watercourses, waterbodies, and wetlands (including the relevance of the Alberta Wetland Policy), including the pre- and post-disturbance alignment and condition.
4. Provide details on any permanent or temporary roadway, conveyor, powerline, and other utility crossings of wetlands or other waterbodies.

3.3 Hazardous Goods, Waste and Wastewater Management

1. Identify the nature, location and amount of all on-site chemical storage, including hydrocarbons and explosives.
    a. provide details on containment and environmental protection measures for chemical storage and handling; and,
    b. provide information on materials used or produced at the Project including a map of on-site disposal areas that might be established.
2. Characterize the anticipated dangerous goods, hazardous, non-hazardous, and recyclable wastes generated by all phases of the Project, and describe:
    a. the composition, volume and management of specific waste streams; and,
    b. plans for pollution prevention, waste minimization, recycling, and management to reduce waste quantities for all stages of the Project.
3. Describe the types and characteristics of waste and wastewater that will be generated during all stages of the Project.
4. Describe the waste and wastewater management strategy for each type of waste and wastewater generated during all stages of the Project, including:
    a. the options considered, criteria used, and rationale for selecting the proposed waste and wastewater treatment and disposal method;
    b. the location and availability of on- and off-site waste disposal; and,
    c. design of facilities that will collect, treat, store and release wastewater streams.

3.4 Conservation and Reclamation

1. Provide a conceptual conservation and reclamation plan for all components and phases of the Project.
2. Describe the consultation procedures that will be used to inform final land use.
3. Describe and map as applicable:
    a. borrow pits and waste material disposal sites;
    b. temporary and permanent roadways, overland conveyor, and utility corridors, and any other disturbance;
    c. reclamation material salvage, handling, and storage areas;
    d. current land use and capability of the aggregate site, overland conveyor route and any other transportation or utility corridor;
    e. final reclaimed site drainage plans;
    f. proposed post-development land use and capability;
    g. revegetation plan for the disturbed terrestrial, riparian, and wetland areas.
4. Discuss any constraints to reclamation such as timing of activities, availability of reclamation materials and influence of natural processes and cycles including natural disturbance regimes;
5. Describe the anticipated timeframes for completion of reclamation stages including an outline of the key milestone dates for reclamation and how progress to achieve these targets will be measured.
6. Describe how the Proponent considered the use of progressive reclamation in project design and reclamation planning and include a map, schedule and description of any proposed progressive reclamation plans.
7. Discuss uncertainties related to the conceptual reclamation plan.

3.5 Regional and Cooperative Initiatives

1. Discuss the Proponent's involvement in regional and cooperative efforts to address environmental and socio-economic issues associated with aggregate development in the region.
2. Describe opportunities for sharing infrastructure (e.g., access roads, utility corridors, water infrastructure) with other operations owned by the Proponent or other resource development stakeholders. Provide rationale where these opportunities will not be implemented.
3. Discuss potential cooperation with other operations owned by the Proponent or other parties regarding environmental management including, but not limited to, water supply, waste management, air quality assessment, and ecological monitoring and reporting.

4 IMPACT ASSESSMENT PROCEDURES

The impact assessment procedures define what should be considered and reported as part of the application. These procedures apply to Section 5: Environmental Assessment and Section 9: Socio-economic Assessment.

1. Describe the development scenarios considered in the assessment, including the:
    a. Baseline Case, which includes existing environmental conditions, existing and approved projects or activities;
    b. Project Case, which describes the specific effects of the Project (not including the Baseline Case);
    c. Application Case, which includes the Baseline Case plus the Project Case; and
    d. Planned Development Case, which describes the cumulative effects of the Application Case plus other planned projects or activities in the regional study area(s) defined in the relevant sections.
2. Define and map Project, local, and regional study areas and describe the rationale used to define study areas considering the Baseline conditions and the location and range of probable Project, Application and Planned Development effects.
3. Describe and provide rationale for the selection of attributes, components, parameters or properties ("attributes") to be assessed in the application.
4. Present the methods used to characterize and assess impacts on the attributes, including definitions of any criteria, rankings, categories, scores, etc. used in the assessment.
5. Provide the tools, methods, and criteria used to assess the significance (i.e., acceptability) of impacts on the attributes.
6. Provide an assessment of impacts on each attribute during each phase of the Project, including the:
    a. construction phase;
    b. operations phase;
    c. prolonged shutdown phase; and,
    d. decommissioning phase.
7. Describe the mitigation measures being proposed to prevent, avoid, minimize, offset or compensate for the impacts on each attribute. Also describe:

