



ENBRIDGE PIPELINES (NW) INC.

Environmental Protection Plan

Line 21 Planned Maintenance at KP 158 near Little Smith Creek

Document Version Tracker

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E	Type B Water License (S20L1-001)
F	Project Contact List
G	Species at Risk Information Sheets

Acronyms and Abbreviations

EI	Environmental Inspector
Enbridge	Enbridge Pipelines (NW) Inc.
EPP	Environmental Protection Plan
GNWT	Government of Northwest Territories
HDD	horizontal direction drill
km	kilometre(s)
KP	kilometre post
m	metre(s)
NPS	nominal pipe size
NWT	Northwest Territories
PCEM	Post-Construction Environmental Monitoring
ROW	right-of-way
SLWB	Sahtú Land and Water Board
the Project	Line 21 planned maintenance at KP 158 near Little Smith Creek
WHMIS	Workplace Hazardous Materials Information System

Environmental Policy

Enbridge believes that minimizing the environmental footprint and impacts associated with our activities delivers value to shareholders, customers and employees. Enbridge's Environmental Management System, including its environmental protection program, has been established to protect and sustain the environment throughout the lifecycle of design, construct, maintain and operate, and decommission and abandon, and to anticipate, prevent, manage, and mitigate conditions that could adversely affect the environment.

Enbridge's Environmental Policy provides the philosophy and approach for responsible environmental management and supports values of integrity, safety, and respect, which guide our actions, policies, procedures and culture.

Enbridge's goal is to foster an educational, just, and flexible organizational culture where environmental excellence is an integral element in the conduct of our business.

Enbridge is committed to:

- Identifying interactions and potential impacts on the environment;
- Minimizing adverse environmental effects through effective planning and execution;
- Complying with government regulations and applicable industry standards;
- Effectively responding to unanticipated events;
- Providing appropriate training to ensure employees and contract workers understand their responsibility to protect the environment;
- Promoting a culture where environmental excellence is everyone's responsibility;
- Actively engaging with the public and government regarding environmental activities;
- Learning from past experiences in order to continually improve competency and performance; and
- Maintaining a non-retaliatory culture that encourages reporting and investigation of environmental hazards, potential hazards, near-misses, incidents, and non-compliances.

1.0

Introduction

Enbridge Pipelines (NW) Inc. (Enbridge) is replacing a segment of the Line 21 pipeline southeast of kilometre post (KP) 158 near Little Smith Creek in the Northwest Territories (NWT) (the Project). The Project is located in the Sahtú Region of the NWT, approximately 80 kilometres (km) southeast of the Hamlet of Tulita and approximately 140 km southeast of the Town of Norman Wells (see Figure 1).

The Project is required to protect the Line 21 pipeline from potential impacts of slope instability at a meander bend along Little Smith Creek near KP 158 and to support the continued safe operation of the pipeline.

Enbridge has received the necessary regulatory approvals for the Project (see Section 2.0) from the Sahtú Land and Water Board (SLWB) and construction is planned to begin in Q1 2021.

1.1

Project Description

The Project involves the removal of an approximately 510-metre (m) segment of the existing Line 21 pipeline (nominal pipe size [NPS] 12) and replacing it with a new, approximately 520-m NPS 12 pipeline segment at a greater depth of cover. Enbridge is planning to install the new pipeline segment via horizontal directional drill (HDD) within the existing Enbridge right-of-way (ROW), and no new land rights are required for operation; however, some temporary workspace, located on privately-held Sahtú lands administered by the Tulita District Land Corporation, will be required in order to accommodate construction activities.

The Project will require upgrades to existing access roads, as well as the following temporary infrastructure:

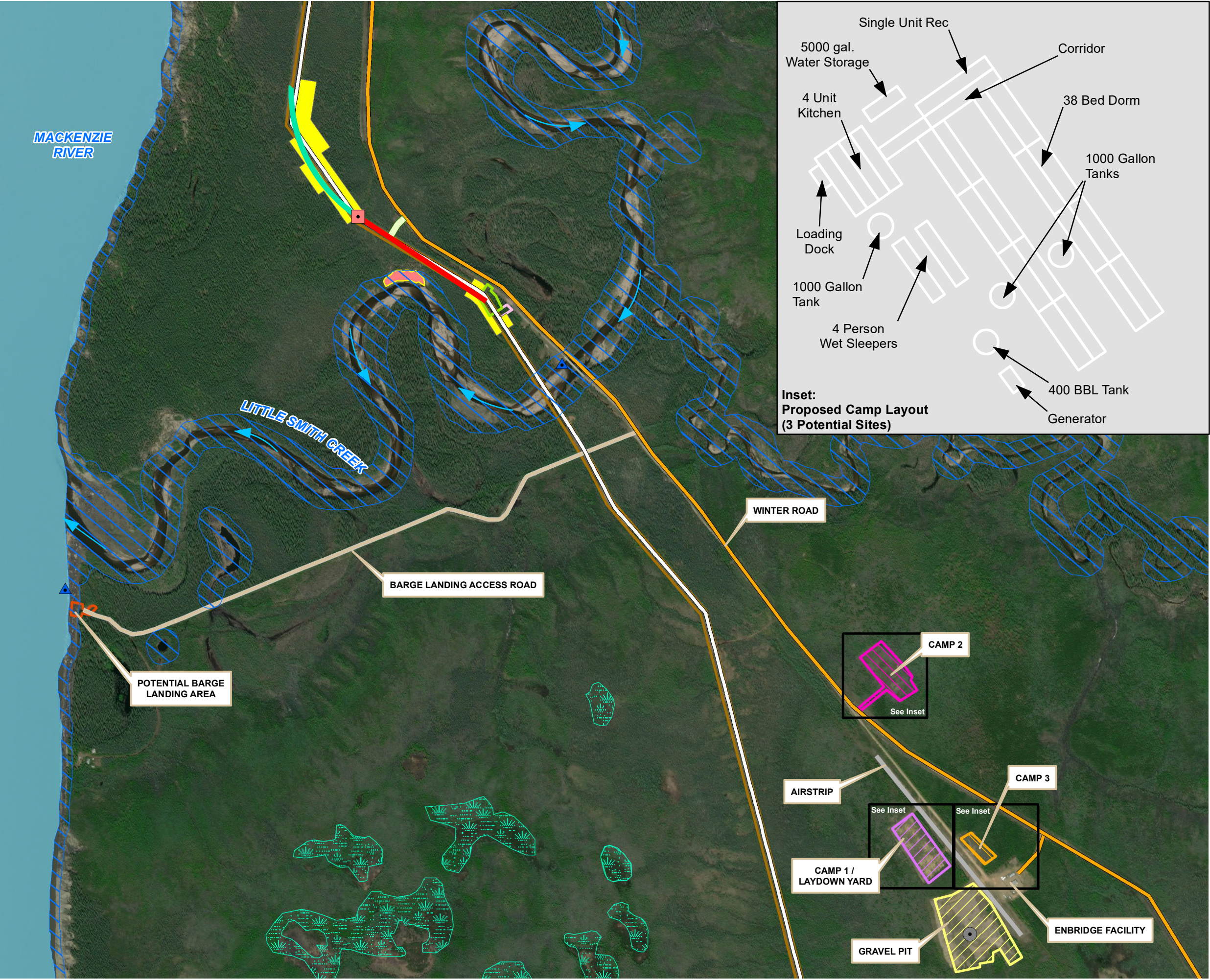
- Airstrip (the Project will use the existing airstrip to transport crews directly to and from site by plane as a precaution to prevent the spread of COVID-19 to the local communities);
- Construction camps (up to three small camps);
- Laydown yard (fuel and equipment storage);
- Barge landing (the Project will use the existing barge landing on the Mackenzie River south of Little Smith Creek and will use temporary portable steel ramps for loading); and
- Temporary workspace:
 - HDD work sites (entry and exit points, and false ROW for trenchless pipe drag section); and
 - Pipeline stopple/tie-in locations

1.2 Plan Purpose and Scope

This Environmental Protection Plan (EPP) has been developed for use by Enbridge and its Contractors and applies to all Project activities as described in Section 1.1. A copy of this EPP will be available to all Project personnel.

This EPP is to be a resource for Enbridge and its Contractors during the pre-construction and construction phases of the Project to avoid or mitigate potential adverse environmental effects. This EPP has been developed based on the findings of the Preliminary and Supplemental Environmental Studies reports (Dillon Consulting Limited [Dillon] 2018; 2020a) and the Environmental and Socio-Economic Assessment (Dillon 2020b) completed for the Project, as well as the Traditional Knowledge Study completed by the Tulita Renewable Resource Council (2019). This EPP includes guidance for carrying out construction activities, outlines environmental protection measures as they relate to Project activities, and provides a reference for environmental inspection staff to support decision-making during the construction phase of the Project.

In addition to this Project-specific EPP, Enbridge has prepared a Waste Management Plan (Appendix A), Spill Contingency Plan (Appendix B), and Closure and Reclamation Plan (Appendix C) for the Project.



ENBRIDGE PIPELINES (NW) INC.
LINE 21 PLANNED MAINTENANCE AT KP 158 NEAR LITTLE SMITH CREEK

**FIGURE 1
PROJECT OVERVIEW**

- HDD Exit
- Potential Water Withdrawal Location
- Potential Sump Location
- Flow Direction
- Proposed HDD Pullback
- Proposed HDD Drill Path
- Waterbody
- Environmentally Sensitive Area with 30 m buffer
- Wetland
- Slope Failure
- North Entrance
- Airstrip
- Existing Line 21 Pipeline
- Winter Road
- Barge Landing Access Road
- Potential Barge Landing Area
- Camp 1 / Laydown Yard
- Camp 2
- Camp 3
- HDD Rig Entry
- Temporary Workspace
- Gravel Pit
- Existing Line 21 ROW
- Stipple Entry

0 100 200 400 Meters

SCALE 1:11,000



MAP DRAWING INFORMATION:
DATA PROVIDED BY NR CAN, DILLON CONSULTING & ESRI

MAP CREATED BY: PH
MAP CHECKED BY: AL
MAP PROJECTION: NAD 1983 UTM Zone 10N



PROJECT: 188582
STATUS: DRAFT
DATE: 2020-11-23

2.0

Regulatory Approvals

The following regulatory approvals were obtained from the SLWB for Project activities:

- Type A Land Use Permit (Permit #S20P-003)
- Type B Water License (License #S20L1-001)

Copies of the Land Use Permit and Water License will be available on-site at all times and are included in Appendix D and Appendix E, respectively.

3.0

Roles and Responsibilities

This section provides an overview of the Project team organization (Figure 2) and outlines Project roles and responsibilities. The Project contact list is provided in Appendix F.

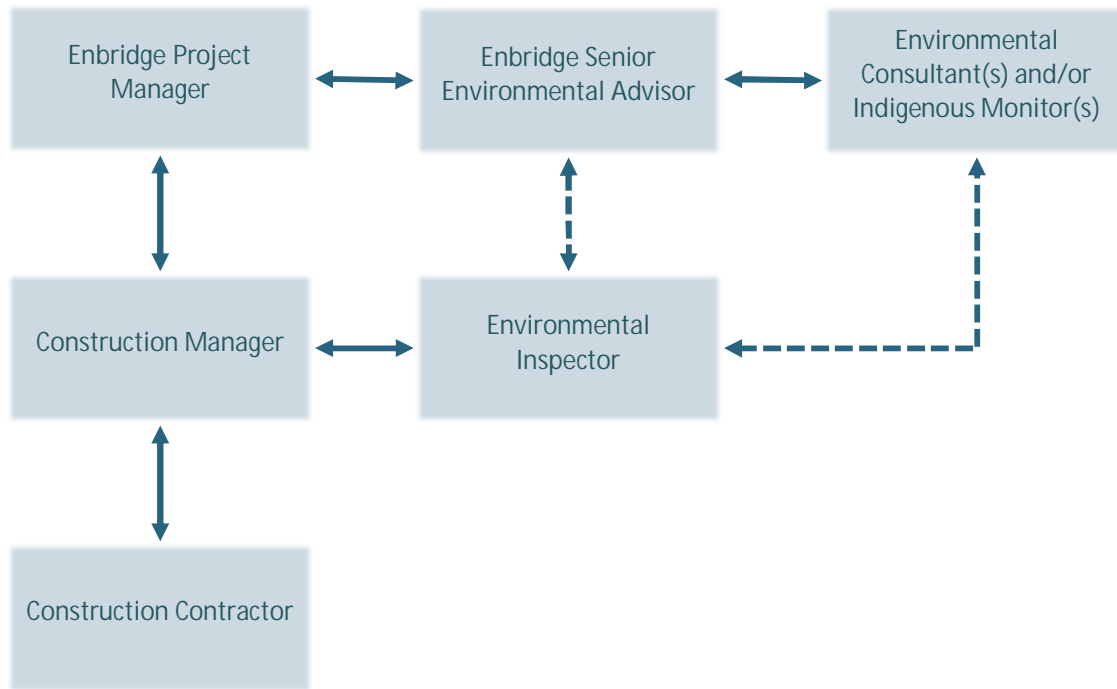


Figure 2: Project Team Organization

The Project team is led by the Enbridge Project Manager, who has the ultimate responsibility for the Project. The Construction Manager reports directly to the Enbridge Project Manager and oversees the Construction Contractor when construction activities are occurring on site. The Construction Manager is responsible for managing the execution of construction plans.

The Environmental Inspector (EI) works directly with the Construction Manager and reports to the Enbridge Senior Environmental Advisor on the status of the Project. The EI works with the Construction Manager to ensure all Project personnel are aware of all environmental conditions, commitments and guidelines for the Project and that the Project is executed in compliance with the EPP and all applicable regulatory permits and approvals. More information on the roles and responsibilities of the EI is provided in Section 3.1, below.

The Enbridge Senior Environmental Advisor is responsible for overseeing Environmental Consultant(s) and/or Indigenous Monitor(s) (when present), who may be contracted to complete pre-construction environmental surveys or environmental monitoring during construction.

3.1 Environmental Inspector

The EI is recognized as an integral part of the construction management team and their role is well-defined within the chain of command (Figure 2).

The EI's responsibilities include the following:

- Work with the Construction Manager so that construction activities are compliant and in alignment with all plans, permit conditions, and the EPP.
- Oversee the implementation of mitigation measures so that they are implemented adequately in quantity and quality to provide effective protection of the environment, and work with the Construction Manager where mitigation measures or construction activities need to be improved or amended to avoid adverse impacts to the environment.
- Attend on-site Project meetings to stay informed on Project status, developments, and requirements, and highlight environmentally sensitive aspects of the Project to the rest of the Project team, where applicable.
- Work proactively with the Project team, including Indigenous Monitors (when present), so that environmental requirements are understood and met, solutions to potential environmental concerns are identified, and corrective actions to address any non-compliance activities are identified.
- Identify if permit variances and/or new mitigation strategies are required based on proposed changes to construction plans in the field, and assist in the development of mitigation strategies with the Enbridge Project Manager, Construction Manager, and Enbridge Senior Environmental Advisor.
- Conduct regular inspection activities and bring any deficiencies or other issues to the attention of the Construction Manager. Intervene or suspend work if an activity or site condition could cause or is causing adverse effects to the environment and needs to be addressed immediately.
- Write daily inspection reports and send them to the Project team. The reports will contain an update of on-site activities and conditions, issues that need to be addressed, follow-up on previously identified action items, relevant discussions with on-site or off-site personnel, and decisions made.
- Support the Project with on-site activities as needed, such as EPP training and site visits.

3.2 Indigenous Monitors

Enbridge recognizes the role of Indigenous Monitors as an integral part of the Project team.

Indigenous Monitors will have access to the Traditional Knowledge Study (Tulita Renewable Resource Council 2019) completed for the Project and will advise the EI and Construction Manager, where applicable, on the implementation of mitigation measures based on their local expertise and traditional knowledge.

3.3 Procedure Variance Process

In the event that an unforeseen environmental issue arises during construction for which no mitigation measures have been approved (e.g., if it is determined that an EPP mitigation measure cannot be implemented as planned, a mitigation measure is not effective, or new procedures are required to address site conditions not anticipated in the EPP), the following steps will be followed:

1. The EI and Construction Manager will be notified of the issue.
2. The EI and Construction Manager will develop a variance or new procedure in consultation with the Enbridge Senior Environmental Advisor.
 - a. The variance must not conflict with any regulatory approval, permit, or authorization condition.
 - b. The variance must be accepted by the Construction Manager, Enbridge Senior Environmental Advisor, and Enbridge Project Manager.
3. If necessary, the Enbridge Senior Environmental Advisor (or designate) will discuss and review the variance with the appropriate regulatory agency.
4. The variance will be documented as an update to the EPP and listed in the Document Version Tracker with an effective date.
5. The EI will be responsible for distributing the updated EPP to field personnel.
6. The EI will provide updated training, where applicable, to all Project personnel.

4.0

Environmental Protection Measures

This section provides mitigation measures to be implemented during Project activities to avoid or reduce potential environmental impacts. Mitigation measures are outlined for various components of the Project in the subsections and tables below. Mitigation measures are sorted by issue/activity.

4.1

Pre-Construction Measures

The following measures are to be implemented prior to the commencement of construction activities.

Issue/Activity	Mitigation Measures
Regulatory Approvals, Permits and Licenses	1. A copy of this EPP and its included plans (Appendix A and Appendix B), and all regulatory approvals, permits and/or licenses (Appendix D and Appendix E) will be available on site at all times.
Project Contacts	2. A list of Project contacts is provided in Appendix F.
Regulatory Compliance	3. All works must be conducted according to all regulatory approvals, permits and licenses obtained for the work. These documents shall be displayed at each work site. 4. Follow the reporting conditions outlined by the SLWB in the Type A Land Use Permit (Appendix D) and Type B Water License (Appendix E) granted for the Project.
Pre-Construction Notifications	5. A minimum of 10 days prior to the initial commencement of Project activities, Enbridge shall provide written notice to the SLWB and a GNWT Inspector. Notification shall include the commencement date and the name and contact information for the individual responsible for overseeing the Project. Written notification shall be provided to the SLWB and a GNWT Inspector if any changes occur. 6. At least 48 hours prior to the initial commencement of the land use operation, Enbridge shall notify the SLWB and contact a GNWT Inspector at (867) 587-7205. 7. At least 48 hours prior to the commencement of the land use operation, Enbridge shall provide the following information, in writing, to the SLWB and a GNWT Inspector: <ul style="list-style-type: none"> the name(s) of the person(s) in charge of the field operation; alternates; and all methods for contacting the above person(s). 8. Prior to the commencement of drilling, Enbridge shall submit the target areas and final drill hole locations on a 1:50,000-scale map with coordinates and map datum to the SLWB and a GNWT Inspector.
Contractor Responsibilities	9. The Contractor is responsible for implementing and following the environmental protection measures contained within this EPP.

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Issue/Activity	Mitigation Measures
Contractor Personnel Responsibilities	<p>10. Contractor personnel must:</p> <ul style="list-style-type: none"> ○ Understand the requirements of the EPP. ○ Fully cooperate with the EI with respect to the content and wording of the EPP in the course of their duties. ○ Report environmental incidents to the Construction Manager.
Discipline	<p>11. Any worker who shows careless or wanton neglect of the environment or disregards requirements put forward in the EPP will be disciplined at the discretion of the Construction Manager.</p>
Environmental Training	<p>12. Prior to the beginning of construction, a pre-job meeting will be held with all relevant project personnel (e.g., engineering, safety and environment employees, inspectors, contractor supervisors, Indigenous Monitors) where this EPP, any environmental concerns, mitigation measures, and regulations specific to the work, corporate policies and procedures, specific stakeholder conditions, specific conditions on associated permits, licenses, and regulatory approvals, and contingency measures (e.g., wet ground conditions or changes in construction methods) will be reviewed with the Enbridge Senior Environmental Advisor.</p> <p>13. Environmental training will be provided to field-level Project personnel as part of the site orientation prior to starting work. This training will be provided by the EI or designate.</p>
Environmentally Sensitive Features	<p>14. Environmentally sensitive features in the Project area include Little Smith Creek, the Mackenzie River, and some low-lying wet areas near the access road to the barge landing site, in addition to a 30-m setback from each feature. These features are shown on Figure 2 in the Spill Contingency Plan (Appendix B).</p>
Survey Marking	<p>15. As part of pre-construction survey marking, conduct the following:</p> <ul style="list-style-type: none"> ○ Clearly flag or stake the boundaries of the Project area before construction, including the corners of the work areas. Maintain the corner markings until the work areas are reclaimed. ○ Clearly flag or stake the boundaries of temporary access roads. <p>16. Maintain survey markings until construction and clean-up activities are complete.</p>

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4.2

Construction Measures

The following measures are to be implemented during construction activities.

Issue/Activity	Mitigation Measures
Scheduling and Timing	<ol style="list-style-type: none"> 17. Adhere to planned Project scheduling as outlined in the applicable regulatory permits and approvals. 18. Schedule and conduct activities to adhere to applicable timing windows and avoid restricted activity periods where feasible, as follows: <ul style="list-style-type: none"> ○ Migratory bird nesting period (May 4 – August 22) ○ Specific restricted activity periods for species at risk or species of special concern, if warranted (see Appendix G).
Vehicle Use	<ol style="list-style-type: none"> 19. Vehicle use on public roads and Project access routes will be in accordance with applicable laws and road use agreements (e.g., load restrictions). 20. Vehicles will not exceed speed limits established for the area and will lower speeds in specific conditions such as areas of high erosion hazard. 21. All personnel will avoid unnecessary wheel spin when traveling or operating on soil.
Equipment Cleaning and Condition	<ol style="list-style-type: none"> 22. Construction equipment, including tracked equipment, rubber-tired vehicles, and mats shall arrive on the job site clean (e.g., free of soil and vegetative debris) and in good working order, with no oil or other fluid leaks. 23. Machinery and equipment shall be inspected for leaks throughout the duration of construction. 24. Maintain an adequate supply of spill prevention and emergency response equipment as outlined in the Spill Contingency Plan (Appendix B). Vehicles transporting fuel or hazardous materials to work areas should be equipped with adequate spill kits.
Access Roads and Traffic Management	<ol style="list-style-type: none"> 25. Restrict construction activities to the approved Project footprint. 26. All construction traffic will adhere to safety and road closure regulations. 27. Install matting along access routes and within the Project footprint, where possible, to maintain access integrity and prevent rutting when ground conditions are not frozen. 28. Construct and maintain the overland portion of winter roads with a minimum of 10 cm packed snow and/or ice at all times. 29. Post signage to discourage unauthorized public access onto the construction footprint during construction. 30. Clearly delineate areas that have access restrictions. Restrict access to construction personnel only.

