# Volume 1, Section 11 Snake Lake Reservoir Expansion Project
# Project Description
# Mitigation Measures, Management Practices, and Monitoring Plans

Submitted to:

a division of Englobe

MPE
A division of Englobe,
Lethbridge, Alberta.

On Behalf of:

Eastern Irrigation District
Brooks, Alberta

Submitted by:

AAR Environmental Services
Calgary, Alberta

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## Executive Summary

The Eastern Irrigation District (EID) is applying for approval under the *Environmental Protection and Enhancement Act* to construct the proposed Snake Lake Reservoir (SLR) Expansion Project (the Project). The Project, located between Bassano and Brooks in Alberta, involves the construction of a roughly 8 km long, up to 20 m high dam to increase the storage capacity of the reservoir system from 19.25 million $m^3$ to 87.4 million $m^3$. This section of the Environmental Impact Assessment (EIA) discusses the mitigations, management and monitoring that will be implemented during the Project, where necessary.

All licenses and environmental permits, notifications and approvals will be in place, with any inconsistencies identified prior to the start of construction (e.g., *Water Act* approvals and obtaining a *Fish Rescue License)*. Appropriate notifications will be sent to concerned parties such as the Department of Fisheries and Oceans (DFO) and the County of Newell.

Proper scheduling of construction activities will mitigate any adverse and preventable impacts on the environment using an adaptive management approach as needed. Any equipment refueling and servicing will happen away from waterbodies and garbage will be disposed of properly. After construction is finished, the Project area will be monitored as required in relation to each discipline (air quality- such as dust and $PM_{2.5}$ monitoring; aquatic ecology, land use and management, noise monitoring, water quality and quantity, terrain and soils [post construction field monitoring of land slumps and rocky terrain], vegetation and wetlands and wildlife). All the mitigation measures and monitoring procedures that have been described aim to reduce any adverse impacts on the Project area before and after construction takes place.

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## Attachments

# Abbreviations

| | |
|---|---|
| AARES | AAR Environmental Services |
| Alberta EPA | Alberta Environment and Protected Areas |
| ACSW | Alberta Ministry of Arts, Culture, and the Status of Women |
| BMP | Best Management Practice |
| CCME | Canadian Council of Ministers of the Environment |
| COP | Code of Practice |
| DFO | Department of Fisheries and Oceans |
| EBAM | Environmental Beta Attenuation Monitor |
| EL | Environmental Liaison |
| EIA | Environmental Impact Assessment |
| EID | Eastern Irrigation District |
| ESC | Erosion and Sediment Control |
| FRL | Fish Rescue Licence |
| GOA | Government of Alberta |
| GOC | Government of Canada |
| GPS | Global Positioning System |
| HRIA | Historical Resources Impact Assessment |
| NTU | Nephelometric Turbidity Units |
| pHRIA | Palaeontological Historical Resources Impact Assessment |
| PM | Particulate Matter |
| PPE | Personal Protective Equipment |
| QAES | Qualified Aquatic Environment Specialist |
| SDS | Safety Data Sheets |
| SLR | Snake Lake Reservoir |
| SOCC | Species of Conservation Concern |
| TDG | Transportation of Dangerous Goods |
| TSS | Total Suspended Solids |
| WHMIS | Workplace Hazardous Materials Information System |

# 11.1 GENERAL

These mitigations and best management practices (BMP) shall form part of the reservoir construction documents. Should any conflict arise between the survey drawings, mitigations, and BMPs, the more stringent conditions will apply. Copies of the mitigations and BMPs will be available to all key personnel during construction.

Throughout this document, all requirements for the Eastern Irrigation District (EID) extend to its onsite contractors, sub-contractors, consultants, and agents.

## 11.1.1 Dissemination of Information

1. The construction contractor and the EID will be provided mitigations and BMPs, survey drawings, and copies of all approvals, including the most recent updates and revisions.
2. Information will be passed to subcontractors as needed.
3. Contractors, sub-contractors, consultants, agents, or the EID employees who show careless or wanton neglect of the environment or disregard the mitigations and BMPs shall be removed from the work site.
4. As needed, liaison with government field representatives will be the responsibility of the EID or their designated agents.
5. Prior to the commencement of new construction activities, a pre-job meeting shall be held with the EID or their designated agents, including key project managers, engineering and environmental staff, contractors, and sub-contractors. Key government representatives (see Attachment 11-1) may be invited where warranted. This meeting will make supervisory and construction personnel aware of environmental issues, contingency plans, rules, regulations, approvals, and approval conditions.

## 11.1.2 Licences and Permits

6. All necessary authorizations shall be obtained prior to the activity which triggers their need. All terms and conditions of the authorization shall be followed.
7. Examples of approvals that may be needed include:
    - *Environmental Protection and Enhancement Act* Approval of Environmental Impact Assessment (EIA)
    - Fish Research License (FRL)
    - *Water Act* Approval
    - Alberta Water Licence extension to New Reservoir Footprint
    - Historical Resources Clearance
    - *Alberta Wildlife Act* Approval of Wildlife Damage (i.e. removal of raptor nest)
    - Department of Fisheries and Oceans Approval (i.e. Salvage Permit) for fish salvage
    - Road/Rail/Utility Right-of-way Crossing Agreements
    - County of Newell Road Allowance Closure Bylaw
8. Best Management Practices identified in regional planning documents will be implemented where appropriate. These documents include:

- South Saskatchewan Regional Plan
- Alberta Irrigation Strategy
- Economic Development in Rural Alberta Plan
- Alberta's Rural Development Strategy
- Bow Basin Watershed Management Plan
- Eastern Irrigation District Integrated Resource Management Strategy
- County of Newell Municipal Development Plan
- Red Deer River State of the Watershed Report

9. Inconsistencies between terms and conditions of different authorizations will be rectified prior to construction or continuation of work if they arise during construction.

10. BMPs will be followed where practicable, and where they do not conflict with approval terms or conditions.

11. Any additional field licenses and approvals necessary will be obtained during construction from the appropriate regulatory authorities.

12. Construction activities must be completed prior to the expiration of authorizations. If these authorizations are likely to expire, renewals or extensions will be required.

### 11.1.3 *Water Act*

13. A *Water Act* approval is required before removal of dugouts with >2500 $m^3$ of storage volume, natural wetlands, ephemeral waterbodies, and natural drainages. It is also required prior to developing and filling the new reservoir.

14. As per the *Water Act,* an irrigation works, once under licence, is not subject to further requirements under the *Water Act*. However, adjacent waterbodies and wetlands are subject to the *Water Act* if works interact with them.

15. Water crossings (including crossing of wetlands) prior to site development are regulated under the *Water Act* as per the Code of Practice (COP) for Watercourse Crossings (Government of Alberta [GOA], 2019). Prior to receiving *Water Act* approval to drain and remove surface waterbodies, the EID will avoid effects on waterbodies including sending a COP notification to Alberta Environment and Protected Areas (Alberta EPA) 14 days (minimum) prior to commencement of vehicle water crossings.

### 11.1.4 Notification of Concerned Parties

16. Notify any required government agencies as listed in the EIA approval.

17. Notify the Alberta EPA Fisheries Biologist and the Department of Fisheries and Oceans (DFO) prior to fish salvage and translocation, if required (see Attachment 11-12).

18. Notify Municipal Bylaw Officers, if required, prior to any burning.

19. Notify the appropriate provincial and municipal agencies prior to application of pesticides or herbicides for weed control.

20. As a courtesy, notify County of Newell and Siksika Nation administration prior to construction.

### 11.1.5 Contacts

21. Emergency contacts shall be reviewed and updated prior to commencement of construction (also see Attachment 11-1, Table 11-1A).

### 11.1.6 Environmental Liaison

22. The EID or its contractors will ensure an environmental liaison (EL) specialist is available/on call to provide advice or compete onsite environmental inspection as needed to investigate environmental issues that arise and ensure compliance with environmental and *Historical Resources Act* approvals. Although the term EL is used singularly, the EL may include different specialists among areas of expertise. The EL will address (or find a specialist to address) any environmental issue that is identified including suggested mitigation measures, setbacks, or timing restrictions. The EL role may be staffed by the EID or a contracting company but must be able to enforce all requirements of the EIA approval, including requirements in this report, other documents of the EIA, and other relevant approvals.

23. The EL shall have jurisdiction to suspend operations and initiate investigations if there is breach of any environmental or historical requirements. The EL will have leeway to determine if work can continue for minor breaches or if work shall be shut down in the breach area and allowed to continue in other areas.

24. The EL will facilitate the transfer of environmental information and inspection results to the EID as needed, based on work activities and time of year. Actions leading to work suspension will be provided as soon as it is safe to do so.

25. The EL will ensure mitigation measures and BMPs are implemented during all Project phases including materials shipping, topsoil stripping and storage, excavation and construction, clean up, reservoir filling and commissioning, reclamation, and initial operations.

26. The EL will review all contractor documents and Project plans prior to construction to ensure environmental issues are addressed.

27. Spill reporting shall meet requirements under federal and/or provincial regulations, per the Project Spill Management Plan (Attachment 11-3). The EID will be notified during incident response.

28. The EL will enforce wildlife management, mitigations, and monitoring as per the EID's Snake Lake Expansion Wildlife Management Plan (see Volume 2, Section 11, Appendix I4).

### 11.1.7 Scheduling

29. Where feasible, schedule any work that applies to topsoil stripping activities during periods of anticipated low precipitation and surface runoff (i.e., late summer to early spring).

30. Ensure monitoring programs that need to occur during construction (e.g., fisheries, archaeology/palaeontological, and/or wildlife, if applicable) are incorporated into the construction schedule.

31. Wildlife timing constraints and setback buffers shall be followed as per the Snake Lake Reservoir Expansion Wildlife Management Plan (Volume 2, Section 11, Appendix I4).

32. Conduct construction activities and operations within important wildlife habitats during periods of low sensitivity.

33. Schedule drainage and removal of wetlands during late summer to winter when wetlands are dry or frozen. If construction is required during non-frozen conditions, schedule activities to avoid high water levels (e.g., spring and wet weather) and sensitive periods (e.g., amphibian breeding season, waterfowl or shorebird breeding season).

### 11.1.8 Adaptive Management Approach

The Project will use adaptive management as a high-level approach throughout its lifespan. Adaptive management is a process designed to improve resource management practices and mitigations by learning from the outcomes following initial implementation of mitigations or BMPs. An adaptive approach explores ways to meet management objectives by predicting the outcomes of processes given the available data and knowledge at the time. The practices are implemented and monitored to understand the effects of the management actions. The results are integrated to adjust mitigation measures and BMPs for their next use.

This document provides specific management plans and mitigations to address potential environmental and historical issues. The management plans, mitigations, and monitoring that will be used to support the Project are identified in the subsequent sections. However, environmental management is full of complexity and uncertainty. Adaptive management provides flexibility in addressing uncertainty and provides a structured and rigorous process for updating the Project specific plans and mitigations. The six steps of adaptive management are: 1) assess the problem; 2) design a plan; 3) implement the plan; 4) monitor the results; 5) evaluate the outcomes, and 6) adjust the plan. Where not otherwise specified, the timing, milestones, and process for implementing adaptive mitigations will be identified by subject matter experts.

### 11.1.9 Environmental Plans

34. The following plans and lists shall be reviewed prior to construction. All key personnel at the construction site should be aware of these plans and lists, including:

- Emergency Contacts List (see Attachment 11-1);
- Weed Management Plan (see Attachment 11-2);
- Fuels and Hazardous Materials Contingency Plan (see Attachment 11-3)
- Noise Management Plan (see Attachment 11-4);
- Waste Management Plan (see Attachment 11-5);
- Traffic Management Plan (see Attachment 11-6);
- Soil Handling and Erosion Contingency Plans (see Attachment 11-7);
- Resource Discovery Contingency Plan (see Attachment 11-8);
- Fire Contingency Plan (see Attachment 11-9);
- Water Monitoring Plan (see Attachment 11-10);
- Erosion and Sediment Control Plan (see Attachment 11-11);
- Instream Activities and Fish Salvage Plan (see Attachment 11-12); and

- Wildlife Management Plan (see Volume 2, Section 11, Appendix I4).

## 11.1.10 Equipment Refueling and Servicing

35. An impervious barrier (e.g., drip tarp) should be in place when servicing equipment with the potential for accidental spills (e.g., oil changes, servicing of hydraulic systems, etc.).

36. Oil changes, refueling, and lubricating of mobile equipment must not be conducted within 100 m of water or watercourses to minimize the potential for water pollution. This includes wetlands prior to removal.

37. Follow the Fuels and Hazardous Materials Contingency Plan (see Attachment 11-3) when refueling or servicing immobile equipment within 100 m of a waterbody, watercourse, or drainage.

38. All deleterious substances associated with oil changes, refueling, and lubrication shall be collected and disposed at an approved location.

39. Fuel and service vehicles shall carry a minimum of 10 kg of suitable commercial sorbent material suitable for fuel spill containment and cleanup on open water. These materials must be on site and accessible during in-water activity.

40. There may be both portable fuel trucks and a fueling station. For the latter, this must be constructed to highest standards on stripped soil with containment berms and surface materials and/or with a containment system.

41. There will be no storage of fuel, oil, or fluids within 100 m (upstream) of any ephemeral draws, waterbodies, or wetlands.

42. When using portable refuelling trucks, a spill tray is recommended to reduce the likelihood of a spill that could contaminate vegetation or soils. If used, the spill trays should be large enough to handle fuel overflow from overfilling.

43. It is also recommended that drip pans and containment pans be placed under immobile equipment to prevent contamination during potential spills. Absorbent blankets should be placed under the equipment and hoses where there is evidence of leakage.

44. Following refueling and maintenance, absorbent blankets and spill trays will be removed, and blankets will be properly disposed.

45. As a BMP, a record should be maintained documenting fueling and maintenance events for immobile equipment or where there is evidence of spills or leakage (date, time, location and condition of site, amount of fuel or other fluid spilled, and any issues).