   a. how the mitigation measures will work, their anticipated effectiveness and the key uncertainties and risks posed to mitigation success;
   b. their costs, inputs, how they will be resourced; and,
   c. the monitoring approaches that will be used to ensure effective implementation of the mitigation measures.
8. Present the tools, methods, and criteria used to characterize and assess the magnitude, frequency and geographic scale of residual effects of the Project on the attributes.
9. Describe the Proponent's plans to manage residual effects.

5 ENVIRONMENTAL ASSESSMENT

5.1 Air Quality

5.1.1 Baseline Information

1. Identify residences or other facilities that could be affected by air emissions or dust, from each Project phase.
2. Discuss baseline air quality conditions including meteorological conditions and appropriate ambient air quality parameters.
3. Inventory the existing greenhouse gas (GHG) emissions in the study areas.

5.1.2 Impact Assessment

1. Identify components of each Project phase that have the potential to affect air quality.
2. Discuss the nature, severity, extent, frequency, duration and impact of activities during all Project phases likely to produce dust or affect air quality that could impact residences, other facilities or receptors.
3. Provide mitigation plans for air quality and dust impacts resulting from each Project phase, including a description of proposed monitoring plans and complaint resolution procedures.
4. Estimate the magnitude and net difference in GHG emissions owing to the Project.
5. Discuss the Project's relative contribution to cumulative effects on regional air quality.
6. Describe and characterize the residual impacts of the Project on air quality for each Project phase and the Proponent's plans to manage those residual impacts.

5.2 Noise

5.2.1 Baseline Information

1. Identify residences or other facilities that could be affected by noise or vibration from each Project phase.
2. Discuss baseline noise conditions.

5.2.2 Impact Assessment

1. Identify components of each Project phase that have the potential to increase noise and vibration levels.
2. Discuss the nature, severity, extent, frequency, duration and time of day of activities likely to produce noise and vibration during each Project phase that could impact residences, other facilities or receptors.
3. Provide mitigation plans for noise and vibration impacts resulting from each Project phase, including a description of proposed monitoring plans and complaint resolution

procedures.
4. Discuss the Project's relative contribution to cumulative effects on regional noise.
5. Describe and characterize the residual impacts of the Project on noise for each Project phase following implementation of the Proponent's mitigation measures and the Proponent's plans to manage those residual impacts.

5.3 Viewscapes

5.3.1 Baseline Information

1. Identify residences or other facilities that could be affected by viewscape changes from each Project phase.
2. Discuss baseline viewscape conditions.

5.3.2 Impact Assessment

1. Identify components of each Project phase that have the potential to affect viewscapes.
2. Discuss the activities during all Project phases likely to affect viewscapes that could impact residences, other facilities or receptors.
3. Provide mitigation plans for viewscape impacts resulting from each Project phase, including a description of proposed monitoring plans and complaint resolution procedures.
4. Describe and characterize the residual impacts of the Project on viewscapes for each Project phase and the Proponent's plans to manage those residual impacts.

5.4 Transportation and Conveyance

5.4.1 Baseline Information

1. Describe the existing transportation infrastructure, traffic volumes and road capacities for the municipal, regional and provincial road networks that will be used or intersected by the Project including, but not limited to:
    a. roadway conditions, lane configurations, speed limits, level of service ratings, weight restrictions of the existing roadways including bridges and culverts;
    b. daily and peak hour traffic volumes, including seasonal variations;
    c. road safety and collision statistics; and,
    d. presence of and protection measures for vulnerable road users.