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Issue/Activity	Mitigation Measures
Brushing and Vegetation Removal	<p>31. Do not allow clearing or grubbing beyond the staked and/or flagged Project footprint boundaries.</p> <p>32. Limit clearing to the minimum necessary to safely complete the job. Clearing within additional workspace will be minimized if the entire workspace is not necessary for construction.</p> <p>33. Brush and trees shall be progressively disposed of during Project activities and all disposal shall be completed prior to the end of the permitted land use operation.</p> <p>34. When clearing non-merchantable timber, maintain an intact ground surface in areas where grading is not warranted.</p> <p>35. Restrict grubbing of shrubs, where feasible. It is preferred that shrubs be mowed or salvaged.</p> <p>36. Limit grubbing to areas where soil removal is necessary (e.g., bell holes, areas to be graded). In areas where strippings salvage and grading are not necessary, and in areas prone to wind erosion, consider other methods for stump removal in order to limit disturbance of the vegetative layer (e.g., mulching).</p>
Surface Disturbance	<p>37. Use equipment that minimizes surface disturbance, soil compaction, and topsoil loss (e.g., equipment with low ground pressure tracks or tires, blade shoes and brush).</p> <p>38. Equipment or vehicles may not be moved overland unless the ground surface is in a state capable of fully supporting the equipment or vehicles without rutting or gouging.</p> <p>39. Overland travel of equipment or vehicles shall be suspended at the first sign of rutting or gouging.</p>
Soil Handling and Storage	<p>40. Remove soil in lifts, keeping separation between the topsoil and subsoil piles.</p> <p>41. If space is limited, separate soil piles using geotextiles.</p> <p>42. Do not place stripped soils in any surface water drainage paths.</p> <p>43. Topsoil and upper subsoil stock piles must be located within the Project footprint.</p> <p>44. Stockpiled topsoil shall be located on undisturbed topsoil. Stockpiled subsoil shall be located on areas where the topsoil has been removed.</p> <p>45. Clearly label temporary soil storage piles as "topsoil" and "subsoil", as appropriate, to prevent inadvertent admixing or improper backfilling.</p>
Topsoil Stripping	<p>46. Use equipment with fine depth control (e.g., excavator or dozer) to strip variable depth topsoil.</p> <p>47. Salvage topsoil to the color change (e.g., transition layer), bottom of the duff layer, or 10 cm, whichever is deepest. Where there is little or no topsoil, salvage all available root zone material to the color change, or 15 cm, whichever is greatest.</p> <p>48. Consult with the EI where topsoil depth is not distinguishable by colour to determine topsoil depth based on soil texture and structure.</p>

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Issue/Activity	Mitigation Measures
Grading and Stripping	<p>49. Soil stripping and grading should be minimized to the extent possible.</p> <p>50. Do not push or store graded or stripped material in treed areas.</p> <p>51. Store material in discrete piles or windrows.</p> <p>52. Ensure that stripped or graded soil does not spread outside of the Project footprint.</p> <p>53. Do not mix topsoil with subsoil fill.</p>
Wet/Thawed Soils	<p>54. Soil disturbance will only occur within the designated areas of the Project footprint required for surface or subsurface work.</p> <p>55. The EI will assist with the identification of soils that are too wet for a particular activity; and when the soils are sufficiently dry to allow the activity to resume. The decision to continue or suspend construction activities on lands with excessively wet soils will be made by the Construction Manager in consultation with the EI. Soils are considered to be excessively wet when the planned activity could cause damage to soils either due to: rutting by traffic through the topsoil into the subsoil; soil structure damage during soil handling or compaction; and associated pulverization of topsoil structure damage due to heavy traffic.</p> <p>56. Contingency measures will be implemented once one of the following indicators occurs:</p> <ul style="list-style-type: none"> ○ Rutting of topsoil to the extent that admixing may occur (rutting is defined as an area of concentrated compaction from tracked or wheeled vehicles measuring 20 m in length, 20 cm in width and greater than 10 cm in depth depending on soil texture). ○ Excessive wheelslip. ○ Excessive build-up of mud on tires and cleats. ○ Formation of puddles. ○ Tracking of mud as vehicles leave the construction ROW. <p>57. Contingency measures include:</p> <ul style="list-style-type: none"> ○ Restrict construction traffic, where feasible, to equipment with low-ground-pressure tires or wide pad tracks. ○ Work only in non-problem areas, such as frozen or well-drained soils, until conditions improve. ○ Install geotextiles, swamp mats, matting or corduroy constructed from non-salvageable timber in problem areas. Record and provide to Enbridge the locations where geotextile, swamp mats or matting are installed for any reason to ensure removal during clean-up. <p>58. Suspend construction until soils dry out.</p>

4.0 Environmental Protection Measures 13

Issue/Activity	Mitigation Measures
Soil Erosion	<p>59. If drifting soils or topsoil loss is evident in areas prone to wind erosion, conduct the following:</p> <ul style="list-style-type: none"> ○ Suspend topsoil stripping operations during high winds; and/or ○ Apply a tackifier to the stripped topsoil pile; and/or ○ Install wind barriers. <p>60. Topsoil handling will be suspended during high winds when soil erosion is evident and during heavy rains if soil becomes saturated. Topsoil will not be handled until winds have decreased and/or topsoil has drained and dried.</p> <p>61. Limit grubbing to areas where soil removal is necessary (e.g., bell holes).</p>
Pipe Assembly, Stringing, Pre-Staging, Welding, Coating and Blasting	<p>62. Do not leave spent welding rods, filings/shavings from end preparation, or cut off pipe rings on the ground. During bevelling operations, collect pipe bevel shaving debris to prevent wildlife from ingesting the shavings. Contain and collect debris from sandblasting operations.</p> <p>63. Where spray or paint-on coatings are applied, place a tarp of sufficient size to block overspray from contacting the ground under the operation.</p> <p>64. Do not perform coating activities within the 30 m buffer of a watercourse without prior approval from the Construction Manager and Enbridge Senior Environmental Advisor.</p> <p>65. Cap pipe ends to prevent wildlife from becoming trapped or confined. If pipe caps are not installed, check for confined or trapped animals prior to pipe movement/installation.</p> <p>66. Hoard-in areas required for sand-blasting activities to contain spent sand-blasting media and stripped coating and/or paint, preventing it from collecting directly on the ground surface or from being transported offsite through the air as much as possible.</p> <p>67. Collect and test the spent media to determine the proper transportation requirements and disposal facility. The EI will aid in identifying appropriate disposal facilities and transportation requirements prior to moving wastes offsite.</p>
Backfilling	<p>68. Prior to the expiry end of the land use operation, the shallow trench created from removal of the pipeline shall be backfilled with excavated materials mixed with wood chips sourced from vegetation and brush removal, and locally sourced substrate of similar type, as required, unless otherwise authorized in writing by a GNWT Inspector.</p> <p>69. If required, de-compact compacted subsoils on the construction ROW and temporary access trails, as well as soils damaged during wet weather to a target depth of 30 cm, prior to soil replacement. If soils are wet, postpone de-compaction until soils dry to ensure so that compaction alleviation measures are effective.</p> <p>70. Avoid mixing snow with spoil material during backfill.</p>

4.0 Environmental Protection Measures 14

Issue/Activity	Mitigation Measures
Hydrostatic Testing	<p>71. Hydrostatic testing will be conducted in accordance with Enbridge procedures and conditions outlined in the SLWB Land Use Permit and Water Licence.</p> <p>72. The total daily quantity of fresh water withdrawn shall not exceed 299 cubic metres per day.</p> <p>73. Water for hydrostatic testing can be temporarily stored in appropriate containers in advance of hydrostatic testing to minimize daily water withdrawals.</p> <p>74. Following the completion of hydrostatic tests, the hydrostatic test water will be sampled in accordance with the Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines (CWQGs), and either discharged over land if guidelines are met, or taken off-site for disposal at an appropriate facility.</p> <p>75. The EI will consult with the Construction Manager to ensure all sampling requirements are met prior to release or disposal of the test water. Disposal or release of the test water must be approved by the EI.</p>
HDD – Work Areas	<p>76. Limit work area construction to only the area necessary to complete HDD operations.</p> <p>77. Segregate and store topsoil in a suitable area during excavations.</p> <p>78. When dewatering containment pits, sumps or ditches, collect and dispose of drilling fluid in accordance with the SLWB Land Use Permit and Water License.</p>
HDD – Drilling Fluid	<p>79. Utilize an Enbridge-approved drilling mud. Limit drilling mud composition to bentonite, fresh water and, if warranted, other inert additives.</p> <p>80. All effluent from HDD activities must be discharged to a storage tank with secondary containment until it can be shipped off-site for disposal at an approved facility.</p>
HDD – Inadvertent Returns	<p>81. The Drilling Contractor shall prepare a drilling fluid release contingency plan to be implemented in the event of an inadvertent return. The plan shall be prepared by the Drilling Contractor in consultation with Enbridge Environment and Construction.</p> <p>82. Excavate the entry and expected exit sites to provide for the containment of drilling mud and sediments during an HDD. Excavations must be large enough to contain the anticipated maximum volume of drilling mud.</p> <p>83. Monitor the drill path and surrounding area for signs of drilling fluid release. The size of the area to be monitored will be determined by evaluating geotechnical conditions (e.g., amount of fracturing, type and depth of substrate) and drilling conditions (e.g., depth of drill path, distance between the entry and exit points). Monitoring will be on a continuous basis during drilling operations and will continue for at least 12 hours after shut-down. Personnel equipped with appropriate communication devices shall be positioned at the most advantageous locations to observe any sign of a release of drilling mud to the surface.</p> <p>84. Suspend drilling operations immediately if an excessive loss of drilling fluid is noted and conduct a detailed examination of the drill path and surrounding area for evidence of a release to the surface.</p>

4.0 Environmental Protection Measures 15

Issue/Activity	Mitigation Measures
Barge Landing – Mackenzie River	<p>85. The barge landing shall be constructed, operated, and maintained to the design specifications and engineering standards, such that:</p> <ul style="list-style-type: none"> ○ Any constructed structures/facilities are maintained and operated so as to prevent structural failure; ○ Any deterioration or erosion of constructed structures/facilities shall be reported immediately to a GWNT Inspector; and, ○ Any deterioration or erosion of constructed structures/facilities that requires repair shall be reported to a GWNT Inspector and the SLWB, immediately. <p>86. Portable ramps shall be used during loading or unloading of ships or barges.</p> <p>87. Place only imported clean coarse material (gravel or rock), or native material for fill.</p> <p>88. Use inert materials for construction of temporary barge landings. Do not use treated wood products or other materials that may allow deleterious substances to leach into the water.</p> <p>89. Install sediment curtains around the work area before starting work and during installation and removal of temporary barge landing structures to prevent sediment from being suspended and spreading to adjacent areas. Inspect regularly and repair when warranted. Remove accumulated sediment within the work area, to the extent practical, before removing curtains and place onshore in a location where sediment will not enter surface waters.</p> <p>90. A water quality monitoring plan should be developed and implemented by a qualified fisheries biologist to coincide with in-stream activities. Turbidity levels and total suspended solids (TSS) concentrations should not exceed applicable water quality guidelines.</p> <p>91. Re-contour the streambed to approximate the pre-construction profile and channel configuration to maintain flow patterns. Watercourses are not to be realigned or straightened in any way nor have their hydraulic characteristics changed.</p> <p>92. During restoration, replace or relocate rocks, stumps or logs required to be moved from the watercourse bottom or foreshore during construction to an area of similar depth.</p>

4.0 Environmental Protection Measures 16

Issue/Activity	Mitigation Measures
Water Withdrawal	<p>93. Water for the Project shall only be obtained from the Mackenzie River or Little Smith Creek, unless otherwise approved by a GNWT Inspector. Up to 299 cubic metres of water per day may be withdrawn from these sources.</p> <p>94. The total annual quantity of fresh water withdrawn shall not exceed 5,000 cubic metres.</p> <p>95. Prior to locating a water intake in a fish-bearing watercourse, written authorization shall be obtained for the location from a GNWT Inspector.</p> <p>96. Prior to withdrawing water from an approved water source, signs shall be posted to identify the intake location.</p> <p>97. The water intakes shall be constructed and maintained with a screen designed to prevent impingement or entrapment of fish. The screens shall be monitored and maintained free of debris.</p> <p>98. Place pump intakes to avoid or reduce disturbance to the streambed and to avoid potential overwintering fish habitat.</p> <p>99. The Contractor will elevate the pump intake to minimize the pumping of sediment.</p> <p>100. A log of water withdrawal volumes is to be maintained by the Contractor and reported to the EI daily for the duration of the Project.</p> <p>101. The Construction Manager shall notify the EI prior to commencing any water withdrawal activities. The notification will include the water source location(s), equipment being used to withdraw water and the anticipated frequency and duration of the withdrawal.</p> <p>102. Water withdrawal location(s) and conditions will be monitored by the personnel conducting the withdrawal activities who shall immediately notify the EI if the conditions are changing (e.g., issues with the intake setup). If required, the EI will discuss and recommend additional mitigation measures in consultation with the Construction Manager.</p> <p>103. The EI shall regularly inspect water withdrawal locations as part of normal environmental inspection activities.</p>

4.0 Environmental Protection Measures 17

Issue/Activity	Mitigation Measures
Water Discharge	<p>104. Surface and/or groundwater dewatering can only be carried out while personnel are on site or nearby, allowing for regular inspection and maintenance of the pumping and discharge system.</p> <p>105. Ground or surface water collecting in the work area will be visually assessed by the EI for signs of contamination prior to being discharged off-site.</p> <p>106. Where possible, discharge locations should be as close to the dewatered areas as possible to maintain the local water table elevation (but not so close as to impact the work area).</p> <p>107. Suitable discharge locations will be delineated and marked by the EI, and confirmed by the Construction Manager and the Contractor.</p> <p>108. Suitable water discharge locations will be communicated to the GNWT Inspector.</p> <p>109. Filter bags are required for water discharged into the environment to prevent erosion and sediment deposition.</p> <p>110. Water discharged into the environment shall be directed to sediment removal basins, located in low-lying, vegetated areas at least 30 m away from a watercourse or wetland.</p> <p>111. Wastewater shall not be discharged to any watercourse or to the ground surface within 100 m of the ordinary high-water mark of any watercourse.</p> <p>112. The Construction Manager must notify the EI of a water discharge event.</p> <p>113. The EI will inspect all water discharge locations following a discharge event and record the site conditions in the daily inspection report.</p> <p>114. Discharge locations will be routinely inspected by the EI.</p>
Erosion and Sediment Control	<p>115. If activities involve ground disturbance within 100 m of any waterbody, install erosion control structures between the natural areas and the work areas to create separation of the work area as required.</p> <p>116. Erosion and sediment control measures are to be left in place, where feasible, until all work is complete.</p> <p>117. Erosion and sediment control measures are to be routinely inspected and maintained in proper working order.</p> <p>118. Erosion and sediment control measures are not static and may need to be upgraded and/or amended as directed by the Construction Manager upon the recommendation of the EI, as site conditions change.</p> <p>119. Repair failed erosion and sediment control measures as soon as possible.</p> <p>120. Prepare the site in such a manner as to minimize rutting of the ground surface.</p> <p>121. Suspend overland travel of equipment or vehicles at the first sign of rutting in areas not stripped of topsoil.</p>
Groundwater	<p>122. Backfill excavated material in lifts and compact after each lift. Return all native material back into the excavation during backfilling. If fill is required, the permeability of the fill material must be consistent with native materials.</p> <p>123. If springs or groundwater are encountered during excavation, Enbridge and the Contractor will review the area and determine the appropriate mitigation.</p>

4.0 Environmental Protection Measures 18

Issue/Activity	Mitigation Measures
Natural Drainage	<p>124. Leave gaps in windrows and at obvious drainages to reduce interference with natural drainage patterns.</p> <p>125. Undertake all grading with the understanding that original contours and drainage patterns will be re-established during clean-up.</p> <p>126. Re-establish surface drainage patterns; install drainage, sediment, and erosion control measures, where required.</p> <p>127. Remove all mats after construction so that they do not impede the restoration of natural drainage patterns.</p> <p>128. Re-grade areas with vehicle ruts or erosion gullies.</p> <p>129. Leave a crown of excess spoil over excavations as appropriate to mitigate backfill settlement.</p>
Unstable Terrain	<p>130. Do not operate vehicles or heavy equipment on unstable terrain.</p> <p>131. Maintain an adequate setback distance from unstable slopes.</p> <p>132. Re-establish surface drainage patterns; install drainage, sediment, and erosion control measures, where required.</p> <p>133. Limit grubbing to areas where soil removal is necessary (e.g., bell holes).</p> <p>134. Leave a crown of excess spoil over excavations as appropriate to mitigate backfill settlement.</p>

4.0 Environmental Protection Measures 19

Issue/Activity	Mitigation Measures
Permafrost	<p>135. The ground surface beneath all structures and equipment associated with the Project shall be insulated to prevent:</p> <ul style="list-style-type: none"> ○ any vegetation present from being removed; ○ the melting of permafrost; and ○ the ground settling and/or eroding. <p>136. Use chilled drilling mud during HDD construction, if feasible.</p> <p>137. Limit topsoil salvage width to only that which is required in thaw-sensitive permafrost areas.</p> <p>138. Take particular care in permafrost areas to create and maintain an adequate snow/ice pad that will limit the potential for disturbance of the vegetation mat.</p> <p>139. Conduct snow harvesting and water spraying in permafrost areas if snow accumulation is limited to maintain an adequate snow/ice pad.</p> <p>140. Where soil is fine-grained and/or of high ice content on permafrost terrain, implement erosion control measures as quickly as possible after surface disturbance. A geotechnical professional can provide details on the erosion control measures and materials to be used.</p> <p>141. Do not salvage surface materials on permafrost terrain at locations where a snow/ice seasonal access road is to be developed. If new all-season access roads are necessary in areas of permafrost terrain, construct them in a manner that limits damage to the vegetative mat and maintains the existing thermal regime. Consult with a geotechnical professional, if warranted. Use snow/ice pads or matting, where warranted, to reduce surface disturbance in permafrost areas.</p> <p>142. Walk down or mow shrubs and small trees rather than cutting, if feasible, to retain a vegetated mat and limit surface disturbance.</p> <p>143. Do not grub on permafrost terrain unless required.</p> <p>144. Use burning racks, sleds or sloops when burning in permafrost areas.</p> <p>145. Use snow and/or geotextile to provide a barrier between stockpiled soil materials and the ground surface.</p> <p>146. Use thaw-stable materials as backfill, or as otherwise approved by a geotechnical professional. Where spoil material has high ice content, approved imported backfill material may be required.</p> <p>147. Insulate the ground surface beneath structures associated with the Project, where possible (e.g., matting).</p> <p>148. Avoid scalping of the vegetative mat/sod layer on permafrost during backfill. Use equipment during final pass of backfilling that will reduce scalping (e.g., clean-up bucket) and is approved by the EI.</p> <p>149. Where the soils are fine-grained and/or of high ice content on permafrost terrain, implement reclamation measures as quickly as possible after surface disturbance so as to reduce the risk of slope failure and ground subsidence. Consult a geotechnical professional, if warranted. Rehabilitate and stabilize organic mats, vegetation and soils that have been disturbed on permafrost terrain as soon as practicable. If necessary, regrade excavated areas during the first winter after construction to repair any subsidence or to remove an excessively high crown.</p>

4.0 Environmental Protection Measures 20

Issue/Activity	Mitigation Measures
Wastes	<p>150. Waste management and disposal is to be carried out in accordance with the Waste Management Plan (Appendix A).</p> <p>151. A minimum of 10 days prior to depositing any waste into a licensed municipal facility, written notification shall be provided to the SLWB and a GNWT Inspector demonstrating that the licensed disposal facility has agreed to accept the waste and has the capacity to receive the volumes of waste requested.</p> <p>152. Garbage and refuse must be disposed into and stored within appropriate secure containers to reduce attraction of wildlife, to restrict wildlife access, and to prevent wastes from leaving the site. Work areas are to be kept clean at all times.</p> <p>153. Ensure waste streams are sorted as required by the disposal facility accepting the wastes.</p> <p>154. Confine the storage of potentially hazardous waste materials to controlled areas, which should undergo regular inspection. All contractors must comply with WHMIS legislation regarding the labeling of hazardous materials.</p> <p>155. Burning of waste is strictly prohibited unless appropriate regulatory approvals are in place and the Enbridge Senior Environmental Advisor has been consulted.</p> <p>156. Consult the Waste Management Plan and EI for documentation and disposal requirements for all waste types.</p>
Discovery and Identification of Contaminated Soil or Water	<p>157. Soil or slurry material should be considered contaminated if any of the following is observed:</p> <ul style="list-style-type: none"> ○ Oil residue ○ Gaseous odour ○ Discoloured soil ○ Sheen on water <p>158. Notify the EI of the suspected contamination who will initiate the applicable investigation and sampling will be completed to confirm suspect soil or water.</p> <p>159. Upon the discovery of potentially contaminated soil or water, the EI will consult with the Enbridge Senior Environmental Advisor to determine proper sampling requirements.</p> <p>160. If required, the Enbridge Senior Environmental Advisor will notify the applicable regulatory agencies of the contamination.</p>