46. To avoid overflow, tanks should not be “topped off” when re-fueling.

47. Proper equipment will always be used to transfer fluids (i.e., there shall be no “makeshift” equipment).

48. Refueling of equipment or vehicles shall not be conducted on agricultural lands.

49. Operators or on-site construction foremen must be trained to contain spills or leakage from equipment.

50. The following measures shall be employed when refueling immobile equipment within 100 m of water or watercourse:

- Fuel nozzles shall be equipped with automatic shut-offs;
- Containers, hoses, and nozzles shall be confirmed free of leaks;
- Operators will be stationed at both ends of the fuelling hose, unless the ends are readily accessible by one operator; and
- Fuel remaining in the hose will be returned to the storage facility.

51. No deleterious substances will be stored within 100 m of water.

52. If equipment or machinery is to be washed onsite, this must be done at a designated cleaning station, where water cannot run into a waterbody.

53. Ensure construction equipment is in good working order. Equipment shall be inspected daily, by work crews/operators with completion of a maintenance checklist or log. Equipment shall be removed from site if working improperly (e.g., blowing black smoke, excessive smoke in exhaust, leaks, squealing belts, etc.), until fixed. The EL or construction manager may make spot checks on vehicles and maintenance logs to ensure equipment is working properly.

### 11.1.11 Garbage and Debris

54. All construction personnel will adhere to the Waste Management Plan (see Attachment 11-5).

55. Unused materials, construction debris, and waste shall be removed for disposal or storage at an offsite location.

56. Construction waste materials and unrecyclable debris shall be continuously collected and disposed at an approved facility to avoid attracting wildlife. Inert materials, that will not leach chemicals, or other substances may be temporarily stored onsite in a secure, fenced location.

57. Food, water, and wastes with strong odours shall be stored in wildlife proof containers or inside vehicles or buildings.

58. After construction is complete, remove stakes, flagging, and fencing from the construction site and store for reuse, recycling, or disposal at an approved waste management facility.

### 11.1.12 Reservoir Flooding

59. Prior to reservoir expansion flooding, remove all remaining garbage, waste materials, and debris from the construction site.

60. Initially fill the expansion reservoir slowly, so that scour is minimized. The goal is to prevent the clay lining from eroding during infilling of the new basin.

61. Time the refilling of the existing reservoir to minimize water level change in littoral habitat to avoid impacting fish nurseries.

62. The filling schedule will be affected by timing of construction activities that need to be done while the existing reservoir is drawn-down. Ideally, this work can be done prior to midsummer, so that filling can commence in July or later in the year. Filling is expected to

take several months or longer than a year, depending on availability of water. Filling will only occur if there is enough water in the Bow River to maintain the instream objective below Bassano Dam and when there is enough water for irrigation and other downstream uses. If needed, filling can be completed over multiple years.

63. Raise water levels slowly in the newly formed reservoir to minimize mobilization of sediment.

64. Floating debris shall be collected and disposed at regular intervals during the initial filling of the reservoir.

65. If filling occurs during the migratory bird nesting season/critical nesting season, mitigation measures to deter birds from nesting on the reservoir surface shall be in place as described in Volume 2, Section 11, Appendix I4.

### 11.1.13 Post Construction Monitoring

66. Post-construction monitoring will address weeds, soil slumping, erosion, bare soils, and other environmental issues following reservoir construction. This shall continue, at a minimum, to the end of the first year after reservoir filling.

67. Selected mitigation measures will be monitored for effectiveness. These will be determined based on monitoring plans written into each discipline report, plus any additional approval requirements for each discipline.

68. Reclamation monitoring of the reservoir berms shall be completed as per the restoration plans (see Volume 2, Section 10 – Appendix H9). A monitoring schedule shall be developed to ensure restoration problem areas are revisited regularly. An issues database will be developed and updated after each site visit. This database will document all environmental issues, follow-up actions, and identify if the issue was resolved.

69. Following the first year after construction, routine monitoring of the reservoir basin will occur if required to ensure reservoir function is maintained. Additional mitigation measures will be recommended if issues are identified.

## 11.2 AIR QUALITY

### 11.2.1 Dust and Air Emissions

70. During construction, the site shall be monitored for excessive dust. Wind speeds, direction and precipitation forecasts shall be checked regularly to assess the potential for dust generation.

71. Particulate matter (PM) or dust can result in health effects on workers or nearby residents/members of the public. In excessive wind, if dust issues occur, the EL or construction manager may temporarily shut down work, shift work to calmer locations, or employ mitigative measures, such as additional watering or require use of Personal Protective Equipment (PPE; e.g., dust masks/shields).

72. The EL or construction manager will determine if, where, and how often water trucks should be deployed for dust abatement or for moisture conditioning of clay-till for use in construction.

73. Haul roads may require regular watering during dry conditions to keep dust at a minimum. Other surface treatments for dust control may be used on the Project site if they do not lead to chemical runoff issues.

74. Equipment will be maintained to reduce air pollution. Equipment producing black smoke or excessive smoke in exhaust shall be removed from site for maintenance.

75. Equipment idling shall be avoided where possible.

### 11.2.2 Air and Dust Monitoring

76. Volume 2, Section 4 (Air Quality) recommends monitoring of PM smaller than 2.5 µm ($PM_{2.5}$). Work shut-down or modification procedures must be in place for high concentration emission or dust events with potential to affect health of workers or nearby residents.

77. All personnel should carry an ample supply of $PM_{2.5}$ dust masks and be trained on proper use. These should be used when working near equipment when fuels are burning inefficiently and during high dust events (when personnel are outside of their vehicle cabins).

78. Monitoring will include visual observations of increased PM and dust and, if required may include installation and operation of an Environmental Beta Attenuation Monitors (EBAM) to measure $PM_{2.5}$ and Total Suspended Particulate concentrations.

79. During construction, monitoring equipment and stations are recommended for high issue locations; see Table 11-1 (Section 11.12.1).

80. EBAM monitoring, if used, will be continuous, with daily results will be reported to the EL during construction; any exceedances will be reported immediately.

81. Particulate monitoring may continue post-construction, filling, and reclamation until the EL is satisfied that the berms are successfully protected from wind erosion and the amount of dust to be generated is not different from surrounding sites.

## 11.3 AQUATIC ECOLOGY

### 11.3.1 Fish Rescue

82. If fish rescue is required on the Snake Lake Reservoir (SLR) for any reason, the Fish Salvage Plan (see Attachment 11-12) shall be followed.

83. If fish rescue is required, a Fish Research License (FRL) from Alberta EPA will be required. The FRL application must be submitted at least 10 business days in advance of the in-water activity. In event of an emergency, a quicker turnaround time may be possible.

84. Fish rescued from the isolated worksite will be transferred back into the current reservoir or into the new reservoir as new habitat forms (i.e., water level sufficient to support fish). Native fish species captured will be relocated unharmed. Rescued fish must be enumerated and measured as per conditions of the FRL prior to releasing and submitted to Alberta EPA.

85. As per the FRL, non-native fish species (e.g., Prussian Carp) will be killed and disposed.

### 11.3.2 Water and Fish Monitoring

86. Adhere to general protection measures related to equipment washing, inspection of hydraulic fuel and lubrication systems of equipment, equipment servicing and refueling, as well as fuel storage in proximity to water and watercourses.

87. Ensure that all necessary equipment and materials are on site prior to commencing in-water work, if required. Complete all work as quickly as possible to reduce in-water duration.

88. Ensure that a Qualified Aquatic Environment Specialist (QAES) is on site during in-water work to implement environmental protection measures within this report. The QAES will supervise water monitoring required for the protection of aquatic habitat during in-water work and will provide and follow recommendations to minimize impacts on fish and fish habitat.

89. Equipment (e.g., backhoes) shall not be permitted for open water work unless mitigations are in place to prevent siltation and spills that could affect fish populations.

90. Onsite personnel shall monitor turbidity and total suspended solids throughout reservoir filling until the reservoir surface is fully inundated. If issues arise the EL or QAES shall be contacted for advice.

91. Runoff on berms into the new reservoir area will be monitored during construction to ensure loose silt and deleterious substances do not enter. If issues are detected, additional erosion control and silt capture measures will be implemented.

92. Commence water quality monitoring at the construction site prior to in-water construction activities. Also monitor water outflow at the new canal exit, once flowing to ensure water meets the Water Quality Guidelines for Irrigation and Agricultural use.

93. Monitor water quality on a continuous basis during in-water activities. If 24-hour monitoring is required, alternative monitoring options (e.g., data loggers) may be used.

94. Ensure all work activities meet or exceed the construction standards outlined in the Alberta Government's Fish Habitat Manual (GOA, 2023).

95. During initial reservoir filling, if water is likely to enter the new reservoir at high velocity, use water flow dissipation structures or large boulders at the input site to reduce scouring.

### 11.3.3 Whirling Disease/Aquatic Invasive Species

96. All construction operations that are working in or near water must follow Alberta's Decontamination Protocol for Work In or Near Water (GOA, 2020), as well as Equipment List for Decontamination Purposes (GOA, 2017a). The Project occurs in the Whirling Disease White Zone, a region of Alberta where whirling disease has not been detected. As such, the minimum requirements are to ensure equipment that has had contact with water is drained, cleaned, and dried before leaving a field site.

97. Aquatic invasive species included in the EID's aquatic invasive species program includes Zebra Mussel (*Dreissena polymorpha*), Quagga mussel (*Dreissena rostiformis bugensis*), Flowering Rush (*Butomus umbellatus*), and Prussian Carp (*Carassius gibelio*); these are the aquatic invasive species of most concern in Southern Alberta. As adapted from the

EID's guide for watercraft, any equipment (for use in water) arriving from out of province must report for an inspection at a provincial inspection station or arrange for an inspection by calling 1-855-336-2628. Any equipment used in water must be cleaned, drained, and dried when removing it from a waterbody. Any suspected invasive species should be reported to the Provincial AIS Hotline at 1-855-336-2628.

## 11.4 HEALTH AND SAFETY

### 11.4.1 Hazardous Waste Management

98. Adhere to the Workplace Hazardous Material Information System (WHMIS) and Transportation of Dangerous Goods (TDG) requirements during handling, storage, and disposal of toxic waste materials.

99. Hazardous materials and wastes used during construction will be stored and handled according to applicable legislation and regulations, in a manner that allows containment and recovery in the event of a spill.

100. A list of hazardous materials and Safety Data Sheets (SDS) for all onsite hazardous materials will be posted onsite and accessible to all workers.

101. Hazardous materials will be clearly labeled and appropriately stored.

102. Hazardous waste materials will be collected and removed from the site regularly.

103. No hazardous waste will be stored on site long-term. If contamination is found during Project activities, work will be halted until a remediation plan is enacted.

104. Requirements in the Fuels and Hazardous Materials Contingency Plan (see Attachment 11-3) shall be followed.

### 11.4.2 Spill Prevention

105. The EID shall ensure that no deleterious substances are released to the environment.

106. A site-specific spill response plan shall be developed. The plan should include appropriate emergency contact numbers and measures to contain, control, report, and remediate spills or releases of deleterious substances (see Attachment 11-3).

107. In the event of a spill, if safe to do so, immediately implement measures to stop continued spillage, control the movement of the spill to new locations, and remove all contaminated soil and/or the spilled substance.

108. Follow mitigation measures to avoid environmental impacts. Properly clean all spills and follow regulatory requirements. Record all activities and identify the individual or organization who will submit a report to the EID and/or regulatory authorities.

109. Spill kits shall be available, and crew shall receive training on proper containment and remediation of hazardous materials.

110. Information on SDS shall be reviewed for fluids and chemicals used in construction.

### 11.4.3 Contaminated Sites

111. If contaminants are known to be on site, develop a contaminated material disposal plan, which could include immediate disposal to an existing facility. Tracking manifests must be implemented for all loads of contaminated materials.

112. Contamination can be identified by a visual sheen or odour. If there are any indication of contaminants, follow General Spill Containment Procedures (see Attachment 11-3).

113. Dispose contaminated material at an approved facility and in accordance with regulatory requirements.

114. The EL will maintain records of disposal activities.

### 11.4.4 Fire

115. Fire prevention, maintenance, and vegetation management shall meet requirements of the *Forest and Prairie Protection Act* (GOA, 2000a).

116. Obtain municipal burning permits prior to any burning activities. Adhere to permit conditions.

117. All personnel shall be informed on wildfire evacuation procedures and muster areas prior to commencing work on site. Depending on the number of onsite personnel, safety drills may need to be held.

118. All personnel shall be informed on proper disposal methods for hot or burning material prior to commencing work on site.

119. When the fire hazard is high, smoking will only be permitted within personal vehicles or at approved locations.

120. A water truck shall be maintained at the construction site when the fire hazard is high (unless all work is in bare soil locations).

121. Vehicles shall not be parked on dry grasses when the fire hazard is high.

122. Fires shall not be permitted when the fire hazard is high. Follow County of Newell requirements when the area is under a Fire Advisory or a Fire Ban.

123. Exhaust and engine systems of equipment or vehicles shall be maintained in good working condition. Inspect undercarriages periodically if driving over dry grasslands to ensure grasses do not accumulate.

124. Mow grasses prior to construction to reduce potential fuels. A pre-construction sweep will be completed prior to mowing as per the Wildlife Management Plan (see Volume 2, Section 11, Appendix I4). If possible, mow grasses outside the main breeding season (April 15 to August 31). If grasses are dry, a water truck with appropriate firefighting equipment must be on site.

125. Firefighting equipment (i.e., shovels, fire extinguishers, axes/pulaskis, water tanks, and sprayers) as outlined in Alberta Regulations 60/2017 *Forest and Prairie Protection Regulation* (GOA, 2017b; see Attachment 11-9) must be onsite with the appropriate number of items for the size of crew present.

126. All heavy equipment and vehicles shall be equipped with an approved fire extinguisher.

127. Small engines must cool before refueling.

128. The Fire Contingency Plan (see Attachment 11-9) shall be implemented, proper authorities notified, and fire breaks cut/ploughed in the event of a wildfire.

## 11.5 HISTORIC RESOURCES

### 11.5.1 Historical Discovery

129. Construction shall be suspended when any archaeological, palaeontological, or historical sites are discovered within the construction site (see Resource Discovery Contingency Plan – Attachment 11-8). Work at that location shall not continue until permission is granted by the Alberta Ministry of Arts, Culture and the Status of Women (ACSW).