5.4.2 Impact Assessment

1. Provide the maintenance scheduling and discuss the modes and likelihood of failure of the proposed conveyor system, including:
    a. estimates of downtime for maintenance or repairs; and,
    b. contingency plans for transporting aggregate materials during prolonged downtime of the conveyance system.
2. Describe the transportation infrastructure requirements for the Project as proposed and the Project without the conveyor including, but not limited to:
    a. routing and design of haul roads and transport facilities;
    b. volumes, timing and types of traffic associated with the movement of goods, services and personnel to and from the Project during the construction, operation, shutdown and decommissioning phases; and,

   c. road access to and within the Project, the need to upgrade existing or construct new roads and the impacts of any new road construction or road improvements if required; how public access to or within the Project will be managed during different phases of the Project.

3. Prepare a Traffic Impact Assessment as per the latest Transportation and Economic Corridors' *Traffic Impact Assessment Guidelines* for the Project as proposed and the Project without the conveyor. Include the following:
   a. describe and map the Project boundary, internal road network, and any existing or proposed access location to/from the provincial highway system;
   b. discuss the options considered for the proposed highway access locations and provide rationale for selecting the preferred option;
   c. describe existing and future background traffic and development traffic, and consider the cumulative effects from other existing and planned developments that are or will be using the same highways and highway accesses;
   d. consider the potential traffic impacts for all stages of the Project (e.g., construction, operations, shutdown, and decommissioning) and determine any necessary improvements to maintain the safe operations of the highway intersection and access road infrastructure; and,
   e. provide a schedule for undertaking the necessary improvements prior to commencing the Project.
4. If the Project involves the transport of dangerous goods by trucks, include the following:
   a. state the classes, divisions, and characteristics of the dangerous goods; and,
   b. state where the dangerous goods will be transported to.
5. Describe any project infrastructure (e.g., utilities, conveyor and facilities that cross or in close proximity to a provincial highway) that may impact the provincial municipal roadways.
6. Discuss any effects from the Project (e.g., smoke, dust, light, noise, precipitation, etc.) that may impact the highway users, and the options proposed to mitigate impacts to highway users.
7. Provide a summary of any discussions with Alberta Transportation and Economic Corridors, local transportation authorities and other stakeholders in regard to the Project and its traffic impacts. Discuss how these consultations have been considered in the Project.

5.5 Hydrogeology

5.5.1 Baseline Information

1. Provide an overview of the existing geologic and hydrogeologic setting.
   a. present regional and project area geology to illustrate depth, thickness and spatial extent of lithology, stratigraphic units, and structural features; and,
   b. describe and review the geology of the region and Project area, including both surficial and bedrock units (both aquifer and non-aquifer units).
2. Describe the hydrogeological setting for the study areas, using maps and diagrams as appropriate, including but not limited to:
   a. major aquifers, aquitards and aquicludes (quaternary and bedrock), their spatial distribution, properties, hydraulic gradients, and flow direction;
   b. the chemistry of groundwater aquifers including baseline concentrations of

major ions, metals and hydrocarbon indicators; and,
   c. zones of potential groundwater recharge and discharge, and areas of groundwater-surface water interaction.
3. List the groundwater users including:
   a. license number and allocated volumes;
   b. intended use of the groundwater resource; and,
   c. summary of the depth intervals for the perforations of the water wells.