4.0 Environmental Protection Measures 21

Issue/Activity	Mitigation Measures
Handling/Disposal of Contaminated Soil or Water	<p>161. If contaminated soil is required to be stored on site, it must be:</p> <ul style="list-style-type: none"> ○ Stored on an impervious membrane and surrounded by a berm to contain any water runoff. ○ Stored away from surface water drainage paths. <p>162. Minimize the amount of contaminated soil exposed to open air to control odours and limit potential air quality issues.</p> <p>163. Wet contaminated materials must be stored in suitable containers or tanks.</p> <p>164. Contaminated materials will be disposed of in accordance with the Waste Management Plan.</p> <p>165. Consult with the EI prior to disposing of any contaminated waste to ensure all sampling requirements are met and an approved facility has been arranged to receive the wastes.</p>
Clean-up and Remediation of Contaminated Areas	<p>166. Excavations left following the removal of contaminated soil must backfilled as soon as possible.</p> <p>167. When soil material must be imported to site, the source of the imported soil must be shared with the EI as early as possible to ensure enough time is available to complete all required sampling and analyses.</p> <p>168. Soils will be analyzed for petroleum hydrocarbons, metals, salinity and other parameters as deemed appropriate by the EI in consultation with the Enbridge Senior Environmental Advisor.</p> <p>169. Contaminated areas that have been remediated will be reclaimed during final clean-up and reclamation of the work areas, in accordance with the Project-specific Closure and Reclamation Plan (Appendix C).</p>

4.0 Environmental Protection Measures 22

Issue/Activity	Mitigation Measures
Equipment Refueling and Servicing	<p>170. Equipment refueling and servicing must employ the spill prevention measures outlined in the Spill Contingency Plan (Appendix B).</p> <p>171. Inspect hydraulic, fuel, and lubrication systems of equipment on a regular basis to ensure that the systems are in good condition and free of leaks.</p> <p>172. Equipment will be attended at all times while refueling.</p> <p>173. Drip trays are to be in place while refueling occurs to contain drips and spills.</p> <p>174. All vehicle servicing with the potential for accidental spills shall take place above an impervious tarp, and servicing will not take place within 100 m of wetlands or watercourses.</p> <p>175. Minimize refueling or servicing of equipment within 100 m of the high watermark of wetlands and watercourses. Where equipment servicing/refuelling is necessary within 100 m of the normal high watermark of a waterbody (e.g., equipment breakdown and water pump fuelling), ensure that:</p> <ul style="list-style-type: none"> ○ Fuel, oil, or hazardous material is not stored within 100 m of a waterbody unless adequate secondary containment is provided and reviewed by the EI. ○ All containers, hoses and nozzles are free of leaks. ○ All fuel nozzles are equipped with automatic shut-offs. ○ Operators are stationed at both ends of the hose during fuelling, unless the ends are visible and shut off is readily accessible by one operator. ○ Fuel remaining in the hose is returned to the storage facility. ○ Secondary containment exceeds the total volume being transferred in the case of stationary equipment (e.g., pumps and generators). <p>176. Adequate spill response materials are available at the site of the transfer to control all potential spill volumes.</p> <p>177. All fuel containers must be stored in secondary containment.</p> <p>178. Spill kits should be accessible while refueling.</p> <p>179. Regular inspection and maintenance will be conducted for all heavy equipment and vehicles used for the Project, including fuel transfer hoses and fuel/oil lines. Equipment or vehicles with deficiencies will be taken out of service and repaired.</p> <p>180. Inspect hydraulic, fuel, and lubrication systems of equipment used in water crossing construction to ensure that the systems are in good condition and free of leaks. Prevent the discharge of materials toxic to fish or other aquatic life into a watercourse or water body.</p> <p>181. Hazardous materials must be labeled, stored, and handled according to Workplace Hazardous Materials Information System (WHMIS) regulations.</p> <p>182. Spill mats and/or drip pans/trays will be placed under all mobile fueling containers and under equipment when not in use, defined as idling or parked for longer than two hours.</p> <p>183. All sewage and solid waste will be contained and sealed in watertight containers.</p> <p>184. Tanks used for transporting greywater will be watertight and will be regularly and properly inspected and maintained by the operator.</p>

4.0 Environmental Protection Measures 23

Issue/Activity	Mitigation Measures
Fuel Storage	<p>185. Fuels must be stored in accordance with the Project-specific Spill Contingency Plan (Appendix B) and Waste Management Plan (Appendix A).</p> <p>186. Fuel storage containers and tanks must be marked with the name of the contractor.</p> <p>187. Mark all stationary fuel storage areas/facilities with flags, posts, or equivalent so that they are plainly visible to local vehicle travel at all times.</p> <p>188. Do not place any fuel storage containers or tanks within 100 m of the ordinary high water mark of any watercourse, unless authorized in writing by a GNWT Inspector.</p> <p>189. Fuels must be stored in designated areas.</p> <p>190. Seal all outlets of fuel storage containers (e.g., jerry cans) and store the containers on their sides with the outlets located at 3 o'clock and 9 o'clock, except for containers currently in use.</p> <p>191. Jerry cans and other mobile fuel containers must always be stored in secondary containment while being used and returned to the storage area as soon feasible following use.</p> <p>192. All refuelling points and fuel storage tanks, including secondary containment and gas cans, will be inspected twice daily during operations. All leaks must be repaired immediately.</p> <p>193. If a fuel storage container is supported by a stand, the stand will be approved by a GNWT Inspector.</p> <p>194. Fuel storage containers and tanks will be appropriately labeled as per the Spill Contingency Plan.</p> <p>195. The Enbridge Senior Environmental Advisor will notify the SLWB and GNWT Inspector of the location and quantity of any and all fuel storage areas/facilities in writing within 10 days of the establishment of a fuel storage area/facility.</p> <p>196. A maximum of 132,000 litres of fuel (diesel and gas) may be stored on the Project site at any time, unless otherwise approved by the SLWB.</p> <p>197. Equip all fuel nozzles with automatic shutoffs.</p> <p>198. Fuel storage tanks shall have adequate secondary containment.</p>

4.0 Environmental Protection Measures 24

Issue/Activity	Mitigation Measures
Spill Response, Reporting and Notification	<p>199. Consult the Spill Contingency Plan for spill prevention measures, spill control plans, reporting, response, and clean-up requirements and procedures.</p> <p>200. The Spill Contingency Plan should be available at all times on the work site and in or near the spill trailer.</p> <p>201. An emergency spill response kit will be kept on the work sites wherever fuel is stored in case of fluid leaks or spills from machinery.</p> <p>202. Notify the Construction Manager as soon possible following the discovery of any spill.</p> <p>203. The Enbridge Senior Environmental Advisor will notify regulatory agencies and community liaisons as per the Spill Contingency Plan. In accordance with the GNWT Spill Contingency Planning and Reporting Regulations, the following steps will be taken, if a spill occurs or is foreseeable:</p> <ul style="list-style-type: none"> ○ Implement the approved Spill Contingency Plan (Appendix B); ○ Immediately report each spill using the NU-NT Spill Report Form by one of the following methods: 24-hour Spill Report Line (867) 920-8130; fax (867) 873-6924; e-mail (spills@gov.nt.ca); or online via the Spill Reporting and Tracking Database; ○ Report each spill to a GNWT Inspector within 24 hours; and ○ Submit a detailed report on each spill within 30 days to the SLWB and a GNWT Inspector. <p>204. A written spill report must be submitted to the EI, Construction Manager and Enbridge Project Manager by the party responsible for the spill within 24 hours (see the Spill Contingency Plan for reporting requirements).</p> <p>205. The EI will complete a Preliminary Spill Notification to be included with the Daily Environmental Inspection Report if the Spill Report is not ready by the end of the shift when the spill was discovered.</p>
Weeds and Invasive Vegetation	<p>206. All equipment (e.g., vehicles, materials, mats, etc.) must arrive for work in a clean condition to reduce the risk of weed introduction. Prohibit any equipment which arrives in a dirty condition to work until it has been cleaned off at a suitable location.</p> <p>207. Flag areas previously identified as having noxious and invasive weed infestations prior to commencement of site preparation (e.g., clearing, strippings salvage, grading) activities.</p> <p>208. Monitor the Project footprint for weed infestations as a part of the post-construction monitoring program.</p> <p>209. Implement post-construction vegetation and weed management as per the Enbridge LP Vegetation Management Guide. The Enbridge Senior Environmental Advisor must ensure that the applicable permits have been obtained for chemical treatments (e.g., herbicides, pesticides) and/or burning as required by the appropriate regulatory authorities prior to undertaking weed treatments.</p>

4.0 Environmental Protection Measures 25

Issue/Activity	Mitigation Measures
Fire Prevention and Suppression	<p>210. Obtain a Burn Permit from the Sahtú Regional Office of the GNWT Department of Environment and Natural Resources if burning is required during the closed season (May 1 to September 30).</p> <p>211. Conduct all burning in accordance with the Forest Protection Act (RSNWT 1988, c. F-10) and regulatory permits.</p> <p>212. The Contractor will maintain fire-fighting equipment at the site in accordance with the Government of the GNWT Forest Fire Prevention and Suppression Guidelines for Industrial Activities.</p> <p>213. All personnel shall be made aware of proper disposal methods for welding rods, cigarette butts and other hot or burning material.</p> <p>214. Conduct burning as conditions permit and do not burn when the fire hazard is high.</p> <p>215. Smoke only on Enbridge property or the construction ROW in outdoor areas that are posted and approved by Enbridge.</p> <p>216. Follow the measures identified in Enbridge's Emergency Response Plan in the event of an accidental fire. A copy of the Emergency Response Plan will be available in the Enbridge and Contractor construction offices for reference during construction.</p>

4.0 Environmental Protection Measures 26

Issue/Activity	Mitigation Measures
Wildlife and Wildlife Habitat	<p>217. Prohibit Project personnel from hunting on the Project footprint, and from harassing, feeding, collecting, or possessing wildlife species.</p> <p>218. Do not permit construction personnel to have dogs on the Project footprint.</p> <p>219. Firearms are not permitted in Project vehicles or on the Project footprint, or at associated Project facilities, except by Wildlife Monitors/Bear Watch personnel.</p> <p>220. Prohibit the recreational use of ATVs or snowmobiles by construction personnel on the Project footprint.</p> <p>221. Limit the length of open excavations as much as practical to lessen the potential for interference with wildlife movement.</p> <p>222. Examine excavations on a regular basis for wildlife that may have become trapped overnight. Report the location and species of wildlife trapped in the excavation, if present, to the EI or Enbridge designate prior to commencing any construction activities. The EI or Enbridge designate will contact the applicable regulatory authority.</p> <p>223. Domestic wastes will be collected and contained in wildlife-proof containers and will be disposed of in accordance with the Project-specific Waste Management Plan.</p> <p>224. In the event that clearing or construction activities occur within the migratory bird nesting period (May 4 to August 22), Wildlife Resource Specialists will use non-intrusive methods to conduct an area search for evidence of nesting (e.g., presence of territorial males, alarm calls, distraction displays, adults carrying nesting material/food) a maximum of 7 days prior to construction activity to identify active nests. In the event that an active nest is found, it will be subject to site-specific mitigation measures (e.g., clearly marked species-specific buffer around the nest or non-intrusive monitoring).</p> <p>225. Consider the wildlife setbacks and sensitive periods recommended in Table 4 of the Sahtú Land Use Plan (Sahtú Land Use Planning Board 2013) if suitable habitat (e.g., dens, nest sites) is identified in proximity to the Project footprint prior to clearing or construction.</p>
Wildlife Encounters or Sightings	<p>226. Unanticipated wildlife issues encountered during construction will be discussed and resolved by the EI or Enbridge designate and the responsible regulatory agencies, if necessary.</p> <p>227. Report any incidents with wildlife to the EI immediately.</p> <p>228. Establish construction traffic speed limits on access roads to reduce the risk of collisions with wildlife.</p> <p>229. Suspend the work activity in the event that an area to be cleared is found to contain an active bird nest, burrow or den. Report sightings of wildlife species of concern to the EI or Enbridge designate. Implement applicable contingency measures associated with the discovery of species of concern during construction (e.g., seasonal timing constraints within the recommended set back distances).</p>

4.0 Environmental Protection Measures 27

Issue/Activity	Mitigation Measures
Caribou	<p>230. If caribou are observed during Project construction, report to the EI or Enbridge designate immediately.</p> <p>231. Avoid and/or minimize alteration of the biophysical habitat attributes (e.g., lowland black spruce-lichen forests and open coniferous forests) listed in the Recovery Strategy for the Boreal Caribou in the NWT (Conference of Management Authorities 2017), where feasible.</p> <p>232. Reduce or avoid works during the calving period (mid-May to mid-June) in potential calving habitat (e.g., forested areas).</p>
Air and Noise Emissions	<p>233. Use well-maintained equipment to reduce air pollution.</p> <p>234. Transport workers to and from the work site by multi-passenger vehicles to the extent practical to reduce emissions.</p> <p>235. Maintain noise-abatement equipment (e.g., mufflers) on machinery and vehicles in good working order to limit noise emissions and air pollution.</p> <p>236. Reduce idling of equipment, where possible.</p> <p>237. Where practical, turn off equipment when not in use.</p> <p>238. Enclose noisy equipment, as needed, to limit the transmission of noise beyond the construction-site.</p> <p>239. Replace or repair equipment parts generating excessive noise, if practical.</p> <p>240. Obtain applicable permits prior to burning. Follow guidance in the applicable legislation.</p> <p>241. Implement techniques to limit smoke production from burning of slash including limiting pile size, minimizing moisture content and maintaining loose burning piles with minimal soil.</p> <p>242. Follow industry-accepted best management practices for noise control and the reduction of air emissions.</p> <p>243. Provide the construction schedule to potentially-affected Indigenous communities or other identified land users in the vicinity of the Project.</p>
Light Emissions	<p>244. Lighting will be restricted to the minimum required to complete the works safely.</p> <p>245. Lighting will be directed to the work area to reduce light pollution during dark hours, to the extent feasible.</p>
Heritage Resources	<p>246. Suspend work in proximity (i.e., within 30 m or any distance specified by the appropriate regulatory agency) to archaeological, palaeontological or historical sites (e.g., arrow heads, modified bone, pottery fragments, fossils) discovered during construction. No work at that particular location shall continue until permission is granted by the appropriate regulatory agency.</p> <p>247. Prohibit the collection of any historical, archaeological or palaeontological resources by Project personnel.</p>

4.0 Environmental Protection Measures 28

Issue/Activity	Mitigation Measures
Traditional Land Users and Commercial Trappers	<p>248. Provide the construction schedule and mapping to potentially-affected Indigenous communities.</p> <p>249. Restrict construction activities to the approved Project footprint.</p> <p>250. Clear vegetation only where required within the marked construction footprint boundaries.</p> <p>251. Prohibit Project personnel from hunting on the Project footprint, and from harassing, feeding, collecting, or possessing wildlife species.</p> <p>252. Accommodate access through Project work areas and access routes for traditional land users and commercial trappers, wherever possible. This may include leaving/plowing gaps in snow windrows at obvious trails used by traditional land users or commercial trappers.</p> <p>253. Prohibit the vandalism or theft of trapper equipment or trapped animals. Report violators to the Construction Manager, who will alert the proper authorities.</p>

4.3 Post-Construction

The following measures are to be implemented following the completion of construction activities.

Issue/Activity	Mitigation Measures
Notifications	<p>254. At least 10 days prior to the completion of the land use operation, Enbridge shall advise a GNWT Inspector of:</p> <ul style="list-style-type: none"> the plan for removal or storage of equipment and materials; when final cleanup and reclamation of the land used will be completed; and when the Final Plan will be submitted.
Clean-Up	<p>255. Remove matting, geotextiles and subsoil ramps, if used to cross wet, low-lying areas, unless otherwise stated by the Construction Manager, where access may be necessary for clean-up.</p> <p>256. Begin rough clean-up on all disturbed areas during construction as soon as practical after backfilling.</p> <p>257. Perform final clean-up of the work areas. All areas affected by construction or removal activities shall be stabilized and landscaped to their pre-construction profiles, unless otherwise authorized in writing by a GNWT Inspector.</p> <p>258. Schedule clean-up to reduce interference with the migratory bird nesting period (May 4 to August 22).</p> <p>259. For damaged or wet soils, postpone clean-up until soils dry out.</p> <p>260. Roll back any remaining cleared vegetation onto the work areas.</p> <p>261. Grade to re-establish surface drainage patterns and maintain existing site grades.</p> <p>262. Reduce disturbance to natural drainage channels during grading. Avoid blocking channels with graded material.</p> <p>263. Clean matting prior to demobilizing mats from work areas.</p>
Reclamation	<p>264. All areas affected by construction activities shall be stabilized and landscaped to their preconstruction profiles, unless otherwise authorized in writing by a GNWT Inspector.</p> <p>265. Complete reclamation in accordance with the SLWB-approved Project-specific Closure and Reclamation Plan (Appendix C).</p>
Debris Removal	<p>266. Remove all debris and bins from the work area.</p> <p>267. Restore any trails impacted by construction activities by removing fallen trees and any other obstructions from the trails.</p>
Erosion Control	<p>268. After final grading, stabilize disturbed steep slopes with permanent erosion control structures, especially if heavy runoff or heavy storms are likely and there is a risk of substantial erosion.</p> <p>269. Remove silt fence and erosion control measures only after the site has been stabilized.</p>
Soil Replacement	<p>270. Store overburden and use it to re-contour the site after operations are complete, unless otherwise authorized in writing by a GNWT Inspector.</p>

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Issue/Activity	Mitigation Measures
Revegetation	271. Prepare the site in such a manner as to facilitate natural vegetation establishment. Natural re-vegetation will be evaluated during post-construction environmental monitoring.
Post-Construction Environmental Monitoring (PCEM)	272. Enbridge will implement a PCEM Program to determine if remedial measures are warranted. Monitoring will occur in spring following break-up and in the summer/fall during the growing season for the first two years. Following year two, monitoring will only be conducted in summer during the growing season. 273. Following the completion of the PCEM Program, Enbridge will continue monitoring the site as part of ongoing operations and maintenance activities.

5.0

Incident Management

An environmental incident is defined as any activity that is not in compliance with environmental regulations or permits or an event which causes an environmental impact that triggers reporting or notification requirements to a regulatory agency. Examples include the following:

- Clearing vegetation outside of permitted areas
- Wildlife conflicts
- Sedimentation into a watercourse or wetland
- Impact to historical resources
- Soil admixing and erosion, including sedimentation on topsoil
- Proceeding with work without appropriate notification or approvals from regulatory agencies
- Non-compliance with environmental regulatory requirements, permit conditions, Project-specific EPPs, or commitments communicated to an external stakeholder or regulator
- Inadvertent leaks and fluid spills of petroleum hydrocarbons or other hazardous materials.

An environmental incident has the potential to occur while conducting pre-construction, construction, reclamation, or operations work. In the event of a leak, spill or environmental incident, work shall stop immediately and the appropriate measures will be taken to mitigate further potential impacts.

5.1

Incident Reporting

All environmental incidents must be reported immediately to the EI and the Construction Manager (refer to the Spill Contingency Plan in Appendix B). Incidents must also be reported by the EI or Construction Manager to Indigenous Monitors (when present), the Enbridge Senior Environmental Advisor, and the Enbridge Project Manager. Further direction on additional reporting to regulators will be provided by the Enbridge Senior Environmental Advisor.

Spill reporting requirements are outlined in the Spill Contingency Plan in Appendix B. The occurrence of a spill triggers time-sensitive requirements to report to federal, territorial, or regional regulatory agencies. The GNWT requires spills of flammable liquids over 100 litres, or sewage and wastewater of any quantity, to be reported immediately to the 24-hour spill reporting line by calling (867)-920-8130, or filling out the NT-NU Spill Report Form, which is provided in the Spill Contingency Plan (Appendix B).

5.2

Incident Investigation and Classification

To understand the causes and to facilitate the implementation of corrective actions to minimize the potential for future similar incidents, investigations of leaks, spills, and environmental incidents will be conducted in accordance with Enbridge compliance requirements. Incidents will be classified in accordance with company procedures and guidelines.

6.0

References

Conference of Management Authorities. 2017. Recovery Strategy for the Boreal Caribou (*Rangifer tarandus caribou*) in the Northwest Territories. Species at Risk (NWT) Act Management Plan and Recovery Strategy Series. Environment and Natural Resources, Government of the Northwest Territories, Yellowknife, NT. x + 57 pp.

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Appendix A

Waste Management Plan

Appendix B

Spill Contingency Plan

Appendix C

Closure and Reclamation Plan

Appendix D

Type A Land Use Permit (S20P-003)

Appendix E

Type B Water License (S20L1-001)

Appendix F

Project Contact List

Project Contact List

Contact Name (Agency/Person)	Contact Information
AGENCIES	
GNWT Department of Environment and Natural Resources 24-Hour Spill Reporting Line	(867) 920-8130
GNWT Department of Lands – Sahtú Regional Office	(867) 587-7200
Sahtú Land and Water Board	(867) 598-2413
ENBRIDGE	
Project Manager – Robert Gagnon	Office: (780) 392-4878 Cell: (587) 336-9819 Robert.Gagnon@enbridge.com
Construction Manager – Bert Fillion	Office: 780-508-7507 Cell: 780-982-5991 Bert.Fillion@enbridge.com
Senior Environmental Advisor – Brad Kilgour	Office: 780-392-4348 Cell: 780-991-0665 Brad.Kilgour@enbridge.com
Regulatory Lead – Karin Schmidt	Office: 403-231-3948 Cell: 587-435-7032 Karin.Schmidt@enbridge.com

Appendix G

Species at Risk Information Sheets

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Appendix A

Waste Management Plan



ENBRIDGE PIPELINES (NW) INC.

Waste Management Plan

Line 21 Planned Maintenance at KP 158 near Little Smith Creek

August 2020, Rev. 1 – 18-8582

Plain Language Summary

Enbridge Pipelines (NW) Inc. (Enbridge) is proposing to replace a segment of the Line 21 pipeline southeast of kilometre post (KP) 158 near Little Smith Creek in the Northwest Territories (the Project).