130. Follow the conditions outlined in the Historical Resources Approval to minimize the potential for impacts on heritage resources.

## 11.6 LAND USE AND MANAGEMENT

### 11.6.1 Access

137. Post construction warning signs along access roads and at road and highway crossings on the route to the Project to warn travelers of construction hazards.

138. All excavated areas with access from public roads will be fenced and/or signs will be installed to restrict entry to onsite crews and equipment.

139. Access to the Project site will be the responsibility of the Prime Contractor and may be controlled via use of entrance gates and, and/or sign-in and sign-out procedures. The contractor will determine how to manage personnel on site in case of an emergency response or practice-drill requiring mustering.

140. When required (e.g., construction activities requiring a busy intersection), staff shall be assigned to direct traffic in accordance with municipal requirements. These staff must be trained on methods to direct traffic.

141. No work or driving will be done outside of the approved workspace or Project construction limits (except hauling activities, or movement of equipment or personnel on municipal or provincial roads).

142. Construction activities and operations shall be confined to the construction site and workspace. Construction traffic and loaded hauling trucks shall be restricted to designated roads prior to entering the site.

143. Roads damaged due to Project activities shall be repaired to pre-construction conditions or as per County road use agreements.

144. Traffic safety and road closure regulations shall be followed.

145. The EL will monitor access control measures, if required.

146. Refer to the Traffic Management Plan (see Attachment 11-6) and the Traffic Impact Assessment (Volume 1, Section 5).

### 11.6.2 Staking Boundaries

147. Stake the reservoir surface boundary, berm limits, and temporary boundaries (borrow pits, laydown yards, etc.). Clearly flag or stake the boundaries of temporary access roads to avoid sensitive sites and constraints.

148. Mark wetland boundaries prior to clearing if approval for wetland removal is not yet obtained. These features will need to be protected with a minimum setback. These setbacks include 10 m for ephemeral waterbodies or temporary marshes, 20 m for all seasonal wetlands and shallow open water wetlands, and 50 to 100 m to protect nesting or breeding wildlife, as per the Wildlife Management Plan (see Volume 2, Section 11, Appendix I4).

149. Maintain staking and flagging throughout construction, if feasible.

150. Environmentally sensitive areas may be identified outside of, or adjacent to, the Project boundary or access routes. If so, flag and/or fence to ensure avoidance.

151. Post signs prohibiting workers or equipment from entering staked, flagged, and/or fenced areas.

152. After reclamation is complete (i.e., vegetation is sufficiently growing and required cover is achieved) remove all stakes, flagging, and fencing.

### 11.6.3 Canal Crossings

153. Irrigation canal crossings may be constructed taking any additional measures necessary to maintain the structural integrity of the canal(s) and prevent silt or runoff into the canal when flowing.

### 11.6.4 Fences and Gates

154. If necessary, fence the construction area near access points to limit and track vehicle movement onto the site.

155. For existing fences, use existing gates or install new gates at the entrance to the construction site.

156. If livestock is present and gated access is used frequently, replace the wire or metal gate with a Texas gate.

157. Install temporary fences and gates, as needed, to prevent access onto reclaimed areas.

## 11.7 NOISE

### 11.7.1 Noise Management

158. Shut down construction equipment at designated times if required in the County of Newell's Land Use Bylaw.

159. All exhaust systems will have working mufflers, and all equipment will be operated as per manufacturer specifications.

160. Equipment and truck idling will be avoided, to the extent possible.

161. The EID will follow regular inspection and maintenance procedures on equipment and vehicles to ensure proper working condition (e.g., mufflers in good repair) to minimize noise (see Attachment 11-4).

162. Construction personnel must have access to ear protection to the level of noise expected.

163. The EID is committed to construction and operation of the reservoir within accepted or regulated community noise disturbance levels. If requested by local landowners or the County of Newell, consultation will occur regarding the proposed activity schedule and potential noise impacts.

164. The EID will investigate all community concerns regarding environmental noise issues as they may arise during the construction or operation of the reservoir.

### 11.7.2 Noise Monitoring

165. The EID will establish a communication procedure to receive noise complaints and will notify residents in the local assessment area of this procedure. If complaints are received, noise level information will be provided to the complainant. All complaints will be addressed by the EID.

166. Continuous sound-level monitoring was not recommended in Volume 2, Section 5 (Noise), but may be implemented if complaints are received. If so, noise monitoring equipment should be positioned at the sensitive receptor location at the construction site and at an offsite location between the construction activity and the receptor, to determine the noise intensity reaching the receptor.

167. Mitigation measures, which may include the use of sound barriers or adjustment of construction timing, or other methods, will be implemented when warranted.

## 11.8 WATER QUANTITY AND QUALITY

168. Erosion and Sediment Control (ESC) measures will be on site during construction to prevent sediment movement to offsite waterbodies or into the existing reservoir.

169. Bio-friendly hydraulic fluids are recommended for all construction equipment working in or near (within 100 m of) water.

170. A spill prevention and response plan will be prepared to prevent spill movement to the surrounding environment. A hydrocarbon spill containment kit will be retained on site.

171. If stationary equipment must operate within open water, there must be secondary containment measures in place to prevent contaminants from entering the waterbody.

172. Equipment and machines will not be fueled, washed, or serviced within the vicinity of waterbodies.

### 11.8.1 Dewatering

173. Drawdown of the extant SLR will be via passive (gravity) measures until the reservoir level is at a sufficient depth to allow instream work to remove dam materials and connect the reservoir basins.

174. Once water is too low for gravity flow, water may be pumped using power pumps (only if necessary).

175. If pumping, ensure the discharge hose is aimed at materials such as sandbags or rocks overlaying geotextile fabric to diffuse the flow and prevent scour.

176. Monitor the discharge location for sediment accumulations and ensure erosion and sediment control measures are maintained and performing as required.

177. Ensure hoses and pumps are of sufficient length and capacity to transfer water to the desired location. Ensure all hoses are in good working condition; hoses with tears or ruptures will be repaired or replaced.

### 11.8.2 Water Isolation to Facilitate Construction or Fish Salvage

178. In water work is not planned; however, if contact between equipment and water is needed for any reason, water isolation is required to facilitate fish protection measures.

179. Isolate SLR from active work whenever construction requires excavation or placement of material within the wetted perimeter of the reservoir.

180. If needed, temporary isolation dams will be constructed using sandbags, a turbidity curtain or Aquadam®, or other approved materials that will ensure a tight seal. Materials should not introduce deleterious substances into the water.

181. A weighted silt curtain may be used as needed to contain sediment mobilized within the workspace, such as during breaching of the extant east dam and removal then replacement of rock armour on its face.

182. Test pumps and make flow adjustments prior to use.

183. Dewater the isolated worksite.

184. Pumps and generators will be placed above the high water level and have secondary containment (impermeable liner or equivalent) for fuel or lubricant leaks and spills.

185. If water is turbid, pump water into a location where silt can settle naturally.

186. Hose intakes will be set in existing pools or deep-water areas and will be equipped with a mesh screen as per DFO's Freshwater Intake End-of-Pipe Fish Screen Guideline (DFO, 1995). DFO's Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater will be followed if applicable (DFO, 2020).

187. Where required, retain biologists to rescue fishes from within the isolated workspace and return them to the reservoir. During initial filling, biologists will prevent fish from entering the new reservoir until the water level is sufficiently high to maintain water temperature and dissolved oxygen concentrations.

188. If required, fish rescues will be completed per Attachment 11-12.

### 11.8.3 Clean Up and Reclamation

189. Restore and reclaim ephemeral draws in areas beyond the berm to maintain the natural flow pattern.

# 11.9 TERRAIN AND SOILS

## 11.9.1 Wet Weather

190. When wet or thawed soils are encountered, stripping operations shall be postponed until soils have sufficiently dried, to ensure soil integrity is maintained for use in reclamation.

191. In wet conditions (e.g., >25 mm of rain in a day) when working on intact (natural or reclaimed) soils, equipment or unnecessary vehicle travel and construction may be suspended if soils become saturated and/or lose structural integrity (e.g., tire ruts are easily formed).

192. Contingency measures, such as those listed in the Soil Handling and Erosion Contingency Plan (see Attachment 11-7) shall be initiated once one of the following indicators occurs: excessive rutting, wheel-slip, mud accumulation on tires, puddling, or mud tracking on roads.

193. A wet soils shutdown decision will be made by the EL in consultation with the EID. Factors influencing a decision to shut down work include: the weather forecast, construction schedule, and availability of non-problem areas (i.e., frozen, or well-drained soils) where work can be shifted.

## 11.9.2 Erosion and Siltation

194. The Soil Handling and Erosion Contingency Plan (see Attachment 11-7) shall be followed.

195. An ESC Plan will be prepared by the EID prior to construction. Spill kits and ESC measures will be on site during construction to prevent sediment/material movement off-site or siltation into the surrounding environment

196. ESC measures may include silt fences, silt logs, anchored logs or boulders, landscape fabric, netting or coconut matting, straw crimping, planting a cover crop, or other measures determined suitable for a specific site.

## 11.9.3 Topsoil Salvage

197. Suitable topsoil ranges from 5 to 10 cm deep in the Project area as per the soil baseline map (see Volume 3, Section G, Figure G1-10). Topsoil will be stripped and stored for use in berm reclamation. Strip topsoil to colour change or to minimum depth of 10 cm if equipment is not able to strip in 5 cm increments. Topsoil salvage shall be done in a manner to minimize admixing.

198. Unsuitable topsoil may be left in place or removed from site for disposal or other uses. Soil should not be used on offsite agricultural fields unless tested and confirmed free of clubroot.

199. Where practical, pre-strip topsoil prior to freeze-up.

200. Place excess soil material in stockpiles; stabilize the soils and contour to no steeper than 3H:1V slopes. Stockpiles will be protected from erosion and located away from any areas that may cause contamination (i.e., near equipment refueling or maintenance areas).

201. Salvage topsoil in temporary workspace areas where heavy traffic is anticipated as well as extremely dry areas to reduce potential for soil pulverization and loss of soil structure.

202. Suitable upper subsoil or B-horizon soil material will be salvaged and stored separately from topsoil for use in berm surface reclamation.

203. When working on intact soils, ensure that there is sufficient frost or low enough soil moisture to allow activities without causing excessive rutting or soil compaction.

204. Implement Soil Handling Contingency Measures (see Attachment 11-7) during topsoil salvage if any of the following conditions are encountered:

- uneven boundary between topsoil and subsoil layers;
- poor colour separation between topsoil and subsoil layers;
- gravelly or stony soil profiles; or
- high winds.

205. Use swamp mats/rig mats, geotextile, or corduroy to improve the load-bearing capacity of soft ground on outer areas of the construction site.

206. Ensure temporary berms and/or silt fences will adequately control runoff and prevent sediment movement.

207. Unsuitable (e.g., saline, sodic, or rocky, etc.) topsoil and subsoil will be left in place or excavated, along with deeper soil layers, for use in berm construction or long-term storage.

### 11.9.4 Temporary Berms/Silt Fences

208. Install temporary berms or silt fences where construction activity occurs adjacent to undisturbed wetlands or draws. Snow fencing may also be used to restrict access into wetland areas.

209. Inspect temporary erosion control structures and make necessary repairs prior to work near the site.

210. When silt accumulates in temporary erosion control structures, an excavator will remove silt and store in a waste area or to use for other purposes.

### 11.9.5 Topsoil Storage

211. Maintain a minimum separation distance of 3 m between topsoil and subsoil piles.

212. Monitor topsoil stockpiles or windrows for wind or water erosion.

213. For immediate re-use of topsoil (e.g., within a few weeks) minimize erosion risk by leaving the piles rough and lumpy.

214. If use will occur in a short period (e.g., a few months) basic measures to prevent erosion should be applied. For example, in spring or summer, spray with mulch or tackifiers. In winter, apply snow cover, or spray with water to create an ice layer.

215. For longer term topsoil storage (e.g., one or more years) the topsoil should be seeded with cover crop, like rye, wheat, or barley, that will protect the pile from erosion and help prevent weed establishment.

### 11.9.6 Clean Up and Reclamation Preparations

216. Erosion and sediment control measures will be installed or remain in place, to prevent sediment or silted runoff from entering nearby wetlands or ephemeral draws.

217. Prior to soil replacement, recontouring may be completed on areas beyond the berms, to re-establish mounds, collection basins, and drainage features.

218. Determine locations where subsoil compaction has occurred by comparing to natural soils surrounding the site.

219. Rip compacted soil with a multi-shank ripper or Paratill® to a depth of 30 cm or the depth of compaction, whichever is deeper. If soils are moist, postpone ripping of subsoils until soils dry.

220. After replacing and compacting subsoils on the berms, prepare for topsoil placement by using a chisel plow, disc, or harrow. The rough surface between soil layers will aid soil stability and help prevent slumping.

221. Spread topsoil evenly over all portions of the outer berm and temporary workspaces.

222. Postpone replacement during wet weather or high winds to prevent damage to soil structure, erosion of topsoil, and excessive dust generation.

223. Erosion and sediment control measures may be used in steeper berm areas where water erosion may occur. Measures may include runoff diffusers (e.g. large bounders at the end of the slope), geotextile fences, coconut matting, straw bales, or straw wattles to prevent runoff water from collecting and running down the slope.

224. Install cross ditches and berms on steeper slopes to prevent surface runoff and erosion.

225. Monitor side slopes during the first few precipitation events to determine locations where additional ESC measures will be required.

226. Due to drought conditions experienced in the area, wind erosion potential is high and natural recovery of native plant species may be delayed.

227. The site should be monitored for evidence of wind erosion and appropriate erosion control measures applied (see Attachment 11-11).

228. Due to the risk of weed introduction, do not use straw for any reclamation uses, unless a certificate is provided to prove straw is clean of weed propagules.

229. Mow adjacent reclaimed sites to limit seed set and help prevent the spread of Crested Wheatgrass into the newly reclaimed areas.

### 11.9.7 Tackifier and Mulch

230. Apply a tackifier on disturbed soils, on steep slopes, or areas where wind erosion may be problematic. Apply at a rate recommended by the supplier.