5.5.2 Impact Assessment

1. Describe project components and activities that have the potential to affect groundwater resource quantity and quality at all stages of the Project.
2. Describe the nature and significance of the potential impacts on groundwater with respect to:
   a. changes in groundwater quality, quantity, and flow;
   b. groundwater protection including reclaiming wells in the Project area prior to construction of the Project;
   c. potential implications of seasonal variations;
   d. inter-relationship between groundwater and surface water in terms of surface water quantity and quality;
   e. implications for terrestrial or riparian vegetation, wildlife and aquatic resources including wetlands; and,
   f. groundwater withdrawal for project operations, including expected alterations in the groundwater flow regime during and following project operations.
3. Discuss the impacts to groundwater users in the study areas, including:
   a. direct impacts to water wells within the Project area, including details on the cost and responsible parties for decommissioning, replacement, and compensation for water wells; and,
   b. indirect impacts to nearby groundwater users owing to alterations in groundwater supply and/or chemistry.
4. Discuss the Project's relative contribution to cumulative effects on regional groundwater with respect to:
   a. changes in regional groundwater quality and quantity; and,
   b. conflicts with regional groundwater users.
5. Describe the methods and strategies that are proposed to monitor and/or mitigate impacts to groundwater quantity and quality, including proposed methods for communicating detrimental groundwater impacts to affected parties.
6. Describe and characterize the residual impacts of the Project on groundwater for each Project phase and the Proponent's plans to manage those residual impacts.

5.6 Hydrology

5.6.1 Baseline Information

1. Estimate and describe the meteorological and hydrological conditions of the study areas including, but not limited to:
   a. climate norms and variability;
   b. surface hydrological features;

c. surface water quantity characteristics of waterbodies; and,
d. runoff potential and sediment yield.

2. Provide an inventory of surface water users who have existing approvals, permits or licenses in the study areas including:
   a. license number and allocated volumes; and,
   b. intended use of the surface water resource.

5.6.2 Impact Assessment

1. Discuss potential hydrological changes due to the Project in terms of quantity, extent and duration including changes to:
   a. evaporation, transpiration and groundwater recharge;
   b. surface area and water levels in waterbodies;
   c. runoff direction and volumes; and,
   d. sediment transport and yield.
2. Identify any potential conflicts with surface water users resulting from the Project.
3. Describe monitoring and mitigation measures to address surface water quantity impacts during all stages of the Project including:
   a. alteration in flow regimes;
   b. impacts to wetlands;
   c. potential flood events; and
   d. potential water use conflicts.
4. Describe and characterize the residual impacts of the Project on hydrology and surface water for each Project phase and the Proponent's plans to manage those residual impacts.

5.7 Surface Water Quality

5.7.1 Baseline Information

1. Describe the baseline water quality of waterbodies located in the study areas.
2. Describe and map the current point and non-point pollution sources in the Project and local study areas.

5.7.2 Impact Assessment

1. Describe and predict the potential impacts of the Project on surface water quality of waterbodies in the study areas including:
   a. changes in water quality that may exceed the Environmental Quality Guidelines for Alberta Surface Waters or the Federal Environmental Quality Guidelines;
   b. changes in concentrations, loading amounts, and timing of key water quality parameters that could affect waterbodies including:
      i. indicators of erosion and sedimentation;
      ii. dissolved and suspended heavy metals;
      iii. organic carbon and nutrients; and,
      iv. organic contaminants, such as hydrocarbons (fuels, lubricants) and explosives.
2. Describe the potential implications of changes in water quality or contaminant loading on:
   a. aquatic resources (e.g., aquatic and benthic invertebrates, biota,

vegetation, algae, biodiversity, habitat);
   b. human uses (e.g., recreation, agriculture); and,
   c. health and extent of riparian lands, wetlands, or other environmentally sensitive features.
3. Provide a summary of the monitoring and mitigation options being proposed to prevent or reduce impacts to surface water quality.
4. Describe and characterize the residual impacts of the Project on surface waters for each Project phase and the Proponent's plans to manage those residual impacts.