This Waste Management Plan (the Plan) has been developed for use by Enbridge and its Contractors and applies to all Project activities as described in **Section 2.0**. It was developed in accordance with the Mackenzie Valley Land and Water Board Guidelines for Developing a Waste Management Plan (2011), and aligns with Enbridge's corporate Waste Management Plan (Enbridge Pipelines Inc. 2018) for Canada. A copy of this Plan will be available to all Project personnel.

This Plan forms part of an application package prepared to satisfy the requirements of the Sahtú Land and Water Board for a Type A Land Use Permit and Type B Water License. In conjunction with this Plan, Enbridge has prepared a Spill Contingency Plan, Closure and Reclamation Plan, and Environmental and Socio-Economic Assessment for the Project. A Project-specific Environmental Protection Plan will be prepared prior to construction.

The purpose of this Plan is to provide guidance to on-site personnel regarding the identification, handling, storage, treatment, transportation, and disposal of different types of Project-related wastes. To be effective, it is important that all personnel are familiar with their responsibilities as they relate to proper waste management. This Plan was developed in consideration of all applicable federal and territorial legislation/regulations related to waste management and applies to the complete life cycle of Project waste, from creation to final treatment and disposal.

This Plan will be effective at the commencement of construction activities and will be updated to reflect site-specific conditions, as required.

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Acronyms, Abbreviations and Definitions

Enbridge	Enbridge Pipelines (NW) Inc.
EPP	<i>Environmental Protection Plan</i>
GNWT	Government of Northwest Territories
HDD	<i>Horizontal Directional Drill</i>
km	kilometre(s)
KP	Kilometre Post
L	Litre(s)
m	metre(s)
m ³	cubic metre(s)
MVLWB	Mackenzie Valley Land and Water Board
NPS	Nominal Pipe Size
NWT	Northwest Territories
ROW	Right-of-Way
SLWB	Sahtú Land and Water Board
TDG	<i>Transportation of Dangerous Goods</i>
the Project	<i>Replacement of a segment of the Line 21 pipeline southeast of KP 158 near Little Smith Creek in the Northwest Territories</i>
the Plan	Waste Management Plan
WHMIS	<i>Workplace Hazardous Materials Information System</i>

1.0 Introduction and Background 1

1.0 Introduction and Background

Enbridge Pipelines (NW) Inc. (Enbridge) is proposing to replace a segment of the Line 21 pipeline southeast of kilometre post (KP) 158 near Little Smith Creek in the Northwest Territories (NWT) (the Project). Enbridge retained Dillon Consulting Limited (Dillon) to prepare a Waste Management Plan (the Plan) in support of regulatory and permitting applications for the Project.

Contact information for Enbridge is provided in Table 1.

Table 1: Project Contacts

Name	Role	Address	Telephone	Email
Robert Gagnon	Project Manager	10175 101 St NW, Edmonton, Alberta T5J 0H3	(780) 392-4878	Robert.Gagnon@enbridge.com
Sarah McKenzie	Regulatory Lead	10175 101 St NW, Edmonton, Alberta T5J 0H3	(780) 420-5375	Sarah.McKenzie@enbridge.com

1.1 Purpose and Scope of Plan

This Plan has been developed for use by Enbridge and its Contractors and applies to all Project activities as described in **Section 2.0**. It was developed in accordance with the Mackenzie Valley Land and Water Board (MVLWB) Guidelines for Developing a Waste Management Plan (2011), and aligns with Enbridge's corporate Waste Management Plan (Enbridge Pipelines Inc. 2018) for Canada. A copy of this Plan will be available to all Project personnel.

This Plan forms part of an application package prepared to satisfy the requirements of the Sahtú Land and Water Board (SLWB) for a Type A Land Use Permit and Type B Water License. In conjunction with this Plan, Enbridge has prepared a Spill Contingency Plan, Closure and Reclamation Plan, and Environmental and Socio-Economic Assessment for the Project. A Project-specific Environmental Protection Plan (EPP) will be prepared prior to construction.

The purpose of this Plan is to provide guidance to on-site personnel regarding the identification, handling, storage, treatment, transportation, and disposal of different types of Project-related wastes. To be effective, it is important that all personnel are familiar with their responsibilities as they relate to proper waste management. This Plan was developed in consideration of all applicable federal and territorial legislation/regulations related to waste management and applies to the complete life cycle of Project waste, from creation to final treatment and disposal.

This Plan will be effective at the commencement of construction activities and will be updated to reflect site-specific conditions, as required.

1.0 Introduction and Background 2

1.2 Environmental Policy

Enbridge believes that minimizing the environmental footprint and impacts associated with our activities delivers value to shareholders, customers and employees. Enbridge's Environmental Management System, including its environmental protection program, has been established to protect and sustain the environment throughout the lifecycle of design, construct, maintain and operate, and decommission and abandon, and to anticipate, prevent, manage, and mitigate conditions that could adversely affect the environment.

Enbridge's Environmental Policy provides the philosophy and approach for responsible environmental management and supports values of integrity, safety, and respect, which guide our actions, policies, procedures and culture.

Enbridge's goal is to foster an educational, just, and flexible organizational culture where environmental excellence is an integral element in the conduct of our business.

Enbridge is committed to:

- Identifying interactions and potential impacts on the environment;
- Minimizing adverse environmental effects through effective planning and execution;
- Complying with government regulations and applicable industry standards;
- Effectively responding to unanticipated events;
- Providing appropriate training to ensure employees and contract workers understand their responsibility to protect the environment;
- Promoting a culture where environmental excellence is everyone's responsibility;
- Actively engaging with the public and government regarding environmental activities;
- Learning from past experiences in order to continually improve competency and performance; and
- Maintaining a non-retaliatory culture that encourages reporting and investigation of environmental hazards, potential hazards, near-misses, incidents, and non-compliances.

2.0 Project Description

The Project is located in the Sahtú Region of the NWT, approximately 80 kilometres (km) southeast of the hamlet of Tulita and approximately 140 km southeast of the Town of Norman Wells (see Figure 1 in Appendix A).

The Project is required to protect the Line 21 pipeline from potential impacts of slope instability at a meander bend along Little Smith Creek near KP 158 and to support the continued safe operation of the pipeline.

2.1 Project Components

The Project involves the removal of an approximately 510-metre (m) segment of the existing Line 21 pipeline (nominal pipe size [NPS] 12) and replacing it with a new, approximately 520-m NPS 12 pipeline segment at a greater depth of cover. Enbridge is planning to install the new pipeline segment via horizontal directional drill (HDD) within the existing Enbridge right-of-way (ROW), and no new land rights are required for operation; however, some temporary workspace, located on privately-held Sahtú lands administered by the Tulita District Land Corporation, will be required in order to accommodate construction activities.

The Project will require upgrades to existing access roads, as well as the following temporary infrastructure:

- Construction camps (up to three small camps);
- Laydown yard (fuel and equipment storage);
- Potential barge landing (upgrades to an existing site on the Mackenzie River); and
- Temporary workspace:
 - HDD work sites (entry and exit points, and false ROW for trenchless pipe drag section); and
 - Pipeline stopple/tie-in locations.

Refer to Figure 1 and Figure 2 in Appendix A for the locations of Project components.

2.2 Activities Resulting in the Generation of Wastes

Project activities will result in the generation of various types of wastes. The following subsections describe the types of Project activities that will generate waste and what wastes are typically generated. More detail on the waste types, including approximate volumes, that may be generated by the Project is provided in **Section 3.0**.

2.0 Project Description 4

2.2.1 Clearing and Access/Site Preparation

Minor vegetation clearing/brushing will be required along the margins of existing access roads and some clearing and grubbing will be required at the camp site/laydown yard. Vegetation will be cleared on portions of the existing ROW where excavation is required for removal of the existing pipe segment and for the HDD entry and exit points and pipeline stopples/tie-ins, as well as for temporary workspace, where required.

Vegetative/woody debris will be generated from clearing, grubbing, and site preparation activities. These types of materials are considered flammable and must be collected and disposed of in accordance with the NWT *Forest Protection Act* (RSNWT 1988, c. F-10) and all applicable permits/authorizations.

2.2.2 Pipeline Construction

The replacement pipeline segment will be installed via HDD and will require drilling fluid (composed of inert bentonite clay) and produce drill cuttings. The drilling fluid and cuttings are considered wastes and require appropriate disposal.

In addition, some excavation work will require use of hydrovac equipment. Hydrovac excavation uses pressurized water and an industrial strength vacuum to simultaneously excavate and evacuate soil. This process creates a slurry (soil mixed with water) that is removed by a powerful vacuum into a debris tank. The slurry is considered a waste product that requires appropriate disposal.

The existing pipe segment that is being removed will be drained into onsite tankage. The contents of the pipe and the pipe segment will be re-injected into the new installed pipeline after it has been tied in and tested.

The new pipeline segment will be hydrostatically tested using a rental fluid comprised of a 50/50 mix of water and glycol. The test fluid will be trucked to and from the Project site in appropriate containment and will not be discharged to the environment.

Other typical wastes that will be generated by pipeline construction include scrap materials (metal, wood), geotextiles, liners, concrete, and spent welding rods, as well as used oils, fuel, lubricants, grease, coolants, filters, etc. from equipment maintenance and servicing. All wastes will be hauled off site and disposed of at approved facilities.

2.2.3 Potential Barge Landing

Construction of the potential barge landing may require the placement of fill material (i.e., sand/gravel). When construction is complete, the barge landing will be removed and the site will be restored, which will require removal of any fill material that may have been used to return the bank of the river to as close to its preconstruction contours as possible. Used fill material will require disposal.

2.0 Project Description 5

2.2.4 Camp Site(s) and Laydown Yard

The camp site(s) will be used to accommodate construction personnel and provide office space and will include parking space, sleeping quarters, community gathering space, kitchen, and sanitary facilities (toilets, showers, sinks, etc.). The laydown yard will be used for equipment and fuel storage.

The camp site(s) will accommodate up to 80 workers during peak construction (winter 2021). The camp(s) will generate domestic wastes, sewage, and greywater, which will be stored on-site in appropriate containment before being transported off-site for disposal. No wastes will be discharged to the environment.

All non-hazardous camp wastes are expected to be hauled to local disposal or treatment facilities in Tulita. If Tulita cannot accept the wastes, then they will be transported to appropriate facilities in Norman Wells or other approved sites. Written agreements will be put in place with receiving facilities for the acceptance of wastes prior to the commencement of construction.

2.2.5 Contaminated Materials

Spills have the potential to occur as a result of an accident or malfunction during Project activities and can result in contamination of soils, vegetation, or water. In the event of a spill, the Project's Spill Contingency Plan will be implemented and contaminated materials will be cleaned up and stored in suitable containment on-site until they can be transported to an appropriate disposal facility.

3.0 Identification of Waste Types 6

3.0 Identification of Waste Types

The following section identifies the different types of wastes that are anticipated to be generated during Project activities (see **Section 2.2**). For the purpose of this Plan, the waste types have been categorized as follows:

- Hazardous Wastes;
- Non-Hazardous and Non-Mineral Wastes; and
- Mineral Wastes.

The estimated quantities of each type of waste are provided in Table 2. The anticipated volumes are based on best available information and are subject to change.

Table 2: Anticipated Project Wastes and Approximate Rates of Production

Waste Type	Approx. Maximum Volume/Rate
Hazardous Wastes	
Used oils, fuel, lubricant, grease, coolants, filters, etc.	0.5 m ³ /day
Hydrostatic test fluid (water/glycol mix)	250 m ³
Contaminated soil, vegetation, or water	N/A – generated from accidents and malfunctions only
Non-Hazardous and Non-Mineral Wastes	
Domestic wastes (from camp and work sites)	5 m ³ /day
Sanitary wastes from camp (sewage and greywater)	200 L/person/day
Construction materials	2 m ³ /day
Vegetative/woody debris	TBD
Mineral Wastes	
HDD cuttings	250 m ³
HDD drilling fluid	625 m ³
Hydrovac slurry	100 m ³
Granular material for potential barge landing (sand/gravel)	100 m ³

Notes:

N/A = not applicable; TBD = to be determined; m³ = cubic metre(s); L = litre(s)

3.1 Hazardous Wastes

The predominant source of hazardous wastes generated by Project activities will be from equipment maintenance and servicing, which may result in waste oil, fuel, batteries, lubricants, grease, oil filters, used hoses, and solvents.

3.0 Identification of Waste Types 7

Other potential hazardous wastes may be generated by accidents and malfunctions, resulting in contaminated sorbent materials, tarps, soil, vegetation, or water.

The potential environmental effects arising from unmanaged hazardous wastes could include degradation of soil quality, water quality, and terrestrial and aquatic habitat quality, as well as potential adverse effects on the health and safety of on-site personnel.

3.2 Non-Hazardous and Non-Mineral Wastes

Non-hazardous and non-mineral wastes generated by Project activities will include domestic and sanitary wastes (i.e., greywater and sewage), vegetative/woody debris from clearing and site preparation, and construction materials.

The potential environmental effects arising from improperly managed non-hazardous and non-mineral wastes could include increased risk of human-wildlife interactions (wildlife attractants), potential for spills, leaks, and safety incidents, a change in the aesthetics of the Project area, increased fire hazard (woody debris), and degradation of water quality, and terrestrial and aquatic habitat quality.

3.3 Mineral Wastes

Mineral wastes generated by Project activities will include used fill materials (sand/gravel), HDD waste, and hydrovac slurry.

HDD wastes are defined as all materials or chemicals, solid or liquid, associated with drilling; including drill cuttings and drill fluids. For the purposes of the Project, drilling fluids will be made up of water and bentonite-based additives. Water for drilling will be withdrawn from the Mackenzie River, nearby spring-fed waterbodies and/or Little Smith Creek. Drilling fluids will be recycled in a closed loop system to limit the volumes of water required to complete the HDD by separating drill cuttings returned to the surface. Depending on the drilling conditions, some drilling fluids and cuttings may be disposed of during HDD activities to avoid exceeding the temporary on-site storage capacity. Upon completion of the HDD activities, the drilling fluids and drill cutting swill be prepared for on-site or off-site disposal.

The potential environmental effects arising from improperly managed mineral wastes could include degradation of soil quality, water quality, and terrestrial and aquatic habitat quality.

4.0 Management of Wastes

The following subsections provide details on the management procedures for the specific waste types identified in **Section 3.0**. The management procedures are in alignment with Enbridge's corporate Waste Management Plan (Enbridge Pipelines Inc. 2018) for Canada and support the measures in the Project-specific EPP.

Waste reduction and recycling have been integrated directly into Project execution procedures to reduce waste generation for all Project components. Materials will be re-used or re-purposed, where possible.

Some wastes will require transportation for off-site treatment or disposal. The type of transportation and tracking documents will depend on the nature of the waste and the location of the appropriate disposal or treatment facility. Minimum requirements for transportation and tracking are outlined below.

Non-hazardous wastes that require off-site transportation from the Project footprint will be transported to local disposal facilities in Tulita. Hazardous wastes will be transported to an appropriate waste facility in Alberta. Appropriate containment will be used to store and transport wastes to avoid off-site impacts.

4.1 Hazardous Wastes

Hazardous materials will be handled, stored, transported and disposed of in accordance with Enbridge's Waste Management Plan (Enbridge Pipelines Inc. 2018) for Canada, as well as all applicable Workplace Hazardous Materials Information System (WHMIS) and Transportation of Dangerous Goods (TDG) legislation.

All hazardous wastes will be stored in designated storage areas in clearly marked containers at least 100 m away from the high-water mark of any waterbody, in accordance with the Project's Spill Contingency Plan. Any spills of hazardous wastes will be responded to and cleaned up in accordance with the Spill Contingency Plan. Hazardous wastes stored on-site will be removed from the designated storage areas prior to demobilizing equipment from the work areas and disposed of at approved facilities.

In the NWT, generators of hazardous waste must be registered with the Department of Environment and Natural Resources prior to shipping any hazardous waste. After completing registration, an identification number is issued by the government as proof of authorization for the company and must be used for the shipment of all hazardous wastes by the approved waste generator. Enbridge's NWT waste generator number is NTG000026.

4.0 Management of Wastes 9

Hazardous materials must be disposed of at a licensed hazardous waste/Class 1 receiving facility. It is likely that hazardous Project wastes will be hauled to an approved facility in Alberta. In the event that hazardous waste is hauled to a separate jurisdiction (i.e., Alberta), a special hauling license will be obtained.

Each shipment of hazardous waste generated as a result of Project activities in the NWT must be accompanied by a completed, territorially-issued movement document/manifest. Contact the Environmental Inspector for assistance in obtaining the required movement documents.

4.1.1 Used Oils, Fuel, Lubricant, Grease, Coolants, Filters, etc.

All used oils, fuels, lubricants, greases, coolants, filters, solvents, etc. produced from routine equipment maintenance and servicing will be captured in appropriate containers, labeled as hazardous waste, and stored in designated areas.

Reference the waste information sheets in Appendix B for the applicable WHMIS and TDG classifications of each specific waste.

4.1.2 Hydrostatic Test Fluid

A rental fluid comprised of a 50/50 mix of water and glycol will be used to hydrostatically test the new pipeline segment.

The test fluid will be hauled to the site and stored in a double wall containment tank, or secondary containment will be set up for the tank.

The used test fluid will be collected and hauled off-site in appropriate containment and no fluid will be allowed to be discharged to the environment.

4.1.3 Contaminated Materials

The inadvertent release of a hazardous substance can generate contaminated clean-up materials (sorbent materials, tarps), soil, vegetation, or water. In the case of a release of hazardous or otherwise deleterious materials, follow the procedures outlined in the Spill Contingency Plan to stop, contain, and clean up a spill. All contaminated material will be considered hazardous waste and must be stored in an isolated containment structure, which can include the following:

- Tank;
- Bin; or,
- Pit/sump with an impermeable liner and containment berms.

The containment structure must prevent leachate from escaping the containment area and coming in contact with a waterbody or the ground surface.

4.0 Management of Wastes 10

Follow procedures in the Project-specific EPP to identify and contain potential contaminated materials. Contaminated materials will be disposed of off-site at an approved facility. Proper NWT waste manifests will be used when transporting and disposing of contaminated materials.

4.2 Non-Hazardous and Non-Mineral Wastes

4.2.1 Domestic Wastes

Waste management measures will be implemented to minimize attractants to wildlife, including the following:

- Reduce and properly dispose of garbage, food wastes, and other edible and aromatic substances.
- Store all food and garbage in either: airtight sealed containers, wildlife-proof containers, or in an enclosed area inaccessible to wildlife.
- Store all on-site grease, oils, fuels in wildlife-proof containers or enclosed bear-proof areas.
- Store minimal amounts of wastes on-site and haul wastes off for disposal as often as practical.

Combustible and non-combustible domestic wastes will be separated into two streams as recommended in the *Northern Land Use Guidelines for Camp and Support Facilities* (Government of Northwest Territories [GNWT] 2015). No incineration of domestic wastes will be undertaken.

Work crews will regularly inspect areas surrounding the camp and work sites to collect and properly dispose of any waste material that has blown off-site.

Domestic solid wastes will be temporarily stored at the camp before being transported to municipal facilities for disposal. Tulita is the preferred location for domestic waste disposal; however, alternate locations have been identified if Project wastes cannot be accepted at the preferred site (refer to waste disposal facilities listed in **Section 5.0**). Agreements will be put in place with waste disposal facilities prior to hauling any waste off-site for disposal.

Waybills or truck tickets will accompany all waste being hauled off site.

4.2.2 Sanitary Wastes

All sewage and greywater will be temporarily stored in tanks at the camp. Enbridge will seek to dispose of all sewage and greywater at a local waste treatment facility in Tulita. Agreements will be in place with waste treatment facilities prior to hauling any sewage or greywater off-site for disposal.

Waybills or truck tickets will accompany all waste being hauled off site.

In the unlikely event that off-site transportation is temporarily restricted, or pre-arranged disposal facilities are unable to accept wastes, sewage and greywater could reach on-site storage capacity. In

4.0 Management of Wastes 11

these circumstances, mitigation options could include the construction of a disposal pit. If required, such on-site disposal would proceed in accordance with best practices outlined in the Northern Land Use *Guidelines for Camp and Support Facilities* (GNWT 2015) and in consultation with GNWT Inspectors.

Portable toilets used on-site will be managed by the Contractor. Sanitary wastes collected in the portable toilets will be hauled off-site for treatment and disposal at the supplier's facility or by removing the contents on-site using appropriate mobile equipment and hauling to an approved waste treatment facility.

4.2.3 Construction Materials

Construction material wastes (e.g., scrap wood, scrap metal, liners, geotextiles, concrete, etc.) will be stored in closed top containers in approved areas until they are removed from site and hauled away for disposal. Approval for disposal must be received by the facility operator prior to disposal. The Contractor will coordinate with waste facility operators to ensure the facility can accept the waste types being hauled off-site. Waybills or truck tickets will accompany all waste being hauled off site.

4.2.4 Vegetative/Woody Debris

Non-salvageable vegetative and woody debris from brushing and clearing will be collected and moved to an open area (e.g., the gravel pit) where it will be disposed of by burning on-site. Burning will be conducted in accordance with the NWT *Forest Protection Act* (RSNWT 1988, c. F-10) and all applicable permits/authorizations. A burn permit will be acquired prior to burning during the closed season (May 1 to September 30).

Should burning not be permitted, brush and trees less than 13 cm in diameter will be stockpiled and spread back over the temporary workspaces following the completion of construction. If required, the brush and small trees may be mulched to reduce the space required for storing and to reduce the effort to spread materials back on the restored workspace.

4.3 Mineral Wastes

Mineral wastes, for the purpose of this Plan, are considered to be natural materials (e.g., clay, sand, gravel, soil) that are used for Project activities (i.e., HDD, hydrovac, fill). The preferred disposal option for mineral wastes is on-site treatment and disposal; however, the contingency disposal plan is to haul mineral wastes off-site to an appropriate facility in the case that the on-site options are determined to not be viable.