231. Apply tackifier or mulch mixture on specified slopes immediately following broadcast or drill seeding.

232. All products applied will be organic-sourced, biodegradable and non-toxic.

233. Reapply tackifier if disturbance of the topsoil surface occurs and the potential for wind erosion remains a concern.

### 11.9.8 Straw Crimping

234. Straw crimping (at 2 to 2.5 t/ha) is an option for reclaimed sites where wind erosion may be problematic. Ensure that straw has been inspected and is free of weeds.

235. Straw to be crimped must have a minimum stem length of 30 cm. Crimp or anchor straw into the soil to an approximate depth of 5 cm.

236. In highly erodible locations, double the straw application rate and make two passes to anchor the straw, one pass perpendicular to the other.

### 11.9.9 Cultivation

237. If there is considerable time between topsoil placement and seeding operations, soils may settle and become hard packed, requiring cultivation before seeding. The EL will recommend if this needs to be done.

238. Do not cultivate beyond the depth of the replaced topsoil.

239. Create microsites (rough and lumpy) on steep slopes to retain moisture and enhance seed germination success by running tracked equipment straight up and down the slope.

240. Disc and harrow only if the site is to be seeded immediately; otherwise leave the replaced topsoil in a rough condition to reduce wind erosion potential.

### 11.9.10 Seeding

241. Appropriate seed mixes have been developed based on native plant communities within the Project site for various ecological range sites. See Volume 2, Section 10 - Appendix H9 for seed mixes and planting rates.

242. For native seed, obtain the highest-grade seed available. Seed mixes are to be free of species listed in the *Weed Control Act*.

243. Where practical, obtain seed from a local source and retain the Certificates of Analysis for future documentation.

244. Once the topsoil surface is prepared, seed the site with a native seed mix at an appropriate rate of application. In early spring before wet weather, seed may be broadcast or planted with a commercial seed drill. Fall seeding is recommended as the seed will germinate in spring when soils are expected to be moist.

245. Do not fertilize areas seeded with a native seed mix.

246. In dryer or later season conditions, and on steep slopes and/or where wind erosion may be problematic, hydroseeding with a mixture of mulch is recommended. This will help protect the seeds until germination occurs. Consider using tackifier with hydro-seeding.

247. Minimize traffic on seeded areas until vegetation is established.

### 11.9.11 Cover Crop

248. Seed a cover crop, where appropriate, for faster vegetative cover on erosion-prone areas such as moderate to steep slopes, exposed windy areas and areas with coarse textured soils.

249. Seed mixes and cover crops shall be seeded at the rates outlined in the Grassland Restoration Plan (see Volume 2, Section 10 – Appendix H9).

250. Monitor growth during subsequent years to ensure the cover crop does not become permanently established and provide excessive competition to the desired species. If the cover crop is persistent, it can be mowed prior to seed set.

### 11.9.12 Post-Construction Monitoring

251. Inspect erosion and sedimentation control measures frequently and after significant precipitation events (>25 mm in 24 hours or rapid melt of snow accumulation) to ensure continued effectiveness (see Attachment 11-11).

252. Collect and document observations and measurements to assess soil quality and land capability. Soil parameters to be assessed may include:

- subsoil compaction;
- topsoil depth;
- topsoil and subsoil texture;
- stoniness;
- erosion potential; and
- visual indications of potential issues.

The number of sites inspected will be determined by a soil reclamation specialist.

253. Soil compaction testing may be used to identify areas with potential compaction that restricts plant growth (i.e., abnormal root development, stunting, poor stand establishment, etc.). Penetrometer tests or soil pits are the most common methods used to identify soil compaction. If vegetation display symptoms that are consistent with growth hindrance due to compaction, remedial actions to loosen the soil will be completed.

254. Monitor for Crested Wheatgrass on areas near old reclamation where this species is present. Where found, this species should be removed by hand pulling or mowing.

255. Photo-document post-construction site conditions starting immediately after reclamation to record revegetation success over time. Record the location of each photograph to allow repeats at the same sites.

256. Vegetation Monitoring will include visual inspection for weed infestations, invasive species, poor vegetation establishment or bare areas. Timing of the inspection will be mid to late summer when vegetation is mature enough for accurate identification and evaluation. If visual differences are noted on and off the construction site, then height, density and vigor will be considered. Particular attention will be paid to areas with extensive surface disturbance, moderate to steep slopes, or areas of terrain instability that may be prone to erosion.

257. If Post-Construction Monitoring indicates reclamation is not successful, reclamation contingency options include replanting and/or exclusion fencing.

# 11.10 VEGETATION AND WETLANDS

## 11.10.1 Weeds

258. Listed noxious and prohibited noxious weeds shall be managed as per the Alberta *Weed Control Act* (GOA, 2008).

259. A pre-construction weed/invasive species survey will be conducted on all lands prior to surface stripping (see Attachment 11-2).

260. Crew training on weed identification and control will be incorporated into the Environmental Orientation and site meetings, as required.

261. If Noxious or Prohibited Noxious weeds are encountered on lands to be stripped, the soils containing the weed shall not be mixed with the topsoil to be used for site reclamation.

262. Control weeds, if warranted, by mowing or spraying a short-term toxicity herbicide.

263. Recommendations made in the pre-construction weed survey shall be followed to limit the risk of transporting weed seeds from weed infested areas.

264. Weed growth on topsoil piles and in construction and workspace areas will be monitored during construction and corrective measures (e.g., spraying or mowing) will be conducted if warranted.

265. All construction equipment and vehicles shall arrive at the construction site in a clean condition to minimize the risk of new weed introduction. The EL will ensure that equipment or vehicles which are not sufficiently clean will not be allowed at the construction site until it has been cleaned at a suitable location.

266. Physically remove dirt by knocking or scraping off soil lumps and sweeping off loose soil before leaving site. Remove soil from all footwear and hand tools.

267. For weed infestations confined within the construction site boundaries, implement mitigation measures or removal strategies prior to clearing activities. Dispose any weed material at an approved landfill.

268. Equipment or vehicles that contact topsoil within areas identified as having a weed problem should be washed, steam cleaned, or shovel and compressed air cleaned prior to continuing work at the construction site.

269. Clearly mark with staking, flagging, and signage (if warranted), any locations with known listed weed infestations to reduce the risk of spread.

270. Record the locations of any new weed infestations.

271. Maintain records, if warranted, of equipment or vehicles that have been examined and/or cleaned prior to entering or leaving the construction site.

272. Place mats over weed infested areas to reduce the risk of construction equipment or vehicles transporting weed or plant material, if practical. Where mats are used, ensure they are free of soil, vegetation, and debris prior to moving from the site.

273. The contractor shall ensure chemical application for weed control is in accordance with the Pesticide Regulation and Environmental Code of Practice for Pesticides (GOA, 2025).

### 11.10.2 Rare Plants and Communities

274. Rare plants or rare ecological communities identified prior to construction shall be managed as per the Rare Plant section of the Resource Discovery Contingency Plan (see Attachment 11-8).

275. Restrict Project activities to the approved footprint.

276. Flag or fence the area until the plant or community can be confirmed by a qualified biologist.

277. Restore berms, soil storage area, and temporary workspaces to native grassland.

278. Preserve topsoil from clearing and use for reclamation as the native seed bank can assist in reestablishment of local vegetation communities.

279. Do not apply herbicide within 30 m of plant species or ecological communities of management concern, wetlands, or other waterbodies. Spot spraying, mowing, or hand picking are acceptable measures for control of regulated weeds in this area.

### 11.10.3 Wetlands and Waterbodies

280. Water feature classes in the SLR Expansion Area include ephemeral waterbodies, ephemeral draws, temporary and seasonal marshes, and intermittent, saline shallow open water as per the Vegetation and Wetland EIA Section. Prior to obtaining a *Water Act* approval for wetland disturbance, these features will be protected.

281. Until there is *Water Act* approval to drain, alter, or remove wetlands, or COP to cross wetlands, the following setbacks will be maintained, as determined through the provincial Stepping Back from the Water Guidelines (GOA, 2012).

- A minimum setback of 20 m must be maintained from seasonal marshes and open water wetlands.
- A minimum setback of 10 m must be maintained from ephemeral waterbodies and temporary marshes.
- A minimum setback of 6 m must be maintained from ephemeral draws.
- Additional setback distances will be added for slopes over 5%.

282. Install a shoo-fly or use existing access around wetlands for initial construction traffic. An initial access approval (COP) for temporary (ford) access through wetlands may be obtained prior to *Water Act* approval. If the wetlands are flooded or soil is saturated, install swamp mats or construct a subsoil ramp to travel through the wetland.

283. Debris and construction materials must not be stored or dumped in wetlands or draws prior to *Water Act* approval.

284. For crossing wetlands, ensure necessary equipment and materials are on site and ready prior to commencing work. Complete all work as quickly as possible and practical to minimize the duration of disturbance.

285. If temporary culverts are installed on ephemeral draws, natural flow of the draw must be maintained.

286. Offsite wetlands may also be affected indirectly through water quality changes. ESC measures and spill containment methods must be in place to avoid transfer of silty water and chemicals into offsite wetlands.

287. Activities in waterbodies should occur during frozen conditions or periods with low water levels, to reduce impacts on wetland water quantity and quality and prevent rutting or damage to wetland soils and vegetation until *Water Act* approval to remove wetlands is granted.

288. The completed and filled reservoir will have shallow areas where wetland function and vegetation can reestablish. New wetland areas may establish in temporary workspace areas surrounding the berms.

289. Wetland monitoring will occur in areas within the reservoir that are expected to develop into wetlands over time. Monitor wetlands with photography and measurement of vegetation, soils and water features for hydrological function.

### 11.10.4 Non-Merchantable Timber

290. Clear onsite timber prior to excavation or construction activities once all wildlife permits (if needed) are in place.

291. Consider using cleared timber for other onsite uses such as crossing swampy ground or for use in berm slope stabilization or for fisheries habitat enhancement.

292. Avoid clearing tree or shrub patches, wetlands, or any habitat that may contain nests, between April 15 to August 15.

## 11.11 WILDLIFE

293. The following mitigation measures and management recommendations are general practices that will be implemented during Project planning and construction. Specific requirements will be addressed in the Wildlife Management Plan (see Volume 2, Section 11, Appendix I4).

294. As the Project occurs on private lands, wildlife surveys and sweeps are recommended to ensure compliance with the Alberta *Wildlife Act*, *Migratory Bird Convention Act* and the *Species at Risk Act*. The EID has committed to following these recommendations as per the Wildlife Management Plan for this Project (see Volume 2, Section 11, Appendix I4).

### 11.11.1 Preconstruction Surveys and Sweeps

295. As discussed in the Wildlife section and the Wildlife Management Plan (see Volume , Section 11, Appendix I4), and as sensitive species and other species of conservation concern (SOCC) surveys have expired (surveys are current for 2 years), it is recommended that these are repeated before construction begins to ensure compliance under the Alberta *Wildlife Act*, *Migratory Bird Convention Act* and the *Species at Risk Act* (GOA, 2000b; GOC, 1994; GOC, 2002). While sensitive species surveys are not required for projects on private land, they are recommended to minimize potential Project effects

on sensitive species and avoid possible delays which could follow a (during construction) sensitive species discovery. At minimum, new surveys are recommended for sensitive amphibians and sensitive raptors that were observed on site. These would need to be completed prior to start of activities.

296. Additionally, as per the Wildlife Management Plan (see Volume 2, Section 11, Appendix I4), a pre-construction wildlife sweep of the Project area plus a 100 m buffer (where access is available) is recommended within 10 days of work commencing to ensure compliance under the Alberta *Wildlife Act*, *Migratory Bird Convention Act* and the *Species at Risk Act*.

297. Concurrently with wildlife sweeps, nest sweeps are recommended to occur within 7 days of planned activity during the migratory bird nesting season (April 15 to August 15). If work is shut down for greater than 7 days at a site (e.g., due to heavy rains), a new sweep is recommended before work re-starts. Between mid-May and early-July, new sweeps are recommended after 4 days of no activity.

298. From February 15 to March 15, pre-construction sweeps will include areas within 100 m of known raptor nest sites, focusing on early nesting raptors.

299. From March 15 to August 15, pre-construction sweeps will occur in areas within 1,000 m of known sensitive raptor nest sites, focusing on early nesting raptors.

### 11.11.2 General Wildlife Mitigations

300. Prior to surface clearing, schedule construction outside of the sensitive migratory and nesting bird and amphibian breeding windows to reduce potential interactions between wildlife and construction activities.

301. If The EID or their contractors' crews observe a previously unreported wildlife feature within species-specific setback distances of planned Project activities, they will report this to the EL. The EL, and if needed, a professional wildlife biologist, will confirm the presence and activity status of the feature, determine setback or timing requirements, or determine other mitigation measures. The EL will then implement these measures for the duration the feature requires protection.

302. If wildlife features are found during pre-construction wildlife sweeps, mitigations will be recommended to protect the feature. Mitigations may include setbacks, timing restrictions, or salvage and relocation of wildlife individuals or features. Salvage or relocation may require discussion with and/or approval from a provincial wildlife specialist, before implementation, and can only be completed by a qualified wildlife biologist working under the appropriate permit.

303. Potential effects on species or features may occur during salvage and relocation. Thus, where salvage and relocation are deemed necessary and approved, standard or published protocols (if present) will be followed, including gentle, stress reduced, and sterile methods to reduce harm to the relocated species or to the species that may use the relocated features.

304. Until a sensitive raptor nest removal is approved, a 100 m setback will be maintained from July 15 (or date of known fledging and nest abandonment) to March 15. Activities may occur within the setback, only between 50-100 m from the nest, if monitored by a qualified

wildlife biologist to ensure that nest is not disturbed and that there are no damaging effects on habitat.

305. Until sensitive raptor nests are approved for removal, a 1,000 m setback will be maintained from March 15 or date of earlier arrival to the site until July 15 (or date of known fledging and nest abandonment). Activities between 300 m – 1,000 m may occur if the site is monitored by a qualified wildlife biologist to show there are no behavioural effects on sensitive raptor species. If the species shows signs of distress, all activities must cease.

306. Incidents or collisions involving wildlife will be reported to the EL. If the incident results in injury or death to a managed or sensitive wildlife species, the incident will be reported to a provincial wildlife biologist.