5.8 Aquatic Ecology

5.8.1 Baseline Information

1. Identify and map waterbodies in the study areas that may be impacted by the Project.
2. For identified waterbodies, describe and map the fish, fish habitat, and other aquatic resources (e.g., benthic invertebrates, amphibians) including:
   a. species composition and distribution;
   b. relative abundance or quantitative population estimates;
   c. location and distribution of critical or sensitive habitats such as for spawning, rearing and overwintering; and,
   d. general life history and seasonal movement trends.
3. Identify fish species or aquatic resources that are:
   a. listed as "at Risk, May be at Risk and Sensitive" in the *General Status of Alberta Wild Species* (Alberta Environment and Protected Areas);
   b. listed as threatened or 'Endangered' under the *Alberta Wildlife Act*;
   c. listed as 'Threatened' or 'Endangered' under Schedule 1 the federal *Species at Risk Act;*
   d. listed as 'Threatened' or 'Endangered' by Committee on the Status of Endangered Wildlife in Canada (COSEWIC); or,
   e. of significance for Indigenous or cultural uses.
4. Identify the type, distribution, and relative abundance of invasive aquatic species present in the study areas.

5.8.2 Impact Assessment

1. Describe and assess potential impacts of the Project to fish, fish habitat, and aquatic resources, including but not limited to:
   a. change in habitat suitability, availability and connectivity during construction and operation of the Project;
   b. impacts due to contaminants, sedimentation, flow alterations, temperature and habitat changes; and,
   c. changes to riparian areas that could affect fish and aquatic resources.
2. Assess the likelihood of invasive aquatic species to establish in the Project area or be spread by Project activities.
3. Identify plans proposed to mitigate impacts to fish, fish habitat, and aquatic resources including, but not limited to:
   a. construction scheduling modifications;
   b. habitat creation and offsets;

   c. invasive species management.
4. Describe and characterize the residual impacts of the Project on aquatic resources for each Project phase and the Proponent's plans to manage those residual impacts.

5.9 Terrain and Soils

5.9.1 Baseline Information

1. Provide descriptions and maps of the terrain and soil resources, including:
   a. surficial geology and topography;
   b. soil types and their distribution;
   c. land capability classes;
   d. ecosite diversity and connectivity; and,
   e. locations of soil and terrain features at risk of geohazards, such as erosion, salinization, landslides, flooding, etc.

5.9.2 Impact Assessment

1. Describe disturbances to the soil profiles and soil quality resulting from Project activities including, but not limited to:
   a. the area of surface disturbance on a yearly and cumulative basis from Project construction, operation and decommissioning activities;
   b. locations of potential sources of soil contamination, waterlogging, crusting, salinization and compaction;
   c. alterations to ecosystem diversity and connectivity; and,
   d. changes to the type and rate of soil erosion, slope instability or other geohazards.
2. Estimate the suitability and the approximate volume of soil materials salvaged for reclamation.
3. Discuss constraints or limitations to achieving vegetation/habitat reclamation based on anticipated soil conditions (e.g., compaction, contaminants, salinity, soil moisture, nutrient depletion, erosion, etc.).
4. Provide a mitigation strategy that will avoid or minimize project effects.
5. Describe and characterize the residual impacts of the Project on soils and terrain for each Project phase and the Proponent's plans to manage those residual impacts.

5.10 Vegetation and Wetlands

5.10.1 Baseline Information

1. Describe and map vegetation communities for each ecosite type including:
   a. presence and regional relevance of landscape units that are identified as rare; and,
   b. connectivity of ecosite types and potential implications to wildlife habitat.
2. Describe and map wetlands, wetland habitat, and riparian communities, presenting their:
   a. location and sizes;
   b. type and condition;
   c. distribution and connectivity; and,
   d. relative wetland value.
3. Identify the occurrence, relative abundance and distribution of vegetation species occurring in each ecosite and wetland type.

4. Identify the type, distribution, and relative abundance of invasive vegetation species present in upland or wetland habitats.
5. Identify vegetation species in the upland and wetland habitats that are:
    a. listed as 'Threatened' or 'Endangered' under the *Alberta Wildlife Act*;
    b. listed as 'Threatened' or 'Endangered' under Schedule 1 of the federal *Species at Risk Act*;
    c. listed as 'Threatened' or 'Endangered' by COSEWIC;
    d. species tracked by the Alberta Conservation Information Management System (ACIMS) as being SU, S1, S2, S3; or,
    e. of significance for Indigenous or cultural uses.