4.3.1 HDD Wastes and Hydrovac Slurry

Water will be withdrawn from the Mackenzie River or Little Smith Creek in order to facilitate HDD and hydrovac activities. Water is mixed with inert bentonite clay for HDD activities and with soils for hydrovacating.

4.0 Management of Wastes 12

HDD wastes (drilling fluid and cuttings) from the Project will be managed according to industry-accepted best management practices outlined in the Alberta Energy Regulator (AER) *Directive 050: Drilling Waste Management* (AER 2019) guidelines. Drilling wastes will be managed on-site to the extent possible. Drilling fluids will be recirculated during drilling activities to limit the volume of water required and waste generated through the drilling process. Drilling wastes will be stored on-site in bins or tanks while awaiting disposal. All efforts will be made to prevent drilling fluids and untested drilling wastes from coming into contact with the ground or from migrating off of the Project work site, through the use of secondary containment, collection pits, and drip trays, where required.

A common disposal solution for HDD and hydrovac mineral wastes is mix-bury-cover into the subsoil. The feasibility of mix-bury-cover is dependent upon the receiving substrate and the results of sampling to assess the wastes and determine if they need to be treated prior to disposal. If permitted by the SLWB, and pending substrate testing, mix-bury-cover of the Project's HDD and hydrovac wastes may be conducted along the trench line of the removed pipe segment in order to help backfill the space left by the removed pipeline and any remaining wastes may be disposed of at the on-site gravel pit or another suitable location nearby. Sumps will be excavated to mix the drilling wastes with native subsoil. Drilling wastes will also be analyzed for applicable parameters to assess against criteria set out in the AER (2019) *Directive 050* guidelines.

If, upon testing, the HDD wastes or hydrovac slurry are deemed unsuitable for mix-bury-cover or the substrates on-site are not appropriate to receive the wastes, or the SLWB does not permit on-site disposal, then the HDD and hydrovac wastes will be hauled off-site for disposal at an appropriate facility. All transports hauling drilling wastes off-site will have appropriate manifests, waybills or truck tickets, based on the type of waste.

4.3.2 Granular Materials

Granular (fill) materials (i.e., sand/gravel) may be required for construction and operation of the potential barge landing site. The Project may utilize materials from the gravel pit located adjacent to the camp/laydown yard, if the materials are determined to be clean and suitable for fill. All granular material placed at the potential barge landing site will be collected, to the extent feasible, upon completion of the Project and returned to the gravel pit and/or disposed of accordingly. The Environmental Inspector will be consulted prior to removing the material from site to determine the appropriate requirements for disposal.

5.0 Infrastructure for Waste Management

Waste disposal will occur throughout construction as part of general maintenance activities. Appropriate waste receptacles for the various waste types to be encountered on the Project will be available at suitable locations throughout the camp and work sites. Wildlife-proof containers will be used to store edible, organic, and/or aromatic wastes and wastes will be stored in fenced-off areas or inside buildings that are inaccessible to wildlife. Secondary and/or tertiary containment will be set up and maintained, as required, for all hazardous wastes (storage requirements are outlined in the Spill Contingency Plan).

Wastes being hauled off-site will be transported by truck on the winter road. Some wastes may need to be hauled by barge on the Mackenzie River, following final site clean-up and demobilization. Wastes will be stored in appropriate containment for transportation.

Waste disposal facilities for all wastes types being hauled off-site will be identified prior to hauling any wastes and disposal agreements will be put in place with all receiving facilities. All applicable facility guidelines and requirements will be met to ensure wastes will be accepted. Waste facility arrangements will be made closer to construction. Table 3 provides a list of potential waste facilities that may be able to accept the wastes generated by the Project.

Table 3: Waste Disposal Facilities

Waste Type	Company	Address	Contact Number(s)
Contaminated Soil (Landfill Disposal)	Tervita Northern Rockies Landfill	Mile 285 Alaska Highway PO Box 1049 Fort Nelson, BC V0C 1R0	P: (250) 774-3027
	Tervita Rainbow Lake Class II Landfill	PO Box 393 Rainbow Lake, AB T0H 2Y0	P: (780) 956-5650 F: (780) 956-5630
Filters, Rags and Sorbent Recycling	RBW Waste Management Ltd.	3907 - 69 Avenue Edmonton, AB T6B 3G4	P: (780) 955-9332 or 1-800-642-3802 F: (780) 437-0281
Hazardous Waste Disposal	RBW Waste Management Ltd.	3907 - 69 Avenue Edmonton, AB T6B 3G4	P: (780) 955-9332 or 1-800-642-3802 F: (780) 437-0281
	Tervita	12311 - 17th Street NE Edmonton, AB T6S 1A7	P: (780) 456-1444 or 1-800-667-0444 F: (780) 456-9696

5.0 Infrastructure for Waste Management 14

Waste Type	Company	Address	Contact Number(s)
Hazardous Waste Disposal (cont'd)	Tervita Northern Rockies Landfill	Mile 258 Alaska Highway PO Box 1049 Fort Nelson, BC V0C 1R0	P: (250) 774-3027
	KBL Environmental Ltd.	PO Box 1895 17 Cameron Road Yellowknife, NT X1A 2P4	P: (867) 873-5263
Hazardous Waste Transportation	Tervita	12311 - 17th Street NE Edmonton, AB T6S 1A7	P: (780) 456-1444 or 1-800-667-0444 F: (780) 456-9696
	KBL Environmental Ltd.	PO Box 1895 17 Cameron Road Yellowknife, NT X1A 2P4	P: (867) 873-5263
	Matco Transport	1 Junkers Road Norman Wells, NT X0E 0V0	P: (867) 587-2351
Lube Oil/Solvent Recycling	Terrapure Environmental	6024 - 27 Street NW Edmonton, AB T6P 1Y5	P: (780) 461-8926
	Tervita	9-61058 Hwy 668 Grande Prairie, AB T8W 5A9	P: (780) 539-1845 F: (780) 539-0260
Oil Disposal	L&P Disposals	Box 1752 High Level, AB T0H 1Z0	P: (780) 926-2988
Oilfield Waste Management	Tervita	PO Box 393 Rainbow Lake, AB T0H 2Y0	P: (780) 956-5650 F: (780) 956-5630
Paint Recyclers	DBS Environmental	1430 - 33 Street N Lethbridge, AB T1H 5H3	P: (403) 328-4833 1-888-328-4833 F: (403) 328-4729
Laboratories	Taiga Environmental Laboratory – Department of Environment and Natural Resources	4601 - 52 Avenue Yellowknife, NT X1A 2L9	P: (867) 767-9235 ext 53151 F: (867) 920-8740 taiga@gov.nt.ca

5.0 Infrastructure for Waste Management 15

Waste Type	Company	Address	Contact Number(s)
Domestic Waste Disposal	Norman Wells Solid Waste Landfill	Norman Wells, NT X0E 0V0	P: (867) 587-3700
	Hamlet of Tulita Solid Waste Facility	PO Box 170 Tulita, NT X0E 0K0	P: (867) 588-3003
Sewage Disposal	Hamlet of Tulita Taylor's Lake Sewage Lagoon	PO Box 91 Tulita, NT X0E 0K0	P: (867) 588-4471
	Northridge Contracting Ltd.	Norman Wells, NT X0E 0V0	P: (867) 587-2050
	Village of Fort Simpson Wastewater Treatment Plant	Box 240 Fort Simpson, NT X0E 0N0	P: (867) 695-2370
	Department of Public Works, Town of Hay River	100 - 62 Woodland Drive Hay River, NT X0E 1G1	P: (867) 874-6522

6.0 Training

Project-specific EPP training is required by all individuals working on Project sites. The EPP training will include a review of permit conditions, mitigation plans (including this Plan), and site-specific environmental mitigation for the Project. The level of EPP training will be dependent on the role and responsibility of the individual. Managers and foremen/supervisors with additional responsibility for the Project will receive more detailed EPP training to ensure they understand all permit conditions, environmental policies, and required environmental mitigation and can effectively direct employees. Field workers will receive a level of EPP training tailored to the execution of their scope of work.

7.0 Monitoring and Evaluation

The Environmental Inspector will be responsible for ensuring all Project personnel are aware of environmental conditions, commitments and guidelines for the Project and that the Project is executed in compliance with this Plan, the EPP, and all other associated management plans and contingency plans, as well as applicable regulatory permits and approvals.

The Environmental Inspector will work with Indigenous Monitors to oversee the implementation of this Plan in conjunction with the EPP. Regular inspections will occur over the course of the Project and daily inspection reports will be prepared and distributed to the Project team.

This Plan will be updated as required and all Enbridge personnel are encouraged to comment and assist in its improvement.

8.0 Contingencies

In the event that an unforeseen issue arises during construction for which no mitigation measures have been approved, the Enbridge Senior Environmental Advisor and the Environmental Inspector will develop appropriate measures in consultation with the Construction Manager, Project Manager and, when appropriate, regulatory agencies.

New or amended mitigation measures will be incorporated into this Plan by the Enbridge Senior Environmental Advisor and the revised Plan will be reviewed by the Project Manager and Construction Manager before it is issued to the Project team with an issued and effective date. The revised Plan will come into effect on the effective date. The Environmental Inspector will be responsible for distributing the revised copy of the Plan to all appropriate Project personnel.

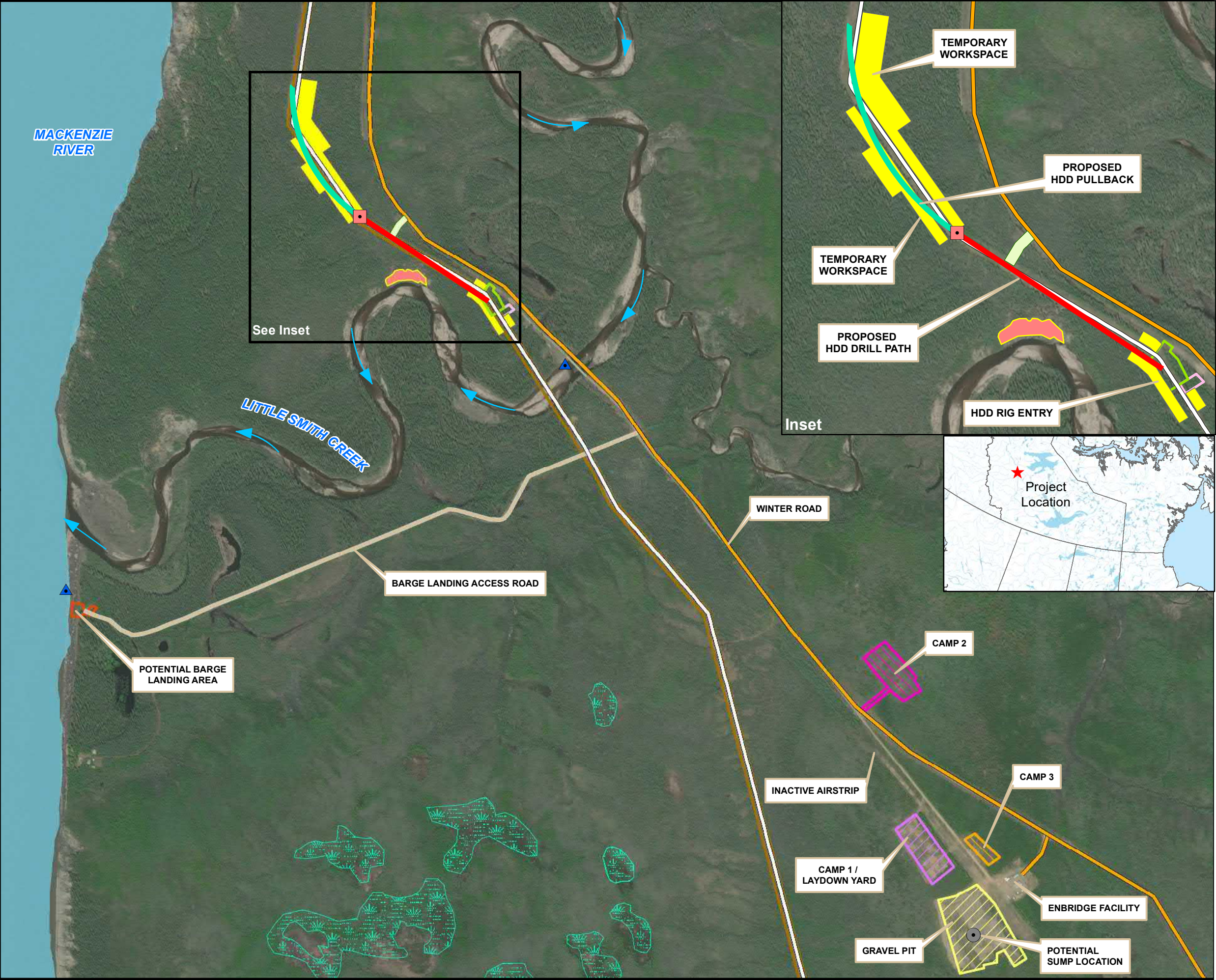
If an issue arises and an adequate resolution cannot be determined between the Environmental Inspector and the Construction Manager, it shall be escalated to the Project Manager who will discuss and resolve the issue with the Enbridge Senior Environmental Advisor.

References

- Alberta Energy Regulator (AER). 2019. Directive 050: Drilling Waste Management. August 2019. 167 pp.
- Enbridge Pipelines Inc. 2018. Waste Management Plan. June 2018, Version 5. 341 pp.
- Government of Northwest Territories (GNWT). 2015. Northern Land Use Guidelines for Camp and Support Facilities. Yellowknife, NT. 30 pp.
- Mackenzie Valley Land and Water Board (MVLWB). 2011. Guidelines for Developing a Waste Management Plan. Yellowknife, NT. 24 pp.

Appendix A

Site Figures



ENBRIDGE PIPELINES (NW) INC.
LINE 21 PLANNED MAINTENANCE AT KP 158 NEAR LITTLE SMITH CREEK

PROJECT OVERVIEW

FIGURE 1

- HDD Exit
- Potential Water Withdrawal Location
- Potential Sump Location
- Flow Direction
- Proposed HDD Pullback
- Proposed HDD Drill Path
- Waterbody
- Wetland
- Slope Failure
- North Entrance
- Existing Line 21 Pipeline
- Winter Road
- Barge Landing Access Road
- Potential Barge Landing Area
- Camp 1 / Laydown Yard
- Camp 2
- Camp 3
- HDD Rig Entry
- Temporary Workspace
- Gravel Pit
- Existing Line 21 ROW
- Stopple Entry

0 100 200 400 Meters

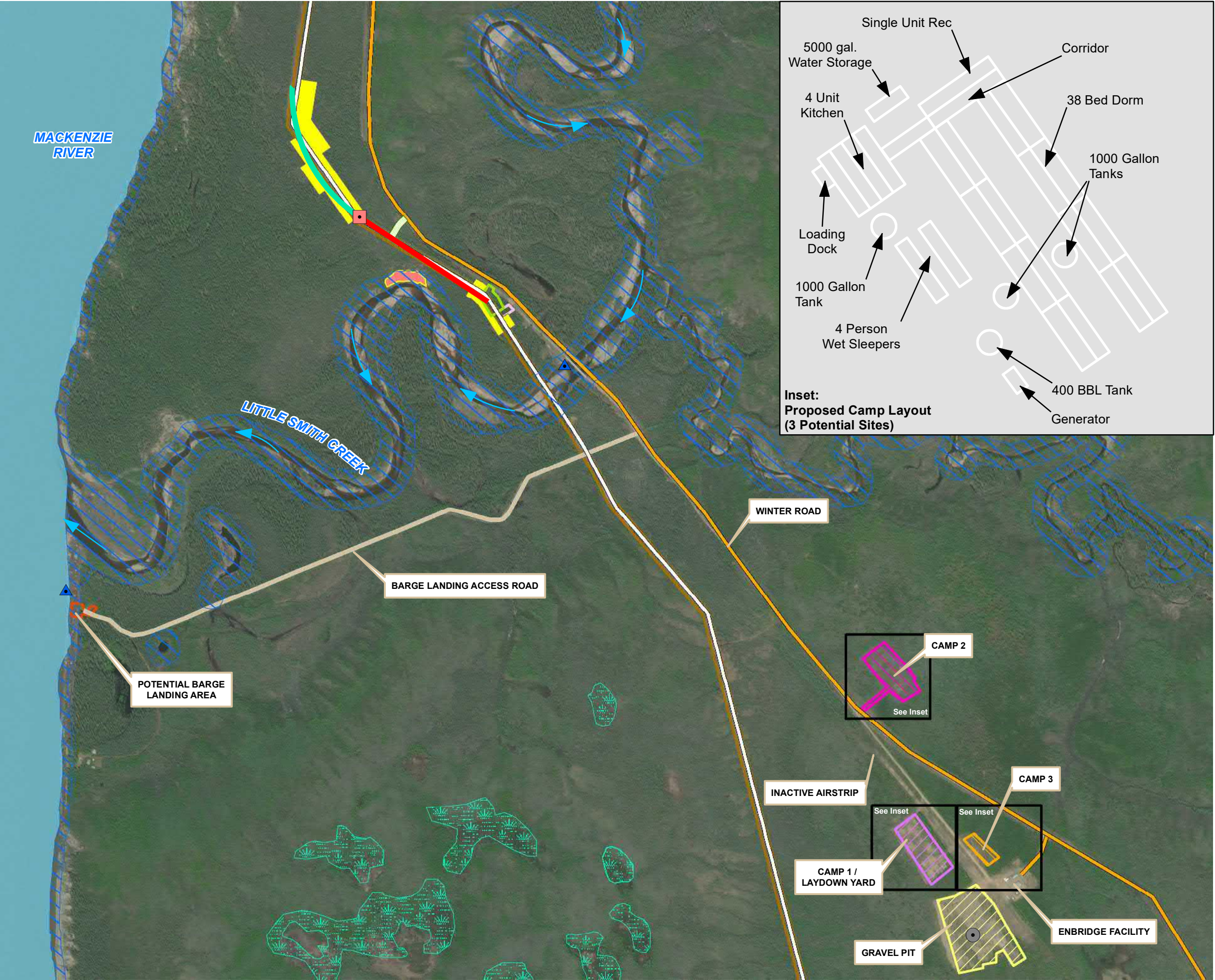
SCALE 1:11,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY NRCAN, DILLON CONSULTING & ESRI

MAP CREATED BY: PH
MAP CHECKED BY: AL
MAP PROJECTION: NAD 1983 UTM Zone 10N



PROJECT: 188582
STATUS: DRAFT
DATE: 2020-08-24



ENBRIDGE PIPELINES (NW) INC.
LINE 21 PLANNED MAINTENANCE AT KP 158 NEAR LITTLE SMITH CREEK

CAMP AREAS AND CHEMICAL AND WASTE STORAGE LOCATIONS

FIGURE 2

- Potential Water Withdrawal Location
- HDD Exit
- Potential Sump Location
- Existing Line 21 Pipeline
- Winter Road
- Barge Landing Access Road
- Flow Direction
- Waterbody
- Wetland
- Environmentally Sensitive Area with 30 m buffer
- Slope Failure
- Proposed HDD Drill Path
- Proposed HDD Pullback
- HDD Rig Entry
- Temporary Workspace
- North Entrance
- Gravel Pit
- Stoppie Entry
- Camp 1 / Laydown Yard
- Camp 2
- Camp 3
- Potential Barge Landing Area
- Existing Line 21 ROW

0 100 200 400 Meters

SCALE 1:11,000



MAP DRAWING INFORMATION:
DATA PROVIDED BY NRCAN, DILLON CONSULTING & ESRI

MAP CREATED BY: PH
MAP CHECKED BY: AL
MAP PROJECTION: NAD 1983 UTM Zone 10N



PROJECT: 188582
STATUS: DRAFT
DATE: 2020-08-24

Appendix B

Waste Information Sheets



Acid (un-neutralized)

Waste Information Sheet

General Information					
Original Use:	Water treatment, descaling, and as a cleaning agent in on-site laboratories for cleaning viscometers, etc. Synonyms: Acetic, Chromic, Hydrochloric acids.				
Physical State:	Corrosive liquid.				
Components:	Specific to the waste acid and use. Various concentrations from 1% to concentrated.				
Potential Hazards					
Class (WHMIS):	E; D1A; D1B	MSDS:	Use MSDS of specific acid.		
Hazard Symbols:			Protective Equipment:		
Environmental:	Leaching of metals if acid comes in contact with soil. Possible groundwater contamination if spilled or leaks at storage sites. Surface water contamination if not neutralized.				
Health:	Respiratory irritant. Corrosive on contact. Severe burns. Avoid contact or inhalation of fumes.				
Management Methods					
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste			
	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste			
	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material			
Storage:	Store in a corrosion resistant (plastic or lined) container at field facility. Keep closed. Store in a cool, well ventilated place away from high pH materials				
Treatment / Disposal:	<ul style="list-style-type: none"> Return to supplier if possible (if product is not contaminated). Neutralization may be required by either ENBRIDGE or waste contractor. Alberta: dispose in a Class Ia disposal well (pH 4.5 - 12.5), or a Class Ib well (pH 6.0 - 9.0). 				
Comments:	<ul style="list-style-type: none"> Reduce potential wastes by ordering acids in bulk. Alberta: Heavy metal content may restrict the usage of Class Ib disposal wells. Deep well disposal is only a limited option in Alberta where acids in small quantities may possibly already be mixed with large process or produced water volumes through operations. Best option is with inventory control (reduce), and using a Waste Material Exchange if volumes are large. 				
Reportable Release Quantity:	NWT: 5 kg or litres	Ontario: Any quantity			
	Alberta: 5 kg or litres	Québec: Any quantity			
	Saskatchewan: 5 kg or litres	TDG (includes loading / unloading): 5 kg or litres			
	Manitoba: 5 kg or litres				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>		-	-	-	-
Placards:	Dependent on specific waste chemical.				
Comments:	Dependent on specific waste chemical. If product was originally supplied as a dangerous good, then waste chemical is also a dangerous good. Use Shipping Name, Class, PIN, etc. of original shipment, unless original chemical properties have changed or contaminated with another dangerous good. If a mixture or solution of two or more dangerous goods, verify TDG Information with the Enbridge Environment Staff.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Acid (un-neutralized)
Waste Information Sheet
September 2016



Asbestos

Waste Information Sheet

General Information				
Original Use:	Insulation on piping vessels, boiler equipment and building. Building panels. Waste may also be called insulation crysotile, crocidolite, amosite, mysorite, avibest, amphibole.			
Physical State:	Fibre material, gray, white, or blue. No odor.			
Components:	Asbestos, may also contain fibreglass and foam materials. Asbestos is a group of impure magnesium silicate materials which occur in a fibrous form.			
Potential Hazards				
Class (WHMIS):	D2A	MSDS:	Use MSDS of specific components (e.g.; asbestos) or ENBRIDGE MSDS Asbestos Gasket.	
Hazard Symbols:		Protective Equipment:		
Environmental:	Known carcinogen to human and animal life.			
Health:	Various exposure limits dependent on the type of asbestos. Causes asbestosis, lung cancer and mesothelioma.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste Alberta: Non-Hazardous Waste/Non-DOW Saskatchewan: Waste Dangerous Good	Manitoba: Hazardous Waste Ontario: Non-Hazardous Waste Québec: Residual Material		
Storage:	Double bag waste in properly labeled, sealed, polyethylene bags (minimum 6-mil thickness). If bags breaks, soak area with water and reseal.			
Treatment / Disposal:	Send / transfer to an approved landfill.			
Comments:	Notify landfill operator and / or local health board in advance of disposal. Waste must be buried immediately upon arrival at a landfill. Refer to Appendix B of ENBRIDGE Waste Management Plan.			
Reportable Release Quantity:	NWT: Any quantity Alberta: Any quantity Saskatchewan: Any quantity Manitoba: Any quantity	Ontario: Any quantity Québec: Any quantity	TDG (includes loading / unloading): 25 kg	
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
WHITE ASBESTOS	9	UN 2590	III	
BLUE ASBESTOS or BROWN ASBESTOS	9	UN 2212	II	
Placards:	Class 9 (in bulk or over 500 kg).			
Comments:	Handle in accordance with O&MP procedures. Refer to Appendix B of ENBRIDGE Waste Management Plan for guidance regarding packaging, transport and disposal.			
Documentation				
Transportation Documents:	Dependent on waste classification.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			





Need further information?
Contact Enbridge Environment Staff in Edmonton.