307. Establish onsite and (where appropriate) offsite construction traffic speed limits and use signage and fencing to reduce the risk of collision with wildlife.

308. Pre-clear and/or mow vegetation to discourage nesting and reduce possible interactions with wildlife during construction. Ensure all necessary regulatory approvals are in place.

309. Provide training to construction staff to avoid interacting with wildlife and to ensure wildlife are not harassed or fed.

310. Neither dogs nor firearms will be permitted on the construction site.

311. Recreational use of all-terrain vehicles shall be prohibited on the construction site.

312. Work will only be permitted within designated areas of the Project work area.

313. Minimize the number of construction vehicles and their travel speed through the Project area prior to stripping and wetland removal.

314. Install wildlife-proof garbage containers on site and remove all garbage and other wildlife attractants at the end of each day.

315. Minimize noise effects on wildlife by maintaining construction equipment and avoid high revving, especially while working near wildlife habitat areas.

316. The EL will keep records of wildlife sightings. Construction staff will be encouraged to report observations.

317. Recommendations made in a Wildlife Sweep Report shall be followed to minimize the impact of construction activities on migratory birds and wildlife Species at Risk.

318. Suspend construction work when a wildlife SOCC is discovered on or near the construction site as per the Wildlife Management Plan (Volume 2, Section 11, Appendix I4). Contact the EL and a wildlife specialist to determine an appropriate mitigation strategy dependent on existing site conditions.

### 11.11.3 Livestock

319. If livestock are present in adjacent fields, a minimum vehicle speeds of 50 km/h will be followed on roads surrounding the Project. In addition, the right-of-way will be given to cattle accompanied by riders on horseback or ATVs attempting to move cattle from one field to another.

320. Refrain from using horns when livestock are near cattle guards to avoid potential for injury resulting from startled livestock attempting to cross the cattle guard.

## 11.12 MONITORING PROGRAMS

Monitoring programs have been developed for various disciplines when there is a need to continue to gather data to ensure mitigations, impact effects, or recovery occurs as planned, or if not, to provide information for development of adaptive management activities. These programs have been summarized here. For monitoring details, refer to information in the EIA sections listed below. There is also planned performance monitoring during dam construction to detect movements or issues in dam structural integrity, but this is not the focus of this section, which is focussed on monitoring of environmental or historical resources likely to be affected by the Project. A summary of recommended monitoring is provided in the sections below. For details, please refer to the individual sections in the EIA.

### 11.12.1 Volume 2, Section 4 (Air Quality)

Monitoring is recommended to address changes in particulate matter less than 2.5 µm ($PM_{2.5}$) as this indicator was predicted to occasionally exceed Alberta Air Quality Model Guidelines at ground level during Project construction activities in areas to the north, northwest, and south of the Project. In this EIA section, it was recommended to establish dust fall monitoring sites, surrounding the Project at eight receptor locations identified the assessment (Table 11-1). As the likelihood of measurable $PM_{2.5}$ dust is low, monitoring could be established if complaints are received from area residents, agricultural and industrial workers, or members of the public. If monitoring is established, results would be compared with the 30-day Alberta Ambient Air Quality Guidelines to see if exceedances are occurring. Monitoring would continue until the end of construction or until a resolution with the area resident is achieved.

**Table 11-1: Potential particulate matter monitoring sites**

| Sensitive Receptor ID | Sensitive Receptor | UTM Easting (m) | UTM Northing (m) |
|---|---|---|---|
| 1 | Residence A | 418657 | 5604955 |
| 2 | Residence B | 410679 | 5614305 |
| 3 | Residence C | 422200 | 5612468 |
| 4 | Residence D | 422806 | 5612895 |
| 5 | Antelope Creek Ranch | 418529 | 5604712 |
| 6 | Lathom Hutterite Colony | 409285 | 5607279 |
| 7 | Snake Lake Feedlot - Home Yard | 408992 | 5613217 |
| 8 | Trans-Canada Highway Twinning Monument | 417159 | 5615320 |

### 11.12.2 Volume 2, Section 5 (Noise)

No noise monitoring was recommended. However, there is potential for noise complaints from nearby residents, agricultural and industrial workers, or members of the public. Noise complaints should be recorded in a database for tracking by the EID through the Project. Based on the nature of the complaints, such as loudness, timing, or duration, a plan to mitigate noise could be developed or communications with the complainants could be established to discuss and try to resolve issues. Also, as discussed in 11.7.2 (above), if noise monitoring is desired at a receptor site due to complaints about noise, a series of monitoring locations at the construction site, partway to the receptor and at the receptor could be used to ascertain actual intensity levels.

### 11.12.3 Volume 2, Section 7 (Surface Waterbodies)

Surface water quality monitoring is recommended for the expanded reservoir starting one year after the reservoir is filled and operating. A water sample would be analyzed to assess water quality for agricultural use and PAL, at three sites, one in each of the existing SLR and expansion basin, and one at the outflow. This would include routine measures, dissolved and total metals, nutrients (phosphorus [P], nitrogen [N]), and bacteria (coliforms). In-situ parameters (DO profile, temperature profile, specific conductivity and pH), would also be measured as well as mercury testing in water and sediments. This monitoring program is not to be confused with Attachment 11-10: Water Monitoring Plan (see below). That water monitoring plan is a procedure to follow if there is activity in open water and involves testing of *in situ* parameters to ensure silt is not entering the water resulting in turbid waters.

### 11.12.4 Volume 2, Section 8 (Aquatic Resources)

Measured water and sediment parameters from Volume 2, Section 7, will be examined to understand if effects may occur to fish and fish habitat. In addition, sampling of methylmercury in fish is recommended. The Alberta Government has an existing government fish sampling program under Alberta Health in collaboration with Government of Alberta Environment and Protected Areas (Alberta EPA; GOA, 2024); it is recommended that Snake Lake Reservoir be added to this program. At minimum, it is recommended to have fish sampled at two years between year 1 and 5 post filling to see if there is an increasing or decreasing trend. This would require capturing a minimum of three fish to provide three samples, plus a duplicate for lab measurement of methylmercury in muscle tissue. After year 5, if methylmercury concentration in tissue has not

decreased, additional sampling needs would be determined in discussion with Alberta Health and Alberta EPA.

### 11.12.5 Volume 2, Section 9 (Terrain and Soils)

This section identified concerns over potential topsoil loss and soil quality degradation. As the key mitigation to reduce these losses is reclamation, it is important to ensure that reclaimed soils develop as a functional soil unit over time. This will require monitoring of the reclaimed soil areas in years 1 to 3 as described in the Conceptual Conservation and Reclamation Plan (Volume 1, Section 10) and for sampling for up to 20 years post-construction as described in the Grassland Restoration Proposal (Volume 2, Section 10, Appendix H9).

### 11.12.6 Volume 2, Section 10 (Vegetation and Wetlands)

Three monitoring programs are planned:

- Grassland restoration on reclaimed berms
- Wetland functional development within reservoir shallow areas
- Weed Management and Control Plan

Grassland restoration is a long-term goal for the reclaimed berms, to partially offset loss of native grassland in the Project footprint. A restoration plan (Volume 2, Section 10, Appendix H9) discusses strategies for trying to achieve functional restoration of native grassland and includes a monitoring program to examine grassland restoration progress over time. Monitoring methods have not yet been finalized, but may include visual inspections, photo documentation, and/or measurements of species composition, distribution, and density. It is recommended to begin monitoring at the end of the first growing season, followed by annual monitoring up to year 5 to determine if the restored areas are on a trajectory to native grassland conditions. Initial years of sampling will be coordinated with the Reclamation Monitoring Program described in Volume 1, Section 10. After 5 years of monitoring, the need for additional measurements at 5-year intervals to year 20 would be determined in discussion with the client and provincial regulators.

Wetland functional development will be monitored in wetland areas that develop within shallow water <2 m deep in the expanded reservoir. A monitoring program will be developed in alignment with a planned *Water Act* approval for wetland disturbance as part of Permittee Responsible Wetland Replacement. To meet the requirements under the Wetland Policy and Directives for wetland replacement, these wetland areas will need to be monitored over 4 years to ensure the development of wetland vegetation, soils, and hydrological conditions, including a functional assessment at year four using the Alberta Wetland Rapid Evaluation Tool-Actual (ABWRET-A; GOA, 2015).

Weed monitoring is associated with the weed management plan discussed in Attachment 11-2 of this section, and in the grassland restoration plan. Weed monitoring will only be associated with the reclaimed berms and temporary workspace areas, and will also address reclamation issues including soil slumping, erosion, bare soils, and other environmental issues. Weed monitoring and management is the primary focus for the first two years after reclamation and will only continue in subsequent years if weed infestations continue to be an issue. Timing of the monitoring will be mid to late summer when vegetation is mature enough for accurate identification and evaluation. Weed control will only target listed weeds that may become persistent, as other non-native

species are expected to decrease over time and provide organic matter to the soil. The information recorded will include weed species, location, extent, plus any notes and photographs.

### 11.12.7 Volume 2, Section 11 (Wildlife and Wildlife Habitat)

Several monitoring initiatives are recommended for wildlife and wildlife habitat. These include:

- Making use of monitoring information, collected as part of vegetation and wetland monitoring as described in Volume 2, Section 10, to describe changes to wildlife habitat.
- Completing any monitoring required by the Alberta EPA that may be attached to approval for Ferruginous Hawk nest removal and or relocation such as monitoring use, success, and habitat conditions at offsetting platforms.
- Monitoring other raptor nest sites and nests of migratory birds that may be discovered during spring and summer wildlife sweeps, to ensure no harm is coming to these nests or the wildlife species using the nests.
- Monitoring of wildlife activity in wetlands or ephemeral pools that form in the Project footprint during construction activities

### 11.12.8 Volume 2, Section 14 (Historic Resources)

No monitoring is required for archaeological features, as the Project footprint has already been subject of an impact mitigation program which supported the *Historical Resources Act* approval. However, there are still concerns about palaeontological discoveries (i.e., fossils) that may occur in the Quaternary bedrock and Bearpaw formation. Monitoring requirements specified as per the HRA Approval include the need to monitor:

- Excavation activities and grade cuts along the eastern and northeastern areas of the proposed dam footprint as both Quaternary and bedrock deposits have a high potential to yield significant fossils.
- Excavation activities impacting Bearpaw Formation shale in Area 2.

Further, the approval conditions state that no excavation activities, as described above, are to take place on the Project until a professional consulting palaeontologist is on site to monitor construction activities. Should significant palaeontological resources be encountered during the conduct of the monitoring program, the Royal Tyrrell Museum of Palaeontology must be contacted. It may then be necessary for Alberta Arts, Culture and Status of Women to issue further instructions regarding these resources.

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# Attachment 11

## Attachments



## Tables

# Attachment 11-1: Emergency Contact List

**Table 11-1A: Emergency Contact List**

| Contact | Location | Phone Numbers and Email |
|---|---|---|
| RCMP | 310 4 St W, Brooks, AB | Emergencies: 911<br>Non emergencies 403-362-5535<br>Detachment (m-f 8:30 to 4:30) 403-794-4400<br>KBrooks@rcmp-grc.gc.ca |
| Ambulance | | 911 |
| Hospital | 440 3 Street E, Brooks, AB | 403-501-3232 |
| Alberta Disaster Services | | 780-427-2772 |
| Fire Service | Bassano Fire Hall<br>#801 – 5th Ave<br>Bassano | 403-641-3788 |
| 24 hr: Alberta Energy & Environmental Response Line (Spills or Emergencies). | | 1-800-222-6514 |
| Environment Canada Spill Reporting | | 403-499-2432 |
| Prairie Fire | | 310-FIRE (3473) |
| S.T.A.R.S. Air Rescue | | 1-888-888-4567, or *4567 (cell phone),<br>alternative: 1-403-299-0932 |
| The EID Project Engineer: Engineering and Operations | Ryan Gagley | 403-363-5645<br>ryan.gagley@eid.ca |
| Provincial Biologist | Lethbridge Region:<br>Mike Grue | (403) 381-5322<br>mike.grue@gov.ab.ca, |
| Canadian Wildlife Service Prairie Region | 9250 – 49th Street NW, Edmonton AB T6B 1K5 | 780-951-8700 |
| Report A Poacher: | | 1-800-642-3800<br>9-1-1 (emergency) |
| Report Crown Land Incidents | | 310-LAND |
| Environment and Protected Areas | | 310-3773 |
| *Water Act* Contact | Jason Cayford,<br>Alberta EPA,<br>Lethbridge, AB | 403-388-7710<br>jason.cayford@gov.ab.ca |
| DFO Fisheries Biologist | Cameron Goble, Senior Fisheries Biologist<br>Emeric Janssens, Fisheries Biologist | 587-220-5472<br><br>403-382-4353 |
| Rangeland Agrologist | Lethbridge North<br>Nicole Wensman, Agrologist | 403-382-4288<br>403-860-0114 (cell phone)<br>Nicole.wensman@gov.ab.ca |
| Alberta Transportation | Lethbridge District Office | 403-382-4052<br>transdevelopmentlethbridge@gov.ab.ca |
| In Case of Discovery of Archaeological, Palaeontological or Historical Site | | Historical Resources Consultant<br>AAR Environmental Services (AARES) 403-294-0488 |

# Attachment 11-2: Weed Management Plan

## 2.1 GOALS AND OBJECTIVES

The goals of the Weed Management Plan are to prevent and control the spread of weeds listed under the Weed Regulation as Prohibited Noxious or Noxious Weeds (GOA, 2016), as well as other problematic non-native invasive plants from the construction site during construction, reclamation, and operational periods of the Project. Prohibited Noxious weeds must be destroyed, and Noxious species must be controlled to prevent further spread as per the Alberta *Weed Control Act* (GOA, 2008).

The objectives of the plan during the pre-construction and construction phase are to:

- Identify species and locations of Prohibited Noxious and Noxious weeds, and other invasive plant species that occur in the Project area and determine if they require control or destruction.
- Prevent the spread of Prohibited Noxious, Noxious weeds, and invasive species by implementing effective mitigation measures.