5.10.2 Impact Assessment

1. Identify the area of each vegetation community, riparian area and wetland identified that would be permanently lost due to the Project.
2. Identify areas that should be avoided during construction, if possible.
3. Identify and quantify areas that will be temporarily lost and reclaimed (e.g., access routes) and discuss the expected timelines for establishment and recovery.
4. Discuss the predicted changes to the connectivity of upland, riparian and wetland habitats in the study areas.
5. Discuss potential impacts the Project may have on rare plants or endangered species and describe any required regulatory authorizations and/or mitigation plans needed to address these impacts.
6. Assess the likelihood of weeds and invasive species establishing in the Project area or being spread by Project activities. Describe how these species will be assessed and controlled during construction, operation and reclamation phases of the Project.
7. Describe how the Alberta Wetland Policy was considered in the assessment of impacts, including but not limited to:
    a. avoidance, minimization, reclamation or replacement of wetlands in accordance with the Alberta Wetland Mitigation Directive;
    b. temporary and permanent alterations (direct and indirect) to wetlands classified under the Alberta Wetland Classification System;
    c. any expected changes in wetland class and cause for this change; and
    d. consideration of cumulative effects in the watershed to wetlands.
8. Provide a mitigation strategy that will avoid or minimize project effects.
9. Describe and characterize the residual impacts of the Project on vegetation for each Project phase and the Proponent's plans to manage those residual impacts.

5.11 Wildlife and Wildlife Habitat

5.11.1 Baseline Information

1. Describe and map existing wildlife resources in terms of spatial occurrence, habitat association, abundance, species richness and diversity.
2. Describe and map known or estimated wildlife movement corridors in the study areas.
3. Identify wildlife species of conservation concern that are:
    a. listed as "at Risk, May be at Risk and Sensitive" in The Status of Alberta Wild Species (Alberta Environment and Protected Areas);
    b. listed as 'Threatened' or 'Endangered' under the *Alberta Wildlife Act*;

c. listed as ‘Threatened’ or ‘Endangered’ under Schedule 1 the federal *Species at Risk Act*;
d. listed as ‘Threatened’ or ‘Endangered’ by COSEWIC; or,
e. of Indigenous or cultural significance.

5.11.2 Impact Assessment

1. Identify the key wildlife and habitat indicators used to assess project effects such as the relative occurrence and abundance of species of conservation concern.
2. Describe components and activities of the Project that may impact wildlife habitat in terms of availability, suitability, and connectivity.
3. Describe components and activities of the Project that may impact wildlife in terms of spatial occurrence, movement patterns, abundance, species richness, and diversity.
4. Identify and describe opportunities for habitat creation or enhancement during the operation.
5. Describe and assess the potential effects of the Project on wildlife mortality including:
    a. potential direct causes of mortality such as vehicle-wildlife collisions; and,
    b. potential indirect causes of mortality such as disturbance and displacement of animals.
6. Provide a strategy and mitigation plan to avoid or minimize effects on wildlife and wildlife habitat for all stages of the Project considering:
    a. consistency of the plan with applicable regional, provincial and federal wildlife habitat objectives and policies;
    b. a schedule for the return of habitat capability to areas temporarily affected by the Project;
    c. the use of setbacks to protect habitat and connectivity of habitat for species of conservation concern;
    d. anticipated access controls, scheduling modifications, or other management strategies to protect wildlife during construction and operation;
    e. measures to prevent human-wildlife encounters and consequent destruction of wildlife; and,
    f. habitat fragmentation and habitat connectivity resulting from linear features (e.g., overland conveyor, roads etc.) and other project infrastructure and activities.
7. Describe and characterize the residual impacts of the Project on wildlife for each Project phase and the Proponent’s plans to manage those residual impacts.