Asbestos
Waste Information Sheet
September 2016



Batteries - Alkaline (Dry)

Waste Information Sheet

General Information				
Original Use:	Batteries for gas detectors. Long life C & D cells, 9 volt, AA, etc.			
Physical State:	Various solid forms.			
Components:	Mercury, manganese dioxide.			
Potential Hazards				
Class (WHMIS):		MSDS: Mercury, manganese dioxide		
Hazard Symbols:		Protective Equipment:		
 		 		
Environmental:	Lowers pH in aqueous environments. Battery fluids may have high heavy metals content. Can contaminate soil and water through landfill leachate. Do not incinerate. Small quantity "consumer" household batteries (non-vehicle) do not pose a serious threat to environment if landfilled.			
Health:	Ingestion of alkali may produce severe pain and burning of the mouth, throat and esophagus. Nausea and vomiting may follow.			
Management Methods				
Waste Classification:	NWT: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste		
	Alberta: Non-Hazardous Waste/Non-DOW	Ontario: Non-Hazardous Waste		
	Saskatchewan: Non-Hazardous Waste	Québec: Residual Material		
Storage:	Significant volumes: store damaged batteries in corrosion resistant (lined) or plastic drums. Batteries in good condition can be stored on drip pan. Keep containers closed and store in a cool, dry, and well ventilated place, off the ground, away from incompatible materials.			
Treatment / Disposal:	(if the 4R options cannot be applied): Landfill - verify with provincial environmental agency or landfill operator. See Disposal Comments.			
Comments:	If available, use municipal, supplier, or retailer battery collection programs. Alkaline batteries containing liquids should only be taken to a Hazardous Waste Disposal facility, they should not be landfilled.			
Reportable Release Quantity:	NWT: N/A	Ontario: N/A		
	Alberta: N/A	Québec: N/A		
	Saskatchewan: N/A	TDG (includes loading / unloading): N/A		
	Manitoba: N/A			
TDG Information				
Shipping Name		Class	PIN	Packing Group
Not TDG Regulated – See TDG Comments Below		N/A	N/A	N/A
Placards:	N/A			
Comments:	Small alkaline batteries that are dry inside are not regulated. If the waste is contaminated with dangerous goods, TDG Regulations may apply.			
Documentation				
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Batteries - Alkaline (Dry)
Waste Information Sheet
September 2016



Batteries - Alkaline (Wet)

Waste Information Sheet

General Information									
Original Use:	Various uses in electrical standby and alarm systems.								
Physical State:	Various solid forms.								
Components:	Mercury, manganese dioxide.								
Potential Hazards									
Class (WHMIS):	E, possible D1B, D2A								
MSDS:	Mercury, manganese dioxide								
Hazard Symbols:	Protective Equipment:								
Environmental:	Lower pH in aqueous environments. Battery fluids may have high heavy metals content. Can contaminate soil and water through landfill leachate. Do not incinerate. Small quantity "consumer" household batteries (non-vehicle) do not pose a serious threat to environment if landfilled.								
Health:	Ingestion of alkali may produce severe pain and burning of the mouth, throat and esophagus. Nausea and vomiting may follow.								
Management Methods									
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: Hazardous Waste</td> <td style="width: 50%;">Manitoba: Hazardous Waste</td> </tr> <tr> <td>Alberta: Hazardous Waste/DOW</td> <td>Ontario: Hazardous Waste (121-C)</td> </tr> <tr> <td>Saskatchewan: Waste Dangerous Good</td> <td>Québec: Residual Hazardous Material</td> </tr> </table>	NWT: Hazardous Waste	Manitoba: Hazardous Waste	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (121-C)	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material		
NWT: Hazardous Waste	Manitoba: Hazardous Waste								
Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (121-C)								
Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material								
Storage:	Significant volumes: store damaged batteries in corrosion resistant (lined) or plastic drums. Batteries in good condition can be stored on drip pan. Keep containers closed and store in a cool, dry and well ventilated place, off the ground, away from incompatible materials.								
Treatment / Disposal:	Enquire with local battery reconditioner for recycling. Hazardous - Hazardous Waste Disposal Facility								
Comments:	If available, use municipal, supplier or retailer battery collection programs. Alkaline batteries containing liquids should only be taken to a Hazardous Waste Disposal facility, they should not be landfilled.								
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: 5 kgs or litres</td> <td style="width: 50%;">Ontario: Any quantity</td> </tr> <tr> <td>Alberta: 5 kgs or litres</td> <td>Québec: Any quantity</td> </tr> <tr> <td>Saskatchewan: 5 kgs or litres</td> <td>TDG (includes loading / unloading): 5 kg or litres</td> </tr> <tr> <td>Manitoba: 5 kgs or litres</td> <td></td> </tr> </table>	NWT: 5 kgs or litres	Ontario: Any quantity	Alberta: 5 kgs or litres	Québec: Any quantity	Saskatchewan: 5 kgs or litres	TDG (includes loading / unloading): 5 kg or litres	Manitoba: 5 kgs or litres	
NWT: 5 kgs or litres	Ontario: Any quantity								
Alberta: 5 kgs or litres	Québec: Any quantity								
Saskatchewan: 5 kgs or litres	TDG (includes loading / unloading): 5 kg or litres								
Manitoba: 5 kgs or litres									
TDG Information									
Shipping Name	Class	PIN	Packing Group	Special Provisions					
BATTERIES, WET, FILLED WITH ALKALI, electric storage	8	UN2795	III	-					
Placards: Class 8 (in bulk or over 500 kg)									
Comments:									
Documentation									
Transportation Documents: TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.									
Company Records: Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.									





Need further information?
Contact Enbridge Environment Staff in Edmonton.

Batteries - Alkaline (Wet)
Waste Information Sheet
September 2016



Batteries - Dry Cell (Ni-Cd)

Waste Information Sheet

General Information				
Original Use:	Rechargeable dry cell batteries in DC systems. Possible small quantities in cordless appliances.			
Physical State:	Various solid forms.			
Components:	Nickel Cadmium.			
Potential Hazards				
Class (WHMIS):	E	MSDS:	Use MSDS of specific component.	
Hazard Symbols:		Protective Equipment:	  	
Environmental:	Lowers pH in aqueous environments. Can contaminate soil and water through landfill leachate. Do not incinerate. Small quantity 'consumer' household batteries (non-vehicle) do not pose a serious threat to environment if landfilled.			
Health:	If damaged may cause severe burns and permanent tissue damage to eyes and skin.			
Management Methods				
Waste Classification:	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> NWT: Non-Hazardous Alberta: Non-Hazardous Waste/Non-DOW Saskatchewan: Non-Hazardous Waste Non-hazardous classification unless contains KOH. </div> <div style="width: 45%;"> Manitoba: Non-Hazardous Ontario: Non-Hazardous (122-C/146) Québec: Residual Material </div> </div>			
Storage:	Store in a steel drum (18 gauge minimum) with absorbent at field facility.			
Treatment / Disposal:	Send to an approved Ni-Cd battery recycler.			
Comments:				
Reportable Release Quantity:	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> NWT: N/A Alberta: N/A Saskatchewan: N/A Manitoba: N/A </div> <div style="width: 45%;"> Ontario: N/A Québec: N/A TDG (includes loading / unloading): N/A </div> </div>			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>	N/A	N/A	N/A	N/A
Placards:	N/A			
Comments:	Not regulated by TDG if sealed. Non-hazardous classification unless contains KOH. If the waste is contaminated with dangerous goods TDG Regulations may apply.			
Documentation				
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Batteries - Dry Cell (Ni-Cd)
Waste Information Sheet
September 2016



Batteries - Wet Cell (Lead Acid)

Waste Information Sheet

General Information					
Original Use:	Variety of automotive, electric storage, portable or emergency electricity and lighting, and instruments.				
Physical State:	Various solid forms. Synonyms: Battery acid, battery fluid, lead acid (see also Acids and Caustic).				
Components:	Sulphuric acid, caustic, lead and various chemicals. May be acid or dry filled. Acid may contain heavy metals and caustics. Household (alkaline) batteries contain carbon, manganese and zinc.				
Potential Hazards					
Class (WHMIS):	E; D1B; D2A	MSDS:	Use MSDS of specific components (e.g.; Acid, Lead, Battery Acid, Battery Fluid, Fluid Alkali, Sulphuric Acid).		
Hazard Symbols:			Protective Equipment:		
Environmental:	Lower pH in aqueous environments. Battery fluids may have high heavy metals contents. Can contaminate soil and water through landfill leachate. Do not incinerate.				
Health:	Extremely corrosive vapor and liquids - can cause lung tissue damage. May cause severe burns and permanent tissue damage to eyes and skin. Lead poisoning.				
Management Methods					
Waste Classification:	NWT: Hazardous Waste	Manitoba:	Hazardous Waste		
	Alberta: Hazardous Waste/DOW	Ontario:	Hazardous Waste (112-C)		
	Saskatchewan: Waste Dangerous Good	Québec:	Residual Hazardous Material		
Storage:	Store damaged batteries in corrosion resistant (plastic or lined) containers at field facility. Undamaged batteries may be stored on a drip pan. Keep containers closed and in a cool, dry, and well ventilated place, off the ground, away from incompatible materials.				
Treatment / Disposal:	Send to an approved battery recycler.				
Comments:	Drain batteries of fluids and / or contain for transport. Treat fluids as per "Acid" Waste Information Sheet.				
Reportable Release Quantity:	NWT: 5 kg or litres	Ontario:	Any quantity		
	Alberta: 5 kg or litres	Québec:	Any quantity		
	Saskatchewan: 50 kg (10 kg off-site)	TDG (includes loading / unloading): 5 kg or litres			
	Manitoba: 5 kg or litres				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
BATTERIES, WET, FILLED WITH ACID, electric storage		8	UN 2794	III	
Placards:	Class 8 (in bulk or over 500 kg).				
Comments:	There are various TDG categories for batteries and battery fluids. The above is one example. OTHER TDG Shipping Names MAY APPLY. Good batteries may be shipped unpackaged, but secured on a drip pan and individually labeled with a Class 8 label and PIN. Poor condition batteries should be shipped in labeled corrosion resistant drums with sorbents.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Batteries - Wet Cell (Lead Acid)
Waste Information Sheet
September 2016



Chemicals - Laboratory

Waste Information Sheet

General Information													
Original Use:	Onsite quality control laboratories. Organic chemicals are carbon based materials, including solvents and other petroleum-derived products. Inorganic chemicals are non-carbon based materials, including many acids, bases, and mineral based compounds.												
Physical State:	May be liquid, solid or gas; dependent on specific waste.												
Components:	Dependent on specific waste. Organic chemicals, Inorganic chemicals - acids, alkalis, and inorganic reagents.												
Potential Hazards													
Class (WHMIS):	B2; B3; B4; C; D; or E												
MSDS:	Varies with waste chemical.												
Hazard Symbols:	Protective Equipment:												
Environmental:	Limited environmental hazard due to small volume. Possible volatile flammable and corrosive liquids. Potential fire hazards.												
Health:	Health hazard - extent is dependent on the specific chemical.												
Management Methods													
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">NWT: Hazardous Waste</td> <td style="width: 33%;">Manitoba: Hazardous Waste</td> <td style="width: 33%;"></td> </tr> <tr> <td>Alberta: Hazardous Waste/DOW</td> <td>Ontario: Hazardous Waste (148-C)</td> <td></td> </tr> <tr> <td>Saskatchewan: Waste Dangerous Good</td> <td>Québec: Residual Hazardous Material</td> <td></td> </tr> </table>	NWT: Hazardous Waste	Manitoba: Hazardous Waste		Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (148-C)		Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material				
NWT: Hazardous Waste	Manitoba: Hazardous Waste												
Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (148-C)												
Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material												
Storage:	Collect in lined drums or original containers if recycling. Monitor volumes and chemicals entering containers. Segregate different waste chemicals. Store in a cool, well ventilated area.												
Treatment / Disposal:	<ul style="list-style-type: none"> Segregate and reuse chemicals on-site if possible. Return to supplier if possible. Send to a chemical recycling facility. Send to an appropriate (approved) waste management facility 												
Comments:	Waste classification is subject to testing.												
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">NWT: 5 kg or litres</td> <td style="width: 33%;">Ontario: Any quantity</td> <td style="width: 33%;"></td> </tr> <tr> <td>Alberta: 5 kg or litres</td> <td>Québec: Any quantity</td> <td></td> </tr> <tr> <td>Saskatchewan: 5 kg or litres</td> <td colspan="2">TDG (includes loading / unloading): Dependent on specific waste chemical</td> </tr> <tr> <td>Manitoba: 5 kg or litres</td> <td colspan="2"></td> </tr> </table>	NWT: 5 kg or litres	Ontario: Any quantity		Alberta: 5 kg or litres	Québec: Any quantity		Saskatchewan: 5 kg or litres	TDG (includes loading / unloading): Dependent on specific waste chemical		Manitoba: 5 kg or litres		
NWT: 5 kg or litres	Ontario: Any quantity												
Alberta: 5 kg or litres	Québec: Any quantity												
Saskatchewan: 5 kg or litres	TDG (includes loading / unloading): Dependent on specific waste chemical												
Manitoba: 5 kg or litres													
TDG Information													
Shipping Name	Class	PIN	Packing Group	Special Provisions									
<i>See TDG Comments Below</i>	-	-	-	-									
Placards:	Dependent on specific waste chemical.												
Comments:	Dependent on specific waste chemical. If product was originally supplied as a dangerous good, then waste chemical is also a dangerous good. Use Shipping Name, Class, PIN, etc. of original shipment, unless original chemical properties have changed or contaminated with another dangerous good. If a mixture or solution of two or more dangerous goods, verify TDG Information with the Enbridge Environment Staff.												
Documentation													
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.												
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.												

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Chemicals – Laboratory
Waste Information Sheet
September 2016



Chemicals - Miscellaneous

Waste Information Sheet

General Information																	
Original Use:	Various – dependent on specific chemical.																
Physical State:	Various – liquid or slurry. Synonyms: Cleaners, lubricants, epoxies, glues, solvents, etc.																
Components:	Various – dependent on specific chemical. Refer to supplier information.																
Potential Hazards																	
Class (WHMIS):	Dependent on specific chemical.																
MSDS:	Refer to container label or supplier information.																
Hazard Symbols:	Refer to container label or supplier MSDS.																
Protective Equipment:	Refer to container label or supplier MSDS.																
Environmental:	Possible soil and groundwater contamination from spills.																
Health:	Dependent on specific product. Refer to container label or supplier information.																
Management Methods																	
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 25%;">Testing Required.</td> <td style="width: 25%;">Manitoba:</td> <td style="width: 25%;">Testing Required.</td> </tr> <tr> <td>Alberta:</td> <td>Testing Required.</td> <td>Ontario:</td> <td>Testing Required.</td> </tr> <tr> <td>Saskatchewan:</td> <td>Testing Required.</td> <td>Québec:</td> <td>Testing Required.</td> </tr> <tr> <td colspan="4">All provinces & NWT: Dependent on specific chemical. Testing may be required.</td> </tr> </table>	NWT:	Testing Required.	Manitoba:	Testing Required.	Alberta:	Testing Required.	Ontario:	Testing Required.	Saskatchewan:	Testing Required.	Québec:	Testing Required.	All provinces & NWT: Dependent on specific chemical. Testing may be required.			
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Alberta:	Testing Required.	Ontario:	Testing Required.														
Saskatchewan:	Testing Required.	Québec:	Testing Required.														
All provinces & NWT: Dependent on specific chemical. Testing may be required.																	
Storage:	Dependent on specific chemical.																
Treatment / Disposal:	<ul style="list-style-type: none"> Return to supplier, reuse or recycle (dependent on chemical type). Send to chemical reclaimer / recycler if applicable. Send to appropriate (approved) waste management facility. Recycle through Waste Material Exchange (if possible, appropriate). 																
Comments:	<ul style="list-style-type: none"> Avoid over-supply. Order in bulk. Investigate the use of low toxicity, safer chemicals. Inquire with supplier. 																
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 25%;">5 kg or litres</td> <td style="width: 25%;">Ontario:</td> <td style="width: 25%;">Any quantity</td> </tr> <tr> <td>Alberta:</td> <td>5 kg or litres</td> <td>Québec:</td> <td>Any quantity</td> </tr> <tr> <td>Saskatchewan:</td> <td>5 kg or litres</td> <td colspan="2">TDG (includes loading / unloading): Dependent on specific waste chemical.</td> </tr> <tr> <td>Manitoba:</td> <td>5 kg or litres</td> <td colspan="2"></td> </tr> </table>	NWT:	5 kg or litres	Ontario:	Any quantity	Alberta:	5 kg or litres	Québec:	Any quantity	Saskatchewan:	5 kg or litres	TDG (includes loading / unloading): Dependent on specific waste chemical.		Manitoba:	5 kg or litres		
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Manitoba:	5 kg or litres																
TDG Information																	
Shipping Name	Class	PIN	Packing Group	Special Provisions													
<i>See TDG Comments Below</i>	-	-	-	-													
Placards:	Dependent on specific chemical.																
Comments:	Testing required. Dependent on specific waste chemical. If product was originally supplied as a dangerous good, then waste chemical is also a dangerous good. Use Shipping Name, Class, PIN, etc., of original shipment unless original chemical properties have changed or contaminated with another Dangerous Good. If a mixture or solution of two or more dangerous goods, verify TDG Information with the Enbridge Environment Staff.																
Documentation																	
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.																
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.																





Need further information?
Contact Enbridge Environment Staff in Edmonton.