The objectives of the plan during the post-construction phase are to:

- Implement a monitoring program to identify Prohibited Noxious, Noxious weeds, and invasive species on reclaimed sites.
- Reduce infestations to a density equivalent to or less than adjacent lands with equivalent land uses; and
- Prevent the introduction and/or spread of Prohibited Noxious, Noxious and invasive plants on reclaimed sites.

## 2.2 MITIGATION

A pre-construction weed survey was completed as part of the Vegetation and Wetlands Baseline. The following weeds and invasive plants, including undesirable agronomic species, were identified on site (Table 11-2A):

**Table 11-2A: Weeds and invasive plants identified during pre-construction weed surveys**

| Strata | Scientific Name | Common Name | Origin | Weed Status |
|---|---|---|---|---|
| Forb | *Berteroa incana* | hoary alyssum | Exotic | Prohibited |
| | *Carduus nutans* | nodding thistle | Exotic | Prohibited |
| | *Cirsium arvense* | Canada thistle | Exotic | Noxious |
| | *Convolvulus arvensis* | field bindweed | Exotic | Noxious |
| | *Sonchus arvensis* | perennial sow-thistle | Exotic | Noxious |
| Grass | *Agropyron cristatum* | crested wheat grass | Exotic | Agronomic |

Prior to construction and following reclamation, updated weed surveys will occur. During surveys, large infestations will be flagged. The following information will be recorded for each observation site:

- species;
- UTM Location;
- extent (approximate size and density of infestation or mapped polygon);
- photograph(s); and
- notes on surface conditions and access.

These surveys will be supplemented by reports of weeds submitted by onsite workers.

This information will be used to develop a live database of the above weed information and notes on treatments and follow-up monitoring. This information will be loaded onto a GPS enabled field map application, so crews can easily find and treat these species.

Where weed infestations are identified, the following actions will occur to treat weeds or prevent spread:

1. Identify patches where access will be restricted to prevent scattering weed seeds. Access will be restricted with flagging with “Do Not Enter” tape or fencing.
2. If weeds have not yet flowered or set seed, mechanical methods such as mowing or hand pulling, or chemical treatment will be used. Weed materials may be left on site.
    (a) Species specific weed treatments will be developed. The choice of herbicide used will depend on the type of weed encountered, the efficacy, toxicity, potency duration, method of applications, type of equipment required, public safety and cost-effectiveness.
    (b) For many species, it is best to mow first and then spray once they begin to regrow.
    (c) Weed spraying will only be completed under the supervision of a qualified weed management contractor with a Pesticide Applicators License.
3. If weeds have flowered or set seed, hand pulling and bagging will be used. Weed materials will be taken to a landfill or waste transfer site for disposal.
4. Equipment shall be cleaned after travel through weed infestation areas.
5. Low-density weed occurrences will be monitored and controlled only if they become a problem.
6. Some invasive plant species will not need to be treated on reclaimed sites, as they provide initial cover and add to the organic content of the soil. They are expected to decrease in abundance following growth of native grasses.

Training will be provided for all personnel on the prevention of weed introduction or spread during construction activities.

# Attachment 11-3: Fuels And Hazardous Materials Contingency Plan

## 3.1 SPILL PREVENTION

All contractor equipment and vehicles will carry spill response kits. These must be sized to the maximum possible spill from each piece of equipment. The EL will inspect the kits at the beginning of the Project or as required.

Daily equipment inspections will be conducted and recorded to minimize the potential for unidentified sources of contamination.

Immobile equipment operating within 100 m of a waterbody must be inspected regularly to ensure prevention of spills. Where possible, immobile equipment should be placed on a spill containment tray or tarp, or in an area surrounded by berms to capture any spills.

Fuel spills while refueling may be prevented by having two workers present, one to manage the nozzle and one the pump. The operator must remain at the fuelling site until refueling is completed and the pump shut off.

## 3.2 SPILL NOTIFICATION

When notified of a spill, the EL or Onsite Construction Manager will:

- appoint an on-site Safety Supervisor;
- ensure appropriate actions are taken to prevent danger to human life;
- contact the 24-Hour Response Line 1-800-222-6514; and
- implement an approved site-specific Emergency Response Plan. If there is no approved site-specific Emergency Response Plan, use the Western Canadian Spill Services Ltd. “Oil Spill Contingency Manual” found at https://wcss.ab.ca/about/contingency-manual/

The Safety Supervisor will be responsible for making all necessary equipment and resources available to contain and clean a spill.

## 3.3 INITIAL RESPONSE

Prior to entering the spill site, the first person on site will suspend construction activity in the immediate vicinity of the site and identify if the spill site can be entered safely. This will require an initial safety hazard assessment, including:

- identify the composition of the spilled material;
- assess the safety hazards of the situation; and
- determine if there are hazards to human life and health.

The site will be safely entered to gather more information only if the first person on site knows the material, understands the hazards, and can enter the site safely with a second person. Both persons will don appropriate personal protective equipment (PPE) before entering.

If the product is unknown, hazards are assumed to be injurious to life and health. If needed PPE is not available, they will vacate the site and contact the Onsite Construction Manager or Safety Supervisor who will then plan a response.

Once at the spill site:

- reassess the safety hazards of the situation and immediately exit if there are newly identified hazards that cannot be controlled;
- stop the spill from continuing, if possible;
- if it was not yet known, identify the composition of the spilled material;
- control any hazards to human life and health:
    - remove sources of ignition, if safe to do so;
    - if product is on fire, extinguish with a proper class of extinguisher, if safe to do so; and
    - if a fire is likely to be ignited ensure a proper class of extinguisher is present and easily accessible;
- physically contain the spill, if safe to do so:
    - on land, use temporary berms, spill padding, tarps, or anything else that will stop overland flow;
    - if near water, construct a berm and/or trenches to contain spilled product prior to entry into a waterbody; and
    - if in water, booms or isolation tarping may need to be employed;
- determine the approximate area affected, rate of flow and duration of spill occurrence and/or volume of spill material, if known;
- contact the Onsite Construction Manager or Safety Supervisor and relay the above information of the spill to them;
- put up perimeter tape to keep vehicles and people off the spill site; and
- record the following information for a Spill Report Form:
    - name of person filling the form;
    - product;
    - date and time of spill or discovery;
    - source of spill;
    - area of spill ($m^2$);
    - depth of spill if pooled on surface (cm);
    - volume of spill (including units of volume);
    - estimated release rate (including units of volume per time);
    - duration of release (i.e., minutes, hours, or days, etc.);
    - location (i.e., is the spill on land, water, or both);
    - soil type (e.g., sandy, clay, etc.);
    - legal location: LSD-Section-Township-Range-W;
    - UTM or Latitude/Longitude;
    - land use;
    - environmentally sensitive areas potentially affected; and
    - weather conditions and surface conditions at time of discovery such as temperature, precipitation, wind, snow or ice cover, soil, vegetation, or open water cover, etc.

## 3.4 SECONDARY RESPONSE

The Safety Supervisor will implement any needed actions as per the site-specific spill plan or as provided to them from the 24-hour Environmental Response Line. Possible actions include:

- Amass or order needed equipment and materials to contain, sample, and treat the spill.
- Review SDS to determine the hazards and treatment.

- Ensure anyone who had direct skin contact or inhaled spill vapours seeks medial attention.
- Fence the site to prevent wildlife or humans from contacting the spilled product.
- Build berms to contain the spill, if additional spill movement is possible.
- Excavate and haul contaminated soils and plants to a contaminated waste facility.
- Clean or dispose all equipment, footwear, PPE, and clothing that contacted the spill.
- Collect samples of contaminated soils or water for testing at an approved laboratory.
- Develop and implement remediation plans.
- If the spill affected a waterbody, deploy booms to contain and recover spilled material from waterbody.
- Establish monitoring programs to test for effects on vegetation, wetlands, wildlife or aquatic species, where feasible.
- Determine when access and activities can resume on site.
- Prepare and submit a written report for the spill response centre.

# Attachment 11-4: Noise Management Plan

Construction of the Project will create intermittent localized noise impacts. Construction activities responsible for these impacts include topsoil stripping, excavation, berm development, etc.

Noise on site is a possible health hazard to onsite workers and may affect wildlife behavior and wildlife use of nearby sites. Noise receptors away for the Project site may also be affected by presence of low frequency sounds that travel long distances.

The goals of the noise management plan are to minimize noise impacts during construction and operation of the reservoir. The objectives of the plan are the implementation of noise mitigation measures or management practices to reduce noise impacts to within acceptable levels.

## 4.1 NOISE MITIGATION

The EID is committed to minimize the noise impacts of construction activities, following a proactive approach through implementation of the following mitigation measures:

- Training staff and onsite contractors regarding environmental noise BMPs and mitigation.
- Guidelines will be developed on when hearing protection must be worn and types of protections that are acceptable.
- Ensure all onsite personnel carry and/or wear one item of appropriate hearing protection (e.g., ear plugs, earmuffs, enclosed vehicle cab) for anywhere that noise may be above 85 dB (e.g., gas lawnmower, shop tools, truck traffic).
- Above 105 dB (e.g., chainsaw, auto horn), two separate protections are required (e.g., earplugs inside vehicle cab). Note when exiting the cab additional protection must be worn.
- In some circumstances, it is acceptable to remain unprotected for short term exposures of a few minutes, such to facilitate communication between workers and an equipment operator. In this case, other mitigations (see below) may be implemented.
- All workers will be encouraged to have their hearing tested after exposure to high operational sounds.
- An inspection of construction vehicles and equipment will be completed to confirm that effective mufflers and silencing devices are installed to reduce noise.
- The above inspection shall also examine the effectiveness of the cab for reducing noise.
- If required, equipment that does not pass inspection may be removed from working at the high noise sites until the issues can be rectified through maintenance or retrofits.
- Construction equipment will be turned off when not in use.
- During short breaks, when exiting the vehicle temporarily or while communicating, equipment shall be reduced to low idle levels.
- Whenever possible, equipment will be operated at a low idle speed.
- If work activities require equipment to work harder at a high revving speed for long time periods, the equipment shall be replaced with larger equipment as soon as possible.
- Working hours of workers in exposure situations should be reduced.
- Noise monitoring shall be implemented whenever noise is expected to exceed 105 dB.
- While noise controls are limited in an open-air site, sound blocking can occur by positioning berms around stationary equipment, operating the noisiest equipment or

equipment doing the hardest work when less workers are on site or when workers are kept at a further distance from the site.

- When equipment is travelling to site, engine retarder braking shall not be used in identified sensitive areas.
- Setbacks and timing restrictions will be maintained around sensitive wildlife species as per the Snake Lake Project Wildlife Management Plan (Volume 2, Section 11, Appendix I4).
- Work may be reduced at night when sounds can travel further and when effects on wildlife would be greater.

## 4.2 NOISE CONSULTATION

The EID is committed to construction and operation of the reservoir within the accepted or regulated community noise disturbance levels. If requested by local landowners or the County of Newell, consultation will occur regarding the proposed activity schedule and potential noise impacts.

The EID will investigate all community concerns regarding environmental noise issues as they may arise during the construction or operation of the reservoir.

# Attachment 11-5: Waste Management Plan

## 5.1 GOAL

The goal of the waste management plan is safe and proper handling, storage, and disposal of waste material generated from construction activities, in an environmentally responsible manner. To achieve this goal, the Waste Management Plan has been designed with the following objectives in mind:

- Comply with the applicable federal, provincial, and/or municipal regulations and industry standards;
- Employ environmentally and economically responsible construction practices and products;
- Recycle wastes, where feasible;
- Store hazardous materials in a secure area;
- Dispose of hazardous and other waste materials regularly, in an approved container or waste facility. This may include regional landfills, recycling centers, construction/demolition disposal or recovery sites, product supplier sites, and hazardous waste disposal facilities;
- Employ all reasonable preventative measures to prevent the release of wastes or hazardous materials into the environment; and
- Contain, clean, and report all waste/hazardous material spills as promptly as possible.

This Waste Management Plan applies to all work areas including the main reservoir expansion site and areas used for borrow materials, laydown, topsoil storage, work areas, staging areas, and roads used for shipping supplies or commuting to the site. All The EID employees and contractors will be informed of the procedures outlined in the Waste Management Plan.

The EID will ensure compliance with all regulations and standards. In the event of a spill or accidental release, the Fuels and Hazardous Materials Spill Contingency Plan (see Attachment 11-3) will be implemented.

## 5.2 MITIGATION

Employees and contractors will adhere to all relevant federal, provincial, and municipal regulations, codes and permits, and industry standards concerning the storage, handling, transport, disposal and spill reporting regulations of all products and/or hazardous substances (Table 11-3A).

**Table 11-3A: Waste management regulations, guidelines and codes of practice**

| Authority | Applicable Acts, Regulations, Guidelines and Codes |
|---|---|
| Government of Canada | *Hazardous Products Act*<br>*Transportation of Dangerous Goods Act* and Regulations |
| Government of Alberta | *Environmental Protection and Enhancement Act*<br>*Waste Control Regulation*<br>*Occupational Health and Safety Act* and Regulations<br>Occupational Health and Safety Code<br>*Public Health Act* |

## 5.3 NON-HAZARDOUS SOLID WASTES

Solid wastes include garbage and debris generated by human activities, such as building wastes, survey stakes and flagging, used geotextiles, polystyrene, other plastics, wood, and metal. These wastes are typically considered to be non-toxic or non-hazardous in nature, although they can pose some safety hazards to Project personnel, or local livestock/wildlife, as well as being a nuisance or eyesore to area residents.

## 5.4 INDUSTRIAL WASTES

Industrial wastes are the potentially toxic solid or liquid wastes and products generated by industrial construction, and include items such as fuels and coolants, used oils, solvents and antifreeze, lube filters and grease cartridges, contaminated soils, absorbents, used batteries, sewage and spent cleaning products. Of these, the liquid wastes pose the greatest environmental threat if accidentally spilled or released due to their ability to flow or seep through soil and/or water.

Project personnel are required to comply with all applicable regulations and standards for the containment, storage, handling, use and disposal of wastes and hazardous materials. Detailed shipping/storage records and documentation will be kept in adherence with government regulations.

## 5.5 WASTE STORAGE

All hazardous material will be stored and secured in approved containers and labeled according to WHMIS and/or TDG regulations. Records of wastes, their locations and handling must be maintained for submission to the province if required.