5.12 Land Use and Management

5.12.1 Baseline Information

1. Provide information on the ownership status and zoned land uses of the Project site and local study areas.
2. Identify and map the current land uses of the Project area, including but not limited to:
    a. residential developments;
    b. commercial and industrial developments;
    c. agriculture;
    d. tourism and outdoor recreation;
    e. renewable and non-renewable energy operations;
    f. utility infrastructure and rights-of-way; and,

g. Indigenous uses.

3. Identify the land capability classes of the Project area.
4. Identify and map unique sites or special features such as Parks and Protected Areas, Heritage Rivers, Historic Sites, Environmentally Significant Areas, culturally significant sites and other designations.

5.12.2 Impact Assessment

1. Describe the potential impacts of the Project on land uses including:
   a. disturbances to unique sites or special features;
   b. changes to public use of lands; and,
   c. anticipated changes (type and extent) to the pre-disturbance topography, elevation, drainage pattern, and land capability within the Project area that will lead to permanent changes in land uses.
2. Identify existing private land users that would be impacted by the Project and describe:
   a. the type of land use and area of land affected and the nature of the impact;
   b. opportunities for avoiding, minimizing or compensating land users, including the cost of implementation; and,
   c. procedures that will be followed in coordinating with and compensating landowners for lands required for the Project or for unanticipated damages or disturbances.
3. Identify any constraints to development of the Project that may arise from existing land uses and discuss procedures that may be used to adapt to these constraints.
4. Describe the anticipated future ownership of the Project lands and whether they will be considered private, public, or Crown.
5. Describe and characterize the residual impacts of the Project on land uses for each Project phase and the Proponent's plans to manage those residual impacts.

5.13 Effect of the Environment on the Project

1. Estimate the potential effects of the environment on the Project including but not limited to:
   a. extreme weather events such as storms, drought, tornadoes, etc.; and,
   b. geohazards such as landslides, floods, etc.
2. Discuss how climate change may influence the risks of the environment on the Project.
3. Describe how the effects of environment on the Project have been incorporated into the various phases of the Project.

6 PUBLIC HEALTH AND SAFETY

6.1 Public Health

6.1.1 Baseline Information

1. Discuss baseline public health in the study areas.
2. Identify residences or other facilities where public health could be affected during each component and phase of the Project.

6.1.2 Impact Assessment

1. Identify components of each Project phase that have the potential to affect public health.
2. Discuss the nature, severity, extent, frequency, duration and impact of activities during all Project phases likely to affect public health.
3. Discuss the Project's relative contribution to cumulative effects on regional public health.
4. Provide any plans being proposed to mitigate significant impact to public health, including proposed measures for management, monitoring and complaint resolution.
5. Describe and characterize the residual impacts of the Project on public health for each Project phase and the Proponent's plans to manage those residual impacts.

6.2 Public Safety

6.2.1 Baseline Information

1. Describe the baseline public safety conditions of the study areas.
2. Identify residences or other facilities where public safety could be affected by each Project phase.

6.2.2 Impact Assessment

1. Identify components of each Project phase that have the potential to impact public safety, including an inventory of accidents and malfunctions that may occur.
2. Discuss the nature, severity, extent, frequency, duration and impact of activities during all Project phases that present significant risks to public safety.
3. Discuss the Project's relative contribution to cumulative effects on public safety in the study areas.
4. Provide any emergency preparedness and response plans being developed to mitigate significant impact to public safety, including proposed measures for management, monitoring, communications during an emergency and complaint resolution.
5. Describe and characterize the residual impacts of the Project on public safety.

7 HISTORICAL RESOURCES

1. Describe consultations with Alberta Culture concerning the need for Historical Resource studies for the Project, and:
    a. provide a general overview of the results of previous historic resource studies that have been conducted, including archaeological resources, palaeontological resources, historic period sites; and,
    b. any other historical resources as defined within the *Historical Resources Act*.
2. Provide a summary of the results of studies conducted to assess the potential impact of the Project on archaeological, palaeontological and historic resources.
3. Describe and map historic resources sites in the Project area.
4. Provide an outline of the program that Alberta Culture may require the Proponent to undertake to further assess and mitigate the impacts of the Project on historic resources.
5. Document historic resources concerns raised during consultation on the Project.