Chemicals - Miscellaneous
Waste Information Sheet
September 2016



Chemicals - Stabilizer

Waste Information Sheet

General Information					
Original Use:	Print shop chemicals from ENBRIDGE Tower, Edmonton				
Physical State:	Aqueous clear solution				
Components:					
Potential Hazards					
Class (WHMIS):	MSDS: ENBRIDGE MSDS #144 - Silvermaster Stabilizer				
Hazard Symbols:	Protective Equipment:				
 	 				
Environmental:	Combustion will produce sulphurous gases. Non-toxic with dilution.				
Health:	May cause nausea. If contact on skin - flush immediately.				
Management Methods					
Waste Classification:	NWT:	Testing Required.	Manitoba:	Testing Required.	
	Alberta:	Testing Required.	Ontario:	Testing Required.	
	Saskatchewan:	Testing Required.	Québec:	Testing Required.	
Storage:	Labeled plastic jugs.				
Treatment / Disposal:	Hazardous - Not applicable unless contaminated with a dangerous good.				
Comments:					
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name	Class	PIN	Packing Group	Special Provisions	
<i>Not TDG Regulated</i>	N/A	N/A	N/A	N/A	
Placards:	Dependent on specific chemical.				
Comments:	Testing required. Dependent on specific waste chemical. If product was originally supplied as a dangerous good, then waste chemical is also a dangerous good. Use Shipping Name, Class, PIN, etc., of original shipment unless original chemical properties have changed or contaminated with another Dangerous Good. If a mixture or solution of two or more dangerous goods, verify TDG Information with the Enbridge Environment Staff.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill, TDG Shipping Document, or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or District office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Chemicals – Stabilizer
Waste Information Sheet
September 2016



Construction and Demolition Material

Waste Information Sheet

General Information					
Original Use:	Demolition or new construction projects.				
Physical State:	Various solids.				
Components:	Clean material (wood, metal, drywall, etc.) which is not contaminated with fiberglass insulation, asbestos, and sulphur. See also Metal - Scrap, Insulation (Asbestos), Insulation (Non-asbestos), and Contaminated Debris and Soil waste information sheets.				
Potential Hazards					
Class (WHMIS):	Not a controlled product.		MSDS:	Not applicable.	
Hazard Symbols:	Not applicable.		Protective Equipment:	Follow occupational health / safety and manufacturer requirements for all equipment operations. Use caution with dust.	
Environmental:	Possible toxic fumes if incinerated.				
Health:	Not a hazard.				
Management Methods					
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material	
Storage:	Ensure wastes are stored in an orderly manner that does not pose a safety risk. Segregate potentially hazardous substances such as asbestos.				
Treatment / Disposal:	Send to an approved landfill. Notify landfill before shipment if significant quantities.				
Comments:	<ul style="list-style-type: none"> Reuse materials when possible. Recycle plastics, rubber, wood, paper, metal, drywall where practical. Ontario requires that construction or demolition projects of more than one building or greater than 2000 square metres must implement a source separation program for brick and Portland cement concrete, corrugated cardboard, drywall, steel, and wood which is not treated, painted or laminated. Materials can be sent to a site operating under an Environmental Compliance Approval or to users of the material for recycling. 				
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>		N/A	N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Construction and Demolition Material
Waste Information Sheet
September 2016



Containers - Aerosol Cans

Waste Information Sheet

General Information				
Original Use:	Spray cans for contact cleaners, lubricants, paints.			
Physical State:	Metal cans (usually <1 litre) under pressure.			
Components:	Various, dependent on original contents. Aerosol component may contain nitrous oxide, organic solvents, ketone, acetone or chlorofluorocarbons.			
Potential Hazards				
Class (WHMIS):	Various		MSDS:	Various
Hazard Symbols:			Protective Equipment:	
Environmental:	Chlorofluorocarbons (CFCs) suspected of damage to ozone layer. Few aerosols still contain CFCs. Containers under pressure - can explode with incineration or compaction.			
Health:	Various health effects due to the fine mist and inhalation. Includes possible carcinogenesis and nervous system disorders.			
Management Methods				
Waste Classification:	NWT: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste		
	Alberta: Non-Hazardous Waste/Non-DOW	Ontario: Non-Hazardous Waste		
	Saskatchewan: Non-Hazardous Waste	Québec: Residual Material		
Storage:	Store in cool, well ventilated area.			
Treatment / Disposal:	<ul style="list-style-type: none"> Empty – Metal cans can be recycled through appropriate recycler Non-hazardous – Landfill (small quantity - verify with landfill operator) Hazardous – Hazardous Waste Disposal Facility (depending on original content) 			
Comments:	If small quantity, take advantage of provincial toxic container collection programs which are available in Alberta, Manitoba and Ontario. Do not puncture or incinerate.			
Reportable Release Quantity:	NWT: N/A	Ontario: N/A		
	Alberta: N/A	Québec: N/A		
	Saskatchewan: N/A	TDG (includes loading / unloading): N/A		
	Manitoba: N/A			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>	-	-	-	-
Placards:	N/A			
Comments:	If available in a consumer commodity, then not regulated. Where TDG regulated, TDG classification subject to original supplier shipment's TDG classification. May also be TDG exempt by minimum quantity. When a container is emptied, but not cleaned or purged of dangerous goods, the words "Empty – Last Contained" must be written on the shipping document.			
Documentation				
Transportation Documents:	Dependent on waste classification.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Containers - Aerosol Cans
Waste Information Sheet
September 2016



Containers - Crude Oil Sample Bottles

Waste Information Sheet

General Information				
Original Use:	Bottles from samples taken for on-site and off-site laboratory QA/QC analysis. Includes both glass and plastic bottles and residue samples.			
Physical State:	Solid containers with oil residues.			
Components:	In residue: hydrocarbons (oil and condensate), varsol, benzene, sulphur. May contain dissolved hydrogen sulphide.			
Potential Hazards				
Class (WHMIS):	B2; B3; D2A	MSDS:	Use MSDS of specific components.	
Hazard Symbols:	 	Protective Equipment:		
Environmental:	Potential groundwater contamination from bottles wash liquids and leachate if stored in a landfill.			
Health:	Not an inhalation hazard if < 38°C. High vapor concentrations may irritate nose, throat and lungs. May irritate eyes and skin on contact. May contain H ₂ S.			
Management Methods				
Waste Classification:	NWT: Non-Hazardous Waste Alberta: Non-Hazardous Waste/Non-DOW Saskatchewan: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste Ontario: Non-Hazardous Waste Québec: Residual Material		
Storage:	Store empty containers in drums at field facility.			
Treatment / Disposal:	<ul style="list-style-type: none"> Rinse / wash and reuse glass bottles on-site. Send broken or damaged bottles to an approved landfill. Recycle glass if contaminated with less than 3% oil (visually clean, maybe small residue). 			
Comments:				
Reportable Release Quantity:	NWT: N/A Alberta: N/A Saskatchewan: N/A Manitoba: N/A	Ontario: N/A Québec: N/A TDG (includes loading / unloading): N/A		
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>	-	-	-	-
Placards:	Dependent on waste classification.			
Comments:	If the container contains residues of dangerous goods, then the applicability of TDG requirements are dependent on the nature of the dangerous goods. If the container is empty but not cleaned, write "Residue – last contained" on the shipping document – in addition to Shipping Name, etc. Common waste classification includes Class 3, PETROLEUM CRUDE OIL, UN 1267.			
Documentation				
Transportation Documents:	Dependent on waste classification.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Containers - Crude Oil Sample Bottles
Waste Information Sheet
September 2016



Containers - Drums / Barrels

Waste Information Sheet

General Information				
Original Use:	Transport and storage of liquid products.			
Physical State:	Metal and plastic. Some are returnable. May be empty, rinsed or not rinsed.			
Components:	Used drums should be treated as hazardous (dangerous oilfield/waste dangerous good) and/or toxic until proven otherwise. Refer to drum labels and shipping information for contents (chemicals, lube oil, solvents, and alcohol).			
Potential Hazards				
Class (WHMIS):	Dependent upon contents of original drum.		MSDS:	Dependent on contents of original drum. See drum label.
Hazard Symbols:	Dependent on contents of original drum. See drum label.		Protective Equipment:	Dependent on contents of original drum. See drum label.
Environmental:	Depends on original contents. Containers may have to be rinsed according to pre-treatment comments. Rinse liquid disposal is a concern if drum contents are hazardous.			
Health:	Dependent on contents of original drum. Regardless, wear protective clothing.			
Management Methods				
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material
	NOTE: Above classification unless not completely empty and containing a hazardous waste. "Empty Container" is generally defined as a container that contains less than 2.5 cm of residue at the bottom of the container or less than 3% of the original contents, whichever is the lesser amount.			
Storage:	Store drums / barrels on their sides with all bungs securely in place at field facility. Use sorbents and / or provide leak containment. Do not give or sell to others. Do not store barrels which contain unknown materials – confirm material and use or properly dispose.			
Treatment / Disposal:	<ul style="list-style-type: none"> • Return barrels / drums to original supplier. • Triple rinse barrels / drums and send to scrap metal dealer / barrel reconditioner. • Triple rinse and send to an approved landfill. (Contact Enbridge Environment Staff for appropriate rinsing material) 			
Comments:	Purchase chemicals in bulk whenever possible to avoid the handling and disposal of barrels.			
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A
	Alberta:	N/A	Québec:	N/A
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A	
	Manitoba:	N/A		
TDG Information				
Shipping Name		Class	PIN	Packing Group
<i>See TDG Comments Below</i>		-	-	-
Placards:	Dependent on waste classification.			
Comments:	If the container contains residues of dangerous goods, the shipping name, TDG classification, and waste classification is dependent on the nature of the dangerous goods. If the container is empty but not cleaned, write "Residue – last contained" on the shipping document – in addition to Shipping Name, etc. <i>The following exemption permits may apply to this waste: 95 2060 (in Alberta), SU 2801 (for Federal).</i>			
Documentation				
Transportation Documents:	Dependent on waste classification.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			



Need further information?
Contact Enbridge Environment Staff in Edmonton.

Containers - Drums / Barrels
Waste Information Sheet
September 2016



Containers - Gas Detection Calibration

Waste Information Sheet

General Information				
Original Use:	For H ₂ S, propane, methane and nitrogen. Refers to nonfillable containers which cannot be purged. Synonyms: Gas bomb containers.			
Physical State:	Solid			
Components:	Aluminum container			
Potential Hazards				
Class (WHMIS):	Various - refer to container label or supplier information.		MSDS:	Various - refer to container label or supplier information.
Hazard Symbols:			Protective Equipment:	
Environmental:	Explosion hazard. Minor air contaminant.			
Health:	Various health effects - dependent on gas.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste		
	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste		
	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material		
	Above classification assumes that containers cannot be purged.			
Storage:	Store in secure packaging/location away from heat sources.			
Treatment / Disposal:	Return to supplier if possible. Possible recycling to supplier but is dependent on type of cylinder. Hazardous – contact a hazardous waste contractor.			
Comments:	Verification on disposal method and transportation requirements should be obtained from provincial environment and transportation authorities. May possibly be landfilled.			
Reportable Release Quantity:	NWT: adverse effect	Ontario: adverse effect		
	Alberta: adverse effect	Québec: adverse effect		
	Saskatchewan: adverse effect	TDG (includes loading / unloading): adverse effect		
	Manitoba: adverse effect			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>	-	-	-	-
Placards:	Dependent on type of gas.			
Comments:	When a container is emptied but not cleaned or purged of dangerous goods, the words "Empty – Last Contained" must be written on the shipping document.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Containers - Gas Detection Calibration
Waste Information Sheet
September 2016



Containers - Miscellaneous

Waste Information Sheet

General Information																	
Original Use:	Various containers from cleaners, lubricants, epoxies, glues, solvents, etc.																
Physical State:	Plastic, metal pails, buckets, tubs, tubes, cups, etc.																
Components:	Various																
Potential Hazards																	
Class (WHMIS):	Various - refer to container label or supplier information.																
MSDS:	Various - refer to container label or supplier information.																
Hazard Symbols:	Various - dependent on product in container.																
	Protective Equipment: Various - dependent on product. <div style="text-align: center;"> </div>																
Environmental:	Possible groundwater and soil contamination from leaching of container's product.																
Health:	Dependent on specific product. Refer to container label or supplier information.																
Management Methods																	
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 25%;">Testing Required</td> <td style="width: 25%;">Manitoba:</td> <td style="width: 25%;">Testing Required</td> </tr> <tr> <td>Alberta:</td> <td>Testing Required</td> <td>Ontario:</td> <td>Testing Required</td> </tr> <tr> <td>Saskatchewan:</td> <td>Testing Required</td> <td>Québec:</td> <td>Testing Required</td> </tr> </table>	NWT:	Testing Required	Manitoba:	Testing Required	Alberta:	Testing Required	Ontario:	Testing Required	Saskatchewan:	Testing Required	Québec:	Testing Required				
NWT:	Testing Required	Manitoba:	Testing Required														
Alberta:	Testing Required	Ontario:	Testing Required														
Saskatchewan:	Testing Required	Québec:	Testing Required														
Storage:	Store in an organized protected area away from heat sources. Prevent moisture from entering containers.																
Treatment / Disposal:	<ul style="list-style-type: none"> Hazardous - Hazardous Waste Disposal Facility Non-hazardous - Landfill via waste contractor Some jurisdictions restrict the recycle/reuse of metal drums. 																
Comments:	<ul style="list-style-type: none"> In Alberta, containers are regulated under the Alberta Waste Control Regulation. If they contained a substance listed in Table 4B of the Alberta Users Guide for Waste Managers then the container must be triple rinsed. In Saskatchewan, Manitoba and the N.W.T., an empty container that contained dangerous goods is considered as hazardous waste unless it has been cleaned or purged. Within Ontario's Regulation 347, there are exemptions for empty containers that previously contained a product; however, these exemptions are based on the product's specific ingredients as identified on the MSDS. If the container is not exempt it shall be considered as hazardous waste. 																
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 25%;">Any quantity if hazardous chemical</td> <td style="width: 25%;">Ontario:</td> <td style="width: 25%;">Any quantity if a hazardous chemical</td> </tr> <tr> <td>Alberta:</td> <td>Any quantity if hazardous chemical</td> <td>Québec:</td> <td>Any quantity if a hazardous chemical</td> </tr> <tr> <td>Saskatchewan:</td> <td>Any quantity if hazardous chemical</td> <td>TDG (includes loading / unloading):</td> <td>Any quantity if hazardous chemical</td> </tr> <tr> <td>Manitoba:</td> <td>Any quantity if hazardous chemical</td> <td></td> <td></td> </tr> </table>	NWT:	Any quantity if hazardous chemical	Ontario:	Any quantity if a hazardous chemical	Alberta:	Any quantity if hazardous chemical	Québec:	Any quantity if a hazardous chemical	Saskatchewan:	Any quantity if hazardous chemical	TDG (includes loading / unloading):	Any quantity if hazardous chemical	Manitoba:	Any quantity if hazardous chemical		
NWT:	Any quantity if hazardous chemical	Ontario:	Any quantity if a hazardous chemical														
Alberta:	Any quantity if hazardous chemical	Québec:	Any quantity if a hazardous chemical														
Saskatchewan:	Any quantity if hazardous chemical	TDG (includes loading / unloading):	Any quantity if hazardous chemical														
Manitoba:	Any quantity if hazardous chemical																
TDG Information																	
Shipping Name	Class	PIN	Packing Group	Special Provisions													
<i>See TDG Comments Below</i>	-	-	-	-													
Placards:	Dependent on waste classification.																
Comments:	If product was originally supplied as a dangerous good, then waste container is a dangerous good, unless the container was cleaned or purged. If the container contains residues of dangerous goods, then the applicability of TDG requirements are dependent on the nature of the dangerous goods. Use shipping name, etc., of original shipment. When a container is emptied but not cleaned or purged of dangerous goods, the words "Empty – Last Contained" must be written on the shipping document.																
Documentation																	
Transportation Documents:	Dependent on waste classification.																
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.																


Need further information?
Contact Enbridge Environment Staff in Edmonton.

Containers – Miscellaneous
Waste Information Sheet
September 2016



Containers - Paint, Stain, Enamel

Waste Information Sheet

General Information					
Original Use:	Containers used to package paints as sent from the manufacturer.				
Physical State:	Metal and plastic cans and pails.				
Components:	Metal, plastic and paint (chemical) residues.				
Potential Hazards					
Class (WHMIS):	Specific to container - see container info.		MSDS:	Specific to container - see container info.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Potential toxic leachate from the storage or landfill of the containers if not drained and dried. Refer to "Storing a Waste", Section 4.0 of ENBRIDGE Waste Management Plan.				
Health:	Liquids may be irritant to eyes and skin.				
Management Methods					
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material	
	Above classification assumes that the containers are drained and contents are dry.				
Storage:	Do not allow rain water to enter containers.				
Treatment / Disposal:	Thoroughly drain (use) and dry all containers before storage or landfill.				
Comments:					
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>		N/A	N/A	N/A	N/A
Placards:	N/A				
Comments:	Assumed not controlled by TDG if the paint residue is dry and therefore flash point is > 60°C. If the waste is contaminated with dangerous goods, TDG Regulations may apply.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Containers - Paint, Stain, Enamel
Waste Information Sheet
September 2016



Containers – Herbicides/Pesticides

Waste Information Sheet

General Information									
Original Use:	In the petroleum industry, herbicide/pesticide containers usually originate from the application of herbicides for weed control. Herbicides/pesticide containers are hazardous, whether empty or full.								
Physical State:	Metal and plastic cans and pails.								
Components:	2,4-D, Glyphosate, Bromacil, Picloram, Atrazine, other fungicides and insecticides.								
Potential Hazards									
Class (WHMIS):	B4; D1B; D2A								
Hazard Symbols:	<div style="display: flex; align-items: center; justify-content: center;"> </div>								
MSDS:	Specific to type of pesticide. See container or supplier's information.								
Protective Equipment:	<div style="display: flex; align-items: center; justify-content: center;"> </div>								
Environmental:	Container effluent may cause severe environmental damage (surface and groundwater contamination, vegetation damage, and subsequent soil erosion). Some pesticides may remain active in waterbody sediments for extended periods.								
Health:	Various effects. Inhalation of some herbicides/pesticides can cause death. Herbicides/pesticides can be absorbed through the eyes and skin.								
Management Methods									
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: Hazardous Waste</td> <td style="width: 50%;">Manitoba: Hazardous Waste</td> </tr> <tr> <td>Alberta: Hazardous Waste/DOW</td> <td>Ontario: Hazardous Waste</td> </tr> <tr> <td>Saskatchewan: Waste Dangerous Good</td> <td>Québec: Residual Hazardous Material</td> </tr> </table>	NWT: Hazardous Waste	Manitoba: Hazardous Waste	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material		
NWT: Hazardous Waste	Manitoba: Hazardous Waste								
Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste								
Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material								
Storage:	Do not allow rainwater to enter empty containers. Avoid the long-term storage of empty containers.								
Treatment / Disposal:	<ul style="list-style-type: none"> Triple rinse containers with rinsate going back into spray tank. Send to designated pesticide container collection facility (contact Enbridge Environment Staff for assistance). 								
Comments:	Use certified contractors for herbicide/pesticide applications for all chemical vegetation control, and ensure they properly dispose of all containers and associated wastes to designated facilities.								
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: Any quantity (free liquids)</td> <td style="width: 50%;">Ontario: Any quantity (free liquids)</td> </tr> <tr> <td>Alberta: Any quantity (free liquids)</td> <td>Québec: Any quantity (free liquids)</td> </tr> <tr> <td>Saskatchewan: Any quantity (free liquids)</td> <td>TDG (includes loading / unloading): Any quantity (free liquids)</td> </tr> <tr> <td>Manitoba: Any quantity (free liquids)</td> <td></td> </tr> </table>	NWT: Any quantity (free liquids)	Ontario: Any quantity (free liquids)	Alberta: Any quantity (free liquids)	Québec: Any quantity (free liquids)	Saskatchewan: Any quantity (free liquids)	TDG (includes loading / unloading): Any quantity (free liquids)	Manitoba: Any quantity (free liquids)	
NWT: Any quantity (free liquids)	Ontario: Any quantity (free liquids)								
Alberta: Any quantity (free liquids)	Québec: Any quantity (free liquids)								
Saskatchewan: Any quantity (free liquids)	TDG (includes loading / unloading): Any quantity (free liquids)								
Manitoba: Any quantity (free liquids)									
TDG Information									
Shipping Name	Class	PIN	Packing Group	Special Provisions					
<i>See TDG Comments Below</i>	-	-	-	-					
Placards:	Dependent on specific pesticide.								
Comments:	There are a large number of TDGR categories for herbicides/pesticides. Consult the supplier and TDGR for Specific TDG classification. If the container is empty, write "Residue – last contained" on the shipping document.								
Documentation									
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.								
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.								