Storage areas will be selected with specific criteria in mind:

- unobstructed vehicle access;
- easily securable;
- not on or near sensitive environmental features (e.g., surface water/wetlands, steep slopes, habitat/nests for sensitive wildlife);
- all hazardous material and waste will be secured in designated areas, except for quantities required for (or generated by) that day's construction activities;
- bulk storage tanks will be placed in a bermed area, lined with an impervious liner; and
- safety data sheets will be available for each product at storage areas or staging yards.

The EL will regularly inspect the storage yard to ensure materials are properly stored and categorized.

## 5.6 WASTE HANDLING

- All personnel handling potentially hazardous materials will possess valid WHMIS and first aid certification;
- Spill and safety equipment will be maintained on site during all phases of construction;
- Service vehicles must be equipped with automatic shutoff valves; and
- Drivers transporting fuels or other hazardous materials will possess valid TDG certification.

## 5.7 WASTE DISPOSAL

- Onsite construction managers will provide the EID with a list of potential wastes (hazardous and non-hazardous) that may result from construction activities, and the proposed approved waste disposal facility (or facilities) for each identified waste product;
- All waste material will be disposed in accordance with federal, provincial, and municipal legislation and regulations;
- Garbage receptacles will be provided for non-hazardous waste material. These receptacles should prevent wildlife access to waste materials. Separate secure containers for hazardous wastes will also be provided; and
- Portable toilets will be provided and serviced regularly.

# Attachment 11-6: Traffic Management Plan

## 6.1 GOALS AND OBJECTIVES

Construction of the reservoir expansion will increase the number of vehicles and hauling trucks on local roads and highways. The Traffic Management Plan will ensure the safety of the public and construction personnel, as well as the integrity of sensitive components of the environment, such as native prairie, wetlands, vegetation and/or wildlife species of concern, and historical resources.

Traffic management objectives include:

- compliance with relevant provincial laws and local municipal by-laws, permits, and approval conditions;
- minimizing cumulative effects on use of roads and highways; and
- restricting public or recreational access during construction.

## 6.2 ACCESS MANAGEMENT

The Project is next to several existing roads, reducing the need for the development of new access roads. Existing access and/or previously disturbed areas will be used where possible. All approved access roads will be clearly signed.

Prior to approvals to remove wetlands and wildlife features, fences, barriers, flagging or signage will be used to limit access to these areas. Fencing and signage will be used if needed to limit public access to the worksite. Once construction is started, access will be through a gated entry with check in and check out procedures.

Warning signs will be posted in both directions at all road and railway crossings. Construction personnel with appropriate training will be appointed to direct traffic, if needed.

## 6.3 VEHICLE MANAGEMENT

All construction traffic will be restricted to existing roads, and the Project area. All non-essential vehicle traffic should be restricted from travel along the construction site. The vehicle types and volumes may be monitored by the site contractor.

Construction personnel will be encouraged to carpool or use multi-passenger vehicles between the worksite and their lodging, to minimize the number of vehicles entering the Project area. There will be no recreational use of all-terrain vehicles at the construction site or temporary work space.

Posted speed limits will be followed to reduce the risk of wildlife collisions. Reduced speed zones may be initiated in areas of high wildlife potential if the site has not been pre-cleared and construction activities occur during the main breeding season (i.e., April 15 to August 15). Vehicle traffic through sensitive habitat areas such as wetlands or native prairie will be minimized as much as possible.

## 6.4 ROAD CONDITIONS

Dust control measures will be employed when, and where, conditions warrant.

Any roads damaged by construction traffic will be repaired to pre-construction conditions.

## 6.5 MONITORING

If desired, the site contractor may monitor access control measures or vehicle speeds to meet the goals of this plan.

## 6.6 CONSULTATION

The Traffic Management Plan will be updated in consultation with the construction and hauling contractors. The update may include assessed traffic flows into and out of the construction sites at various points along the route, as well as traffic flows to and from the marshalling points. Excessive travel activities on county roads should be discussed with the County of Newell

# Attachment 11-7: Soil Handling and Erosion Contingency Plans

## 7.1 TOPSOIL INTEGRITY PLAN

Topsoil integrity means soil has the same growth capability after construction. To achieve this, construction practices must be managed during adverse conditions.

### Pulverization

Topsoil pulverization primarily occurs where the travel lane of the construction site or access road has not been salvaged of topsoil or during excessive handling of topsoil while salvaging. Soils that have been pulverized will not be used for reclamation due to a high risk of soil erosion and likelihood that revegetation will not occur within a reasonable time frame. To prevent effects of soil pulverizing, soils will be stripped in the entire Project area or left in place in the new reservoir. In reclaimed areas, travel will be restricted to low pressure equipment (i.e., tracked vehicles or large/multi-tired vehicles).

### Travel Lanes

Where travel lanes on areas outside of the stripped footprint occur, the following measures will be used to prevent issues:

- restrict traffic to essential vehicles only, and/or
- develop alternative access if soils are becoming rutted, and/or
- use rig/access matting on wet soils or in high traffic areas, and/or
- restrict vehicle access to low pressure vehicles
- minimize construction activity on days with higher winds; and
- restrict activities after rainfall until soil moisture conditions are favorable.

### Stripping

Use equipment that minimizes the handling of the topsoil. For example, use a small wide pad multidirectional bladed bulldozer to bulk the topsoil then use a fine depth control piece of equipment to remove remaining topsoil.

Once topsoil is salvaged, ensure wind erosion is minimized by tackifying the surface or watering down the topsoil storage pile, creating a crust.

## 7.2 WET SOILS CONTINGENCY PLAN

The EL must be able to identify soils that are too wet for a particular activity and when the soils are sufficiently dry to allow the activity to resume. A record of the location, timing, and reason for implementation of the Wet Soils Contingency Plan will be maintained by the EL.

Soils are excessively wet when any of the following occur:

- rutting of topsoil or root zone material to the extent that admixing may occur;
- excessive wheel-slip;
- excessive build-up of mud on tires and cleats;
- formation of puddles; or
- tracking of mud as vehicles leave the construction site.

To minimize soil structure damage, the contingency measures listed below will be implemented individually or in combination, based on site specific conditions:

- Restrict construction traffic, where feasible, to low pressure equipment. Work by ATV or on foot may be allowable if conditions are safe.
- Work only in nonproblem areas, such as well-drained soil or well-sodded lands, until conditions improve.
- Consider stripping an additional width of topsoil in problem areas.
- Suspend construction until soils dry out.

If the indicators of excessively wet/thawed soil conditions previously noted above are not evident, soils will be dry enough and activity can resume.

## 7.3 SOIL HANDLING CONTINGENCY PLAN

During soil stripping, minor effects on soil capability may occur if there are variable depths between the topsoil / subsoil boundary. If so, use equipment capable of fine depth adjustments when salvaging topsoil.

## 7.4 SOIL EROSION CONTINGENCY PLAN

The Soil Erosion Contingency Plan will be followed to control wind or water erosion on the reclaimed berm. Mitigation techniques will include regrading, installing ESC measures, and establishing a cover crop.

If water erosion is occurring, the following control options will be implemented immediately:

- construct temporary berms of subsoil, logs, timber, sandbags, or bales, firmly anchored with posts or bars;
- regrade the berm;
- run tracked equipment straight up and down creating micro-ridges perpendicular to water flow;
- seed an annual cover crop;
- construct temporary cross ditches to collect and drain water slowly;
- armour the upslope face of berms with geotextile or coconut matting;
- apply netting, mulch or tackifier to hold soil;
- hydroseed with a mixture of mulch and seed; and
- crimp native straw into the steep soil areas.

If wind erosion of the topsoil may occur:

- postpone topsoil replacement until after forecasted wind events;
- lightly spray with water once replaced;
- tackify (at a rate recommended by the distributor) the topsoil surface;
- pack the topsoil with a sheep’s-foot packer or other suitable equipment;
- seed a cover crop;
- employ straw crimping at 2-2.5 t/ha;
- apply hydromulch; and
- install wind fences.

# Attachment 11-8: Resource Discovery Contingency Plan

## 8.1 PLANT SPECIES OF CONCERN DISCOVERY CONTINGENCY PLAN

Prior to construction, a field sheet of known rare plants, rare plant communities, and their current Alberta Conservation Information Management System (ACIMS) ranking (Alberta Conservation Information Management System, 2022) will be developed and added to this plan. This sheet will be provided to onsite crews.

If a potential S1 to S3 ranked plant or community is observed prior to or while clearing, work at this site should be halted until the plant species is confirmed. Photographs of the species and surrounding habitat features will be obtained and provided to a botanist. Depending on the species, rarity rank, and any approval conditions with respect to rare species, the EL, upon advice from the botanist, will determine the best course of action. The botanist may need a site visit to:

- confirm the species, its rarity rank, and status under the *Wildlife Act*;
- delineate the location of the plant or community and relative abundance; and
- locally assess the relative rarity of the plant or community;

The growth habit, habitat preferences, and propagation strategy for the species or community members will then be researched to develop a mitigation strategy.

Mitigation options include:

- protect the site using fencing or flagging;
- salvage intact sod for replacement in a similar habitat;
- collect live specimens (if the species can be propagated vegetatively) or wait until the plant is mature and collect seeds; then, propagate rare plant or community seedlings at a specialised nursery or greenhouse; finally, plant the seedlings in a secure habitat;
- for sod or planted seedlings, install protective measures as needed and monitor their growth until it can be shown the species have survived and are likely to continue to survive in future years; and
- If the onsite population is determined to be a small portion of the local population, it is likely that onsite removal will not affect the population; if needed, install protective measures for offsite species and monitor these individuals until it can be assured the species or community will continue to survive locally.

## 8.2 WILDLIFE SPECIES OF CONSERVATION CONCERN DISCOVERY CONTINGENCY PLAN

If a wildlife SOCC or a protected habitat feature (e.g., den, nest) is discovered during construction, the discovery will be assessed by a qualified biologist and appropriate mitigation measures will be implemented (i.e., setbacks and/or timing restrictions per Wildlife Management Plan (see Volume 2, Section 11, Appendix I4).

If wildlife SOCC or their protected habitat features are discovered during construction, the following measures will be enacted:

- Work will be immediately suspended at and surrounding the site (100 m buffer);

- Advice from a qualified wildlife biologist must be obtained. Where possible (when additional disturbance of the species is not likely), photographs of the species, its nest, den or burrow, and surrounding habitat features will be obtained and provided to the biologist;
- Depending on the species, sensitivity rank, or status under the *Wildlife Act*, *Migratory Birds Convention Act*, or *Species at Risk Act*, and any approval conditions with respect to species, the EL, upon advice from the biologist, will determine the best course of action. If deemed necessary by the biologist, the provincial wildlife biologist will also be contacted.
- If needed, the biologist will complete a site visit to:
    - Confirm the species and/or feature status, its rarity rank, and status under the *Wildlife Act* and other relevant legislation; and
    - Record the location of the wildlife feature and delineate or mark (with flagging) a setback;
- Based on the above, a setback and/or timing constraints will be developed. This will stay in place until the species is confirmed to have completed breeding activities and/or left the area;
- If work needs to occur within the setback, under certain circumstances the Wildlife Management Plan allows for monitoring species behaviour of an active wildlife feature, with work shut-down or low impact modification procedures if the species becomes distressed. This typically involves a smaller, modified set-back within which no work or entry are permitted, and the remaining setback within which some work may take place under the direction of the wildlife biologist monitoring the feature.
- As per the Wildlife Management Plan (Volume 2, Section 11, Appendix I4), all visits and assessments by qualified biologists should be documented by the environmental consultant for the Project. Where required, a report will be prepared and provided to the provincial wildlife biologist or other approval authority.

## 8.3 WILDLIFE ENCOUNTER CONTINGENCY PLAN

If nuisance or aggressive wildlife are encountered during the construction of the reservoir, follow the measures outlined below:

- Record and report all wildlife encounters (non-aggressive) to the EL for guidance on wildlife incident prevention and mitigation measures.
- Report any incidents (e.g., aggressive behavior, nuisance behavior) with wildlife to the EL and the EID who will immediately notify the Provincial Biologist and, if warranted, the local Fish and Wildlife Office.
- Report any trapped, injured, or dead animals within or immediately surrounding the Project area to the EID or their agents who will contact the local Fish and Wildlife Office. The fish and wildlife biologist or provincial biologist will determine appropriate actions.
- Report location and details of collisions with wildlife to the EL and the EID. The EID will notify the applicable provincial authorities and, if warranted, the local police detachment for vehicle damage purposes.
- Wildlife mitigation measures may include use of wildlife proof garbage containers, waste storage sites, and reducing onsite traffic speeds.

- Wildlife harassment or feeding (intentional and not) by crews is not permitted. Any evidence of such will warrant investigation. If other issues develop, follow-up actions will be determined by the EID or designate.

## 8.4 AQUATIC SPECIES OF CONCERN DISCOVERY CONTINGENCY PLAN

Aquatic Species of Concern include species at risk and invasive aquatic species.

If an Aquatic Species of Concern is discovered during construction, the discovery will be assessed, and appropriate mitigation measures will be implemented upon advice of a QAES based on the location of the observed species with respect to:

- the Project footprint and construction activities;
- the timing of construction;
- type of construction activity; and
- ability to alter construction activities to minimize disturbance.

Once assessment by the QAES is completed, DFO and the provincial fish biologist will be notified, and a site-specific mitigation plan may be developed (if required). This mitigation plan would include, but would not be limited to, the following:

- adhering to species specific sensitive life history timing constraints;
- altering construction methods or locations to minimize interactions;
- implementing temporary and/or permanent sediment control measures to prevent sedimentation;
- removing and destroying aquatic invasive species; and
- monitoring the observed species, habitats, and/or work area for additional observations of the species.

## 8.5 HISTORIC RESOURCES CONTINGENCY PLAN

The construction site has been subjected to Historic Resources Impact Assessments (HRIA) for archaeological and palaeontological resources. In addition, Archaeological Mitigations (digs at significant sites) have been completed and a planned Palaeontological Monitoring Program has been developed for implementation during excavation of geological resources.