8 TRADITIONAL ECOLOGICAL KNOWLEDGE AND TRADITIONAL USE

1. If consultation with Indigenous groups reveals that traditional use areas and spiritual sites occur within the Project study areas, provide a map and description of traditional use areas and spiritual sites if the Indigenous community or group is willing to have these locations disclosed.
2. Discuss the species, abundance and availability of vegetation, fish and wildlife for food, and for medicinal and cultural purposes in the Project area.
3. Discuss limitations to access for traditional uses during all stages of the Project.
4. Describe the methods used to obtain traditional ecological knowledge (TEK) and how TEK was integrated into the project design.
5. Determine the impacts of the Project on traditional, medicinal and cultural uses and identify possible mitigation strategies and how TEK was integrated into the mitigation strategies.

9 SOCIO-ECONOMIC ASSESSMENT

For all monetary figures, provide figures in real Canadian dollars instead of nominal, and provide any conversion rates used, e.g., inflation and discount rates, currency conversion rates.

9.1 Baseline Information

1. Describe and interpret the baseline conditions in the local and regional study areas of socio-economic values and topics pertinent to the project. The socio-economic values to be covered may include, but should not necessarily be limited to:
    a. land values, including supply and demand for housing, and any land values other than housing;
    b. recreation and recreational assets;
    c. road and other public infrastructure;
    d. labour market conditions, including supply of labour, skillsets, demand, unemployment rate, and income;
    e. local and senior government services, programs, assets, and budgets pertinent to the Project in the local and regional study areas; and,
    f. other socio-economic values and topics to the extent that they relate to potential Project effects.
2. Justify any exclusions of socio-economic values and topics from the assessment.
3. Describe the socio-economic contribution of aggregate mining and processing in the local and regional study areas.

9.2 Economic Analyses and Impact Assessment

1. Describe the socio-economic impact of the Project to the study areas using an economic impact analysis.
    a. estimate the impacts of the Project in terms of employment, Gross Domestic Product, and government revenue;
    b. indicate key sources of uncertainty and provide analysis appropriate to the uncertainties;
    c. discuss any relevant limitations of the economic impact analysis and its results.
2. Describe the socio-economic impact of the Project to the study areas using a cost-benefit analysis.

a. identify the incremental costs and benefits of the Project, including both private and public;
b. identify any non-market and/or non-quantifiable costs and benefits of the Project, and explain how these are dealt with in the analysis;
c. estimate the net benefit of the Project in net present value terms. Discuss the implications of any non-quantified costs and benefits on the result;
d. demonstrate the financial viability of the Project using internal rate of return of the Project and/or other metrics. Present any additional relevant information to provide confidence in Project financial viability over the planned Project life;
e. identify how the estimated costs and benefits of the Project will be distributed to the Proponent, governments, private entities, local residents and stakeholders, and the public;
f. indicate key sources of uncertainty and provide analysis appropriate to the uncertainties; and,
g. discuss any relevant limitations of the cost-benefit analysis and its results.

3. Describe, characterize, and interpret the significance of the residual effects of the Project on socio-economic values in the local and regional study areas.
    a. assess effects on the values identified in the baseline step; and,
    b. describe effects in natural units relevant to the topic (e.g., traffic volume, population count, etc.) and using effects characterization criteria as appropriate.
4. Describe, characterize and interpret the significance of the residual cumulative effects associated with the Project.
    a. identify other projects and stressors that are expected to overlap in space and time and whose effects are expected to interact with the Project's effects.
    b. describe how proposed mitigation measures will help mitigate cumulative socio-economic effects, and describe any additional mitigation to address cumulative effects.