During construction, additional undiscovered historical resource sites may be encountered during ground disturbance and excavation activities. The *Historical Resources Act* mandates that all heritage resource sites encountered during construction must be immediately reported to the archaeologist managing the HRIA or paleontologist managing the pHRIA.

In event of a discovery, the following mitigation and monitoring objectives and emergency response measures will ensure compliance with the *Act*:

- Historic resource personnel and/or the EL will be on site during construction in highly sensitive areas;
- If the EL or other construction personnel make a potential historical resource discovery, the EL will contact the Historical Resources Consultant (AAR Environmental Services [AARES]: 403-294-0488);

- The consultant will review the observation and evaluate the significance of the resource and the severity of the impact;
- If the resource is of a significant nature or warrants careful evaluation, the consultant will report the observation to ACSW: 780-431-2300;
- They will also halt construction until further clearance is issued by provincial regulators;
- ACSW will determine if additional mitigation is required to salvage or protect impacted historical resources;
- If the impact is determined to be within acceptable parameters, the Historical Resources Consultant will conduct the required salvage and recording without halting construction; and
- A final summary report will be prepared and submitted to ACSW following completion of salvage or impact mitigation activities.

# Attachment 11-9: Fire Contingency Plan

The objectives of the Fire Contingency Plan are to ensure the safety of first responders and the public, protect property and the environment, and to restore the affected area and the environment to pre-fire conditions as much as possible.

## 9.1 MITIGATION

Prior to commencement of construction, the Project Construction Manager will designate a Fire Boss. The Fire Boss will be experienced in coordinating firefighting activities, mobilizing crews and crew bosses, and understand firefighting techniques and equipment.

All vehicles and mobile equipment used on site will carry firefighting equipment in accordance with the *Forest and Prairie Protection Regulations*. Additionally, all motorized equipment must carry a fully charged fire extinguisher.

The Fire Boss will:

- conduct inspections of vehicles for firefighting equipment and extinguishers;
- inspect fire extinguishers to ensure they are in working order; and
- ensure belly pans or drip trays under immobile equipment are periodically removed and cleaned.

In the event of a fire:

- when a fire is detected, personnel will immediately report location and size of the fire and wind direction to the Fire Boss;
- if it is safe to do so, personnel will commence fire suppression measures;
- activities on the front line will only be completed by personnel inside equipment, or if outside, with firefighting PPE (i.e., fire resistant coveralls, safety gloves, safety glasses, $PM_{2.5}$ mask, hard hat and face protection/full mask) where appropriate. The Fire Boss may designate a PPE inspector to assess if equipment is adequate for front line activities.
- personnel without full firefighting PPE will be directed to flanks or burned over areas to address hot spots, where safe to do so, or to tasks away from the fire;
- the Fire Boss will ensure the County of Newell Fire Department is contacted;
- in severe conditions, the Provincial Fire Control Centre may be contacted to request helicopter bucket or air tanker support;
- moveable materials, equipment, and vehicles will be moved to a safe location if they are in the path of the fire, if safe to do so;
- all equipment and personnel shall be made available to control the fire;
- the Fire Boss will inspect the fire site as soon as possible and take charge of directing suppression measures including deploying firefighting equipment and crew to plough/clear fire breaks, set up portable pumps and hoses, and begin to extinguish the fire directly;

- once county firefighters are onsite, they will assume control of the firefighting operations and continue to work with the Fire Boss to coordinate firefighting by onsite personnel;
- fire suppression measures shall continue until the fire is extinguished as certified by the county firefighters and/or the Fire Boss; and
- once declared to be extinguished, the Fire Boss will direct crews to monitor the burn area for smoldering material and/or employ infrared scanning equipment to detect any hot spots. If encountered these sites will be doused with additional water and/or contained with a firebreak.

# Attachment 11-10: Water Monitoring Plan

## 10.1 PURPOSE

This water monitoring program was developed to protect water resources from sediments or spills and to document water quality during construction activities. This document includes a brief description of the regulatory requirements, resources required, monitoring approach, and reporting strategy.

The monitoring strategy was developed in accordance with the:

- Codes of Practice for Watercourse Crossings (GOA, 2019);
- *Fisheries Act* (Government of Canada [GOC], 1985); and
- Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines (CEQG) for the Protection of Aquatic Life – Freshwater (CCME, 2023).

## 10.2 OBJECTIVES

- To identify activities that may increase sedimentation, turbidity, and total suspended solids (TSS) in waterbodies during construction activities;
- To modify construction activities to minimize the potential impact of sediments; and
- To assist with Project-specific regulatory compliance.

## 10.3 FIELD STAFF REQUIREMENTS

Where water monitoring is required, monitoring will be conducted under supervision of a QAES who will be present during all instream construction activities. The QAES will be responsible for:

- selection of water sampling locations;
- identification and documentation of sampling methods including sampling frequency;
- auditing water monitoring procedures;
- tracking water quality measurements and reviewing daily reports from the sampling team;
- regularly comparing *in situ* water quality measurements with relevant regulatory guidelines;
- liaising with the Project EL; and
- notifying the EL, when activities have the potential to cause serious harm to aquatic life.

## 10.4 MONITORING LOCATIONS

Sampling locations will be identified by the QAES before construction. Each location will be clearly marked with on-shore flagging georeferenced with hand-held GPS units. Sampling locations will all be within the existing reservoir and will be required during excavation of the existing dam to connect the two reservoir areas. Monitoring locations will be established at approximately the following sites:

- four shoreline sites within 50 m and 200 m of the activity in both directions
- two sites within 100 m of the shoreline in open water
- two sites within 200 m of the shoreline in open water
- two sites within 400 m of the shoreline in open water

Sites will be sampled by boat and will be measured every 2 hours. If increased levels of turbidity are identified, the sampling will increase to 1 per hour, where possible.

For safety reasons, all sampling will occur during daylight hours only. All safety measures for working around water will be followed. If it is not safe to conduct the sampling, or 24-hour construction is conducted, permanent sampling units may need to be installed.

## 10.5 IN SITU TURBIDITY MEASUREMENT

At-depth turbidity will be determined instantaneously on site using a calibrated turbidity meter. The station location, depth and turbidity will be recorded on field data sheets. The turbidity meter will be calibrated before the commencement of excavating and as required throughout the duration of construction activities.

## 10.6 WATER QUALITY GUIDELINES

Relevant water quality guidelines from the CCME Water Quality Guidelines for the Protection of Aquatic Life – Freshwater will be applied to the in-situ turbidity measurements.

Turbidity maximum increase of 8 Nephelometric Turbidity Units (NTUs) from background levels at any one time when background levels are between 8 and 80 NTUs. In addition, the NTUs should not increase more than 10% over background levels when background is greater than 80 NTUs.

## 10.7 REPORTING

A daily report will be drafted by the QAES and provided to the EL after the monitoring shift. The report will include a detailed summary of field observations, water quality data and a detailed map displaying each transect and sampling point.

If an increase of 8 NTU in turbidity or 25 mg/L for TSS is noted in any sample, the QAES will notify the EL. An additional sample will be taken immediately after notification and compared with the data from the preceding sampling period, the background data, and the trends in turbidity over the course of the monitoring regime.

A final water quality report will be submitted upon completion of construction.

# Attachment 11-11: Erosion and Sediment Control Plan

The following generic temporary and permanent erosion and sediment controls are provided for use in construction and reclamation of the Snake Lake Reservoir Expansion. Any slope greater than 10% will have appropriate erosion control measures to minimize erosion.

## 11.1 TEMPORARY MEASURES

During reservoir berm construction, various preventative measures may be required to minimize the potential soil erosion and siltation into surrounding waterbodies. These include:

- Minimizing the exposure time of disturbed ground;
- Installation of sediment barriers, including straw bale filters (composed of certified weed free straw), brush barriers, and silt fences. Sediment barriers are designed to remove silt from surface runoff. These are typically installed across the foot of a slope next to a waterbody or at the outlet or a runoff diversion. Brush barriers are constructed of woody materials (shrubs and tree branches) to impede the flow of water;
- Installation of sediment collection basins. These are constructed by excavating and grading a storage area to capture and hold sediment-laden runoff and allow sediment to settle. Sediment barriers are often used in conjunction with sediment basins;
- Use of interceptor dikes as a barrier to runoff flow. Earthen berm dikes are useful on steep slopes during heavy rain events. Interceptor dikes interrupt and divert storm water flow of the construction site toward gentle slope locations. The dikes are typically constructed with sandbags or mounded earth. On long slopes, a series of dikes are used. Spacing depends on the steepness of the slope.
- Diversion Ditches may be excavated at the base of a slope to prevent water from running across the soil surface. They ultimately drain into a low area where water can run into vegetation and/or rocks, or into a natural runoff draw. Temporary diversion ditches may be installed at the top of a slope to direct water slowly down to lower elevation areas, or into a temporary pipe.
- Mulching is a temporary measure used to reduce soil erosion. Mulch is often used to stabilize slopes late in the season when revegetation will take too long; and
- Surface stabilization using netting and matting composed of biodegradable wood fibers, jute yarn, or other materials interwoven with knitted nylon or vinyl monofilament material. These materials hold the soil in place and prevent soil shifting. It is typically fastened to the slope with wood stakes or metal staples.
- After topsoil has been stripped and stockpiled, install temporary erosion control structures on erosion prone approach slopes to waterbodies to prevent sediment particles from migrating off the construction footprint.
- On steep slopes and areas prone to compaction, rutting or topsoil erosion; suspend rubber-tired travel in the area if machinery is causing ruts that are channeling water. To prevent the loss of topsoil, salvage and store any remaining topsoil away from the area to be re-graded.

## 11.2 PERMANENT MEASURES

There are several permanent measures to continue providing erosion and sediment control after berm construction:

- Revegetation is the primary permanent measure as it creates a stable soil surface that can withstand severe rainfall and wind, while slowing flow velocity and allowing water to infiltrate into the surface soil. The Reclamation (see Volume 1, Section 10) and Restoration (see Volume 2, Section 10 - Appendix H9) reports in the EIA detail the methods to ensure native grassland communities are re-established on the berms and surrounding disturbed lands;
- Permanent sediment barriers, include boulder draws and flow dissipation features. These are constructed at locations where water is known to collect and flow following rainfall or snowmelt; they are developed as a draw, lined with cobbles or boulders, and usually include a steep portion and a landing, where energy is dissipated and water can enter a permanent ditch.
- Permanent sediment collection basins are typically a small pond excavated for initial intercept of stormwater runoff. They allow sediment to filter out and typically allow slow seepage into a runoff ditch or stormwater pond.
- Interceptor dikes may be used permanently to direct water toward boulder draws.
- Drainage Ditches may be permanent features at the base of the berm to gather and direct flow of runoff toward a natural draw or wetland area.
- Surface stabilization using non (or slow)-biodegradable fabrics or netting to permanently provide structure to soil areas.

# Attachment 11-12: Instream Activities and Fish Salvage Plan

## 12.1 OBJECTIVE

This plan addresses isolation and fish salvage or scare methods. In general, activities within water are not planned during Project construction. However, as a contingency, if activities need to occur within open water due to unplanned events, isolation and fish rescue will be needed and should adhere to this plan to prevent harm to fish as per DFO requirements.

## 12.2 ASSESSMENTS AND APPROVALS

A QAES report will be prepared ahead of the salvage to identify species present, capture methods and handling procedures. Based on this the following licences and approvals will be acquired:

- As the reservoir areas will be fully approved under Water Licence to the EID as part of an irrigation works, additional *Water Act* approval will not be required.
- Fish in the reservoir are regulated under the Federal *Fisheries Act* and a Letter of Advice or Authorization from DFO shall be obtained. If needed, a DFO Request for Review will be submitted.
- Acquire a Fish Research Licence from Alberta EPA. A FRL requires 10 business days to process. Notify the Alberta EPA Biologist (as listed on the FRL) of intended times and places of fish rescue at least four working days in advance.

### 12.2.1 ISOLATION PLAN

Isolations may be used to allow work in flooded portions of the extant or expanded reservoir without harm to fish, such as activities required during decommissioning and removal of the existing East Dam, to facilitate connection of the extant and expanded reservoir:

- Mitigation measures are recommendations based on current information. Once drawings and plans are available, recommendations will be updated.
- A temporary basin with an outlet structure may be needed to hold any silty water until the silt settles and turbidity is acceptable. The water can then be released from the basin into a temporary ditch.
- Confine construction activities to the isolated area of the reservoir.
- Ensure spill containment kits (e.g., silt fencing, sandbags, absorbent pads, clothes) are on site prior to activities.
- A screen is recommended across the breach area to prevent fish from crossing into the new reservoir area while drawdown is occurring. Flow into the new reservoir should be such that smaller fish are not trapped against the screen.
- When pumping is required, pre-test pumps to ensure that they are operating properly and make necessary flow adjustments.
- Set hose intakes in existing pools within the isolated work area. Ensure the intakes are equipped with a mesh screen. Individual pore space should not exceed 2.5 mm and the

mesh should have an open area of 2.5 $m^2$ per 0.1 $m^3/s$ of discharge as per DFO's Freshwater Intake End-of-Pipe Fish Screen Guideline (DFO, 2020).

- Place pumps and generators above the high-water mark and within drip trays to contain any fuel spills. Monitor to ensure rapid detection and clean up should any spills occur.
- Implement a turbidity monitoring program for any in-water work, to ensure remaining water in the reservoir and outflowing water in the new reservoir meets water quality standards for protection of aquatic life. Monitor water quality as per the Water Monitoring Plan (see Attachment 11-10).
- When drawing down the current reservoir, the low water level must be at a depth that will sustain fish through the winter.
- Photo document water isolation processes including the dam installation, pumping/ drawdown, and outlet water flows. These photographs must be maintained for possible regulatory reviews.

### 12.2.2 FISH RESCUE PLAN

Where isolations are needed, any fish contained within those isolations will be rescued prior to commencing construction activities.

Records of the fish rescue shall include fish identification and measurement, rescue method and effort. Fish rescued from the isolated worksite must be released immediately after processing into pooled water within the new reservoir. This may include capture, handling and release or fish scares to school fish into the reservoir area. Fish rescue must be completed by qualified biologists working under a Fish Research Licence and appropriate DFO authorizations or approvals.