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Containers – Herbicides/Pesticides
Waste Information Sheet
September 2016



Contaminated Debris and Soil - Chemical / Solvent

Waste Information Sheet

General Information					
Original Use:	Generated by the accidental spillage of chemicals and solvents during operation or maintenance. Includes contaminated soils, vegetation and absorbent materials.				
Physical State:	Solid, semi-liquid (chemical, solvent and contaminated solids).				
Components:	Various chemicals, hydrocarbons (solvents), soil, water, sorbent and other spill debris.				
Potential Hazards					
Class (WHMIS):	B4	MSDS:	Use MSDS of specific components, (e.g. solvent).		
Hazard Symbols:	Refer to container label or supplier MSDS.	Protective Equipment:			
Environmental:	Potential extensive groundwater / surface water and soil contamination if contaminated debris / soil is left in place or directly on ground surface or if disposed in a landfill.				
Health:	Dependent on specific product / chemical. Typically not an inhalation hazard if < 38°C. High vapor concentration may irritate nose, throat and lungs. May irritate eyes and skin on contact.				
Management Methods					
Waste Classification:	NWT: Hazardous Waste Alberta: Hazardous Waste/DOW Saskatchewan: Waste Dangerous Good	Manitoba: Hazardous Waste Ontario: Hazardous Waste Québec: Residual Hazardous Material			
Storage:	Contain material in sealed drums, or lined and bermed area, away from heat and ignition sources at field facility.				
Treatment / Disposal:	<ul style="list-style-type: none"> On-site / off-site land treatment / biodegradation. Send to an appropriate (approved) waste management facility. On-site / off site treatment through chemical application and treatment (e.g. lime application for acid effected soils). Possibly send to a waste contractor for solvent / chemical recovery. 				
Comments:	Contact Enbridge Environment Staff on a case specific basis. Testing may be required.				
Reportable Release Quantity:	NWT: 25 kg or litres Alberta: 25 kg or litres Saskatchewan: 25 kg or litres Manitoba: 1 kg or litres	Ontario: Any quantity Québec: Any quantity	TDG (includes loading / unloading): Depending on specific contaminant.		
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
See TDG Comments Below		-	-	-	-
Placards:	Dependent on specific contaminant.				
Comments:	Classifications for this waste may vary depending on the specific contaminant. Likely Classes based on common solvents and chemicals used in the oil and gas industry include 4.1, 6.1, or 8.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Contam. Debris & Soil - Chemical / Solvent
Waste Information Sheet
September 2016



**Contaminated Debris and
Soil - Mercury**
Waste Information Sheet





General Information					
Original Use:	Generated from the spillage of mercury from instrument manometers.				
Physical State:	Solid (mercury contaminated soils).				
Components:	Mercury, soil, water, sorbent and other spill debris.				
Potential Hazards					
Class (WHMIS):	D1A; D2A	MSDS:	Mercury		
Hazard Symbols:		Protective Equipment:			
Environmental:	Spilled mercury will contaminate pond and drainage ditch sludge and can accumulate in drains/gutters within process buildings. Leachate may contain soluble mercury salts.				
Health:	Toxic vapors. Eye irritation. If absorbed by skin, may cause dermatitis. Long or repeated exposure may create emotional disorder and damage to the nervous system, kidneys or liver.				
Management Methods					
Waste Classification:	NWT:	Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta	Hazardous Waste/DOW	Ontario:	Hazardous Waste	
	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material	
Storage:					
Treatment / Disposal:	<ul style="list-style-type: none"> If large quantity of mercury is spilled, the metal may be collected and cleaned for reuse. On-site solidification, Hazardous Waste Disposal Facility if mercury levels are above regulated landfill regulations. 				
Comments:	Contact Enbridge Environment Staff on a case specific basis. Testing may be required.				
Reportable Release Quantity:	NWT:	5 kg or litres	Ontario:	Any quantity	
	Alberta:	5 kg or litres	Québec:	Any quantity	
	Saskatchewan:	100 g	TDG (includes loading / unloading): 5 kg or L		
	Manitoba:	5 kg or litres			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
CORROSIVE SOLID, N.O.S. ("Technical Name")		8	UN1759	I, II or III	16
Placards:	Class 8				
Comments:	After shipping name put: "(soil/debris contaminated with mercury)". TDG regulation is dependent on whether or not contaminant levels are above regulated landfill regulation. Testing may be required. For sufficient quantities of mercury, see "Mercury" Waste Information Sheet.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Contam. Debris & Soil – Mercury
Waste Information Sheet
September 2016



**Contaminated Debris and
Soil - Oil / Condensate**
Waste Information Sheet

General Information																	
Original Use:	Generated by the accidental spillage of crude oil or condensate. Includes contaminated soils, vegetation, and absorbent materials.																
Physical State:	Solid (oil / condensate and contaminated solids).																
Components:	Oil, condensate, BTEX, heavy metals (As, Cd, Cr, Pb, Hg, Ni, Tl or Se), salts, soils, boron, barium, other spill debris and absorbent materials.																
Potential Hazards																	
Class (WHMIS): B4	MSDS: Crude Oil.																
Hazard Symbols:	Protective Equipment:																
	  																
Environmental:	Potential groundwater contamination from hydrocarbons if disposed in landfill. Migration of hydrocarbons also possible with land treatment. Light ends may be extremely mobile (water soluble).																
Health:	Typically not an inhalation hazard if < 38°C. High vapor concentrations may irritate nose, throat, and lungs. May irritate eyes and skin on contact. Personnel protection required. Level of protection will vary with the waste.																
Management Methods																	
Waste Classification:	<table border="0"> <tr> <td>NWT:</td> <td>Non-Hazardous Waste</td> <td>Manitoba:</td> <td>Non-Hazardous Waste</td> </tr> <tr> <td>Alberta:</td> <td>Non-Hazardous Waste/Non-DOW</td> <td>Ontario:</td> <td>Non-Hazardous Waste</td> </tr> <tr> <td>Saskatchewan:</td> <td>Non-Hazardous Waste</td> <td>Québec:</td> <td>Residual Material.</td> </tr> </table>	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material.				
NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste														
Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste														
Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material.														
Storage:	Note: Classified as Hazardous Waste/WDG/DOW if BTEX, flash point and hydrocarbon exceed criteria. If saturated - store in steel drums. Temporary storage on drying pads or lined areas.																
Treatment / Disposal:	Recover free liquids, contain contaminated soil within a bermed and lined storage cell, contact Enbridge Environment Staff for treatment and disposal options																
Comments:	Minimize contamination potential through the use of spill containment measures such as dikes and drip pans. Various jurisdictions have specific rules around the management of hydrocarbon contaminated materials. Contact the Enbridge Environment Staff to provide assistance.																
Reportable Release Quantity:	<table border="0"> <tr> <td>NWT:</td> <td>25 kg</td> <td>Ontario:</td> <td>Any quantity</td> </tr> <tr> <td>Alberta:</td> <td>25 kg</td> <td>Québec:</td> <td>Any quantity</td> </tr> <tr> <td>Saskatchewan:</td> <td>Any quantity</td> <td>TDG (includes loading / unloading):</td> <td>25 kg or litres</td> </tr> <tr> <td>Manitoba:</td> <td>1 kg</td> <td></td> <td></td> </tr> </table>	NWT:	25 kg	Ontario:	Any quantity	Alberta:	25 kg	Québec:	Any quantity	Saskatchewan:	Any quantity	TDG (includes loading / unloading):	25 kg or litres	Manitoba:	1 kg		
NWT:	25 kg	Ontario:	Any quantity														
Alberta:	25 kg	Québec:	Any quantity														
Saskatchewan:	Any quantity	TDG (includes loading / unloading):	25 kg or litres														
Manitoba:	1 kg																
TDG Information																	
Shipping Name	Class	PIN	Packing Group	Special Provisions													
SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. (soil / debris contaminated with Petroleum Crude Oil).	4.1	UN 3175	II	16, 56													
Placards:	Class 4.1 (in bulk or over 500 kg).																
Comments:	May not be TDG regulated. Classified as Hazardous Waste/WDG/DOW if BTEX, flash point and hydrocarbon exceed regulated criteria.																
Documentation																	
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.																
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.																

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Contaminated Debris & Soil - Oil/Condensate
Waste Information Sheet
September 2016



Contaminated Debris and Soil - Pesticide

Waste Information Sheet

General Information					
Original Use:	Generated by the accidental spillage or over use of pesticides (i.e. herbicides) during weed control operations. Includes sterilized contaminated soils and affected vegetation.				
Physical State:	Solid (pesticide and contaminated solids).				
Components:	Various pesticides (bromacil, diuron, sodium metaborate, ureabor, tebuthiron, picloram, atrazine, dicamba, 2,4-D), soils, absorbents, and other spill debris.				
Potential Hazards					
Class (WHMIS):	B4; D1B; D2A	MSDS:	Use MSDS of specific pesticide.		
Hazard Symbols:			Protective Equipment:		
Environmental:	Potential groundwater and surface water contamination. Wind drift to agricultural or non-contaminated areas. Surface water contamination from soil leaching.				
Health:	Avoid inhalation - can cause nervous system disorders. Eye irritation. Can be readily absorbed through the skin and cause severe irritations.				
Management Methods					
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste			
	Alberta: Dangerous Oilfield Waste	Ontario: Hazardous Waste			
	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material			
Storage:	Store debris in steel drums at field facility. Temporary storage on drying pads or lined areas. Keep containers closed and in a cool, well ventilated area.				
Treatment / Disposal:	<ul style="list-style-type: none"> If possible treat contaminated soil on-site through the application of activated carbon / charcoal (contact Enbridge Environment Staff). Spread affected soils over areas of site requiring vegetation control. Send to an approved landfill – co-disposal with activated carbon / charcoal. Notify landfill before shipment. 				
Comments:	Contact Enbridge Environment Staff on a case specific basis.				
Reportable Release Quantity:	NWT: 5 kg or litres	Ontario: Any quantity			
	Alberta: 5 kg or litres	Québec: Any quantity			
	Saskatchewan: 5 kg or litres	TDG (includes loading / unloading): 5 kg or litres			
	Manitoba: 5 kg or litres				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
SOLIDS CONTAINING TOXIC LIQUID, N.O.S (Soil / debris contaminated with "Specific Chemical Name")		6.1	UN 3243	II	16, 57
Placards:	Class 6.1 (in bulk or over 500 kg).				
Comments:	Many pesticides are not classified as poisonous substances in TDG. Check classification of the original product.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or District office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Contaminated Debris & Soil – Pesticide
Waste Information Sheet
September 2016



Contaminated Debris and Soil - Produced Water

Waste Information Sheet

General Information					
Original Use:	Generated by the accidental spillage of emulsion and produced water. Includes contaminated soils, vegetation, and absorbent materials.				
Physical State:	Solid and liquid (salt water and contaminated solids).				
Components:	Aromatic hydrocarbons, oil and grease, water, sand, sodium, calcium, magnesium and potassium. Many types of salt may be in waste. Most common is sodium chloride (NaCl) – average 2.6%.				
Potential Hazards					
Class (WHMIS):	B4; D2A	MSDS:	Use MSDS of specific components.		
Hazard Symbols:			Protective Equipment:		
Environmental:	Produced water with a high salt content will damage vegetation; extremely persistent compound which is toxic to environment in high concentrations.				
Health:	Not an inhalation hazard < 38°C. High vapor concentrations may irritate nose, throat and lungs. May irritate eyes and skin on contact. May contain H ₂ S.				
Management Methods					
Waste Classification:	NWT: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste			
	Alberta: Non-Hazardous Waste/Non-DOW	Ontario: Non-Hazardous Waste			
	Saskatchewan: Non-Hazardous Waste	Québec: Residual Material			
Storage:	If saturated - store in steel drums. Temporary storage on drying pads or lined areas.				
Treatment / Disposal:	<ul style="list-style-type: none"> Recover free liquids, contain contaminated soil within a bermed and lined storage cell, contact Enbridge Environment Staff for treatment and disposal options Small to medium volumes of contaminated soil should be sent to an approved landfill. 				
Comments:	Contact Enbridge Environment Staff on a case specific basis.				
Reportable Release Quantity:	NWT: 25 kg	Ontario: Any quantity			
	Alberta: 2 m ³ (any amount off-site)	Québec: Any quantity			
	Saskatchewan: 1.6 m ³ (any amount off-site)	TDG (includes loading / unloading): 25 kg or litres			
	Manitoba: 1 kg				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
See TDG Comments Below		-	-	-	-
Placards:	Dependent on specific contaminant.				
Comments:	Classifications for this waste may vary depending on the specific contaminant. If waste contains significant quantities of petroleum crude oil, waste could be classed as SOLIDS CONTAINING FLAMMABLE LIQUIDS, N.O.S. ("Technical Name of Contaminant"). Refer to <i>Contaminated Debris and Soil – Oil/Condensate</i> Waste Information Sheet.				
Documentation					
Transportation Documents:	Dependent on specific contaminant.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Contaminated Debris & Soil - Produced Water
Waste Information Sheet
September 2016



**Contaminated Debris & Soil -
Refined Products**
Waste Information Sheet


General Information				
Original Use:	This waste is generated by the accidental spillage of refined products. Includes contaminated soils, vegetation and absorbent materials.			
Physical State:	Solid (liquid and contaminated solids).			
Components:	Refined products, heavy metals (As, Cd, Cr, Pb, Hg, Ni, Tl or Se) soils, boron, barium, other spill debris and absorbent materials.			
Potential Hazards				
Class (WHMIS): B4	MSDS: All refined products.			
Hazard Symbols: <div style="text-align: center;"> </div>	Protective Equipment: <div style="text-align: center;"> </div>			
Environmental:	Potential groundwater contamination from hydrocarbons if disposed in landfill.			
Health:	Migration of hydrocarbons also possible with land treatment. Not an inhalation hazard below 38°C. High vapor concentrations may irritate nose, throat and lungs. May irritate eyes and skin on contact.			
Management Methods				
Waste Classification:	<div style="display: flex; justify-content: space-between;"> <div> NWT: Hazardous Waste Alberta: Hazardous Waste/DOW Saskatchewan: Waste Dangerous Good </div> <div> Manitoba: Hazardous Waste Ontario: Hazardous Waste Québec: Residual Hazardous Material </div> </div>			
Storage:	Store in steel vessels, drums, etc. Temporary storage on drying pads or in/on lined pits or ground.			
Treatment / Disposal:	<ul style="list-style-type: none"> Recover free liquids, contain contaminated soil within a bermed and lined storage cell, contact Enbridge Environment Staff for treatment and disposal options Non-hazardous, Landfill, Bioremediation 			
Comments:	Minimize contamination potential through the use of spill containment measures such as dikes and drip pans. Various jurisdictions have specific rules around the management of hydrocarbon contaminated materials. Contact the Enbridge Environment Staff to provide assistance.			
Reportable Release Quantity:	<div style="display: flex; justify-content: space-between;"> <div> NWT: 25 kg Alberta: 25 kg Saskatchewan: 1.6 m³ (any amount off-site) Manitoba: 1 kg </div> <div> Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): 25 kg or litres </div> </div>			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. (soil / debris contaminated with petroleum crude oil)	4.1	UN3175	II	16,56
Placards:	Class 4.1 (in bulk or over 500 kg)			
Comments:	May not be TDG regulated. Dependent on flash point test.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Contaminated Debris & Soil - Refined Products
Waste Information Sheet
September 2016



**Contaminated Groundwater,
Sludges/Slurries**
Waste Information Sheet

General Information																	
Original Use:	This waste is generated by the removal of groundwater and/or material classified as a sludge/slurry (i.e., a loose combination of soil and water).																
Physical State:	Liquid or semi-solid.																
Components:	Road salt, pesticides and herbicides, accidental spills of hazardous and non-hazardous materials.																
Potential Hazards																	
Class (WHMIS): N/A	MSDS: None																
Hazard Symbols:	Protective Equipment: 																
Environmental:	Waste characterization required to identify pollution concerns.																
Health:	No hazards.																
Management Methods																	
Waste Classification:	<table border="0"> <tr> <td>NWT:</td> <td>Testing Required</td> <td>Manitoba:</td> <td>Testing Required</td> </tr> <tr> <td>Alberta:</td> <td>Testing Required</td> <td>Ontario:</td> <td>Testing Required</td> </tr> <tr> <td>Saskatchewan:</td> <td>Testing Required</td> <td>Québec:</td> <td>Testing Required</td> </tr> </table>	NWT:	Testing Required	Manitoba:	Testing Required	Alberta:	Testing Required	Ontario:	Testing Required	Saskatchewan:	Testing Required	Québec:	Testing Required				
NWT:	Testing Required	Manitoba:	Testing Required														
Alberta:	Testing Required	Ontario:	Testing Required														
Saskatchewan:	Testing Required	Québec:	Testing Required														
Storage:	Large volumes may be temporarily stored in lined pits. For lesser volumes store in tanks or barrels.																
Treatment / Disposal:	<ul style="list-style-type: none"> Recover free liquids, contain contaminated sludge/slurry within a bermed and lined storage cell, contact Enbridge Environment Staff for treatment and disposal options. Non-hazardous. 																
Comments:	Minimize contamination potential through the use of spill containment measures. Various jurisdictions have specific rules around the management of materials that pose a contamination risk. Contact the Enbridge Environment Staff to provide assistance.																
Reportable Release Quantity:	<table border="0"> <tr> <td>NWT:</td> <td>N/A</td> <td>Ontario:</td> <td>N/A</td> </tr> <tr> <td>Alberta:</td> <td>N/A</td> <td>Québec:</td> <td>N/A</td> </tr> <tr> <td>Saskatchewan:</td> <td>N/A</td> <td>TDG (includes loading / unloading):</td> <td>N/A</td> </tr> <tr> <td>Manitoba:</td> <td>N/A</td> <td></td> <td></td> </tr> </table>	NWT:	N/A	Ontario:	N/A	Alberta:	N/A	Québec:	N/A	Saskatchewan:	N/A	TDG (includes loading / unloading):	N/A	Manitoba:	N/A		
NWT:	N/A	Ontario:	N/A														
Alberta:	N/A	Québec:	N/A														
Saskatchewan:	N/A	TDG (includes loading / unloading):	N/A														
Manitoba:	N/A																
TDG Information																	
Shipping Name	Class	PIN	Packing Group	Special Provisions													
<i>Not TDG Regulated</i>	N/A	N/A	N/A	N/A													
Placards:	N/A																
Comments:	If the material is contaminated with dangerous goods, TDG Regulations may apply..																
Documentation																	
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate																
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.																

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Contaminated Groundwater, Sludges/Slurries
Waste Information Sheet
September 2016



Drag Reducing Agent (DRA)
– Flow Improver
Waste Information Sheet





General Information				
Original Use:	This material is injected into the pipeline system to reduce friction and viscosity elements to improve the overall "flowability" of pipeline liquids.			
Physical State:	Opaque amber to light green liquid, hydrocarbon/solvent-like odour.			
Components:	Various petroleum hydrocarbons (> 90%).			
Potential Hazards				
Class (WHMIS):	B3, D2B	MSDS:	Use MSDS for specific product (e.g. CDR Flow Improver from Conoco Inc., Houston, TX, USA).	
Hazard Symbols:	 	Protective Equipment:	 	
Environmental:	A highly mobile waste stream. Potential for groundwater and soil contamination. Possible toxic vapours and fire hazard with on-site recycling operations.			
Health:	May cause minor skin, eye and lung irritation. Toxic if ingested.			
Management Methods				
Waste Classification:	NWT:	Hazardous Waste	Manitoba:	Hazardous Waste
	Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste
	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material
Storage:	Store in steel drums or tanks in a well ventilated area away from heat sources.			
Treatment / Disposal:	Return to supplier or solvent recycler for recycling. Send to an appropriate (approved) waste management facility			
Comments:	May need to test to determine actual classification due to variety of products			
Reportable Release Quantity:	NWT:	100 litres	Ontario:	Any quantity
	Alberta:	200 kg or litres	Québec:	Any quantity
	Saskatchewan:	500 litres (100 off-site)	TDG (includes loading / unloading): 200 kg or L	
	Manitoba:	100 litres		
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
PETROLEUM PRODUCTS, N.O.S.	3	UN1268	I, II or III	None
Placards:	Class 3 (in bulk or over 500 kg)			
Comments:	The above classification is based on a pure product. If the waste is contaminated with other materials, OTHER TDG Shipping Names MAY APPLY.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Drag Reducing Agent (DRA) – Flow Improver
Waste Information Sheet
September 2016



**Drag Reducing Agent
(DRA) – Liquid Power or
EP-1000 Extreme Power**
Waste Information Sheet

General Information				
Original Use:	This material is injected into the pipeline system to reduce friction and viscosity elements to improve the overall “flowability” of pipeline liquids.			
Physical State:	White liquid with a mild odour.			
Components:	Water and calcium (CDR Liquid Power), Ethylene glycol, alcohols, C12-14-secondary, ethoxylated (EP-1000 Extreme Power) and other unknown constituents (protected by product patent) (both).			
Potential Hazards				
Class (WHMIS):	N/A	MSDS:	Use MSDS for specific product (i.e. CDR Liquid Power from Conoco Inc. and Extreme Power EP 1000 from Phillips Specialty Products Inc., both in Houston, TX, USA).	
Hazard Symbols:	N/A	Protective Equipment:	   	
Environmental:	No significant impacts. Mild caustic - may cause localized pH alteration in soils or surface waters.			
Health:	May cause minor skin, eye and lung irritation.			
Management Methods				
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material
Storage:	Store in steel drums or tanks in a well ventilated area. Segregate from strong oxidizing agents.			
Treatment / Disposal:	Return to supplier (if “un-spent”). Send to an appropriate (approved) waste management facility			
Comments:				
Reportable Release Quantity:	NWT:	Any vol. causing an adverse impact	Ontario:	Any quantity
	Alberta:	Any vol. causing an adverse impact	Québec:	Any quantity
	Saskatchewan:	Any vol. causing an adverse impact	TDG (includes loading / unloading): N/A	
	Manitoba:	Any vol. causing an adverse impact		
TDG Information				
Shipping Name		Class	PIN	Packing Group
Not TDG Regulated		N/A	N/A	N/A
Placards:	N/A			
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply.			
Documentation				
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

**Drag Reducing Agent (DRA) – Liquid
Power or EP-1000 Extreme Power**
Waste Information Sheet
September 2016



**Electronics – Computer/
Printer Equipment**
Waste Information Sheet

General Information					
Original Use:	Includes broken and obsolete computer desktop, laptop and notebook computer terminals, keyboards, mouse, disk drives, monitors and printers from offices.				
Physical State:	Solid				
Components:	Plastic casings containing various components including heavy metals, such as lead, cadmium and mercury, and valuable materials such as aluminum, ferrous metals and copper.				
Potential Hazards					
Class (WHMIS):	Not a controlled product.		MSDS:	Not Applicable.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Illegal burning may produce toxic fumes. Decomposition in landfills may cause leaching of toxins into the soil and groundwater.				
Health:	Not expected to be a hazard unless casing is forcibly broken or damaged to expose potentially hazardous components.				
Management Methods					
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material	
Storage:	Store in bins or in areas of low traffic volumes on-site. Segregate computer monitors from other waste computer equipment to facilitate recycling. Maintain waste volumes in a neat and orderly manner. Protect from high heat and moisture.				
Treatment / Disposal:	<ul style="list-style-type: none"> If available, use provincial, municipal, supplier, or retailer waste electrical and electronic equipment (WEEE) stewardship (take-back and recycling) programs. Landfill – verify with provincial environmental agency or landfill operator. 				
Comments:					
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>		N/A	N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Electronics – Computer / Printer Equipment
Waste Information Sheet
September 2016



**Electronics – Printer
Cartridges**
Waste Information Sheet

General Information					
Original Use:	Includes empty ink and toner cartridges from office computer equipment and printers.				
Physical State:	Solid				
Components:	Small quantities of various chemicals, depending on the cartridge manufacturer (Propanol, ethanol, iron oxide).				
Potential Hazards					
Class (WHMIS):	Not a controlled product.		MSDS:	Use MSDS of specific cartridge.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Illegal burning may produce toxic fumes. Decomposition in landfills may cause leaching of toxins into the soil and groundwater.				
Health:	Encased in a cartridge and are not accessible unless forcibly broken or damaged. Not expected to be a health risk under normal circumstances. Exposure to the chemical components of damaged or broken cartridges may cause eye irritation.				
Management Methods					
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material	
Storage:	Store in bins or in areas of low traffic volumes on-site. Segregate from other waste to facilitate recycling. Maintain waste volumes in a neat and orderly manner. Protect from high heat and moisture.				
Treatment / Disposal:	<ul style="list-style-type: none"> • If available, use provincial, municipal, supplier, or retailer stewardship programs. Some manufacturers can rebuild toner cartridges with new drums; refilled ink-jet cartridges or self-refill kits can also be purchased. • BE CAREFUL when using refilled cartridges or self-refill kits; may not be compatible with printer. • Where opportunities for the 4R's are unavailable, landfill, unless the chemical content warrants management as hazardous waste. Check the MSDS. 				
Comments:					
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>		N/A	N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is broken, damaged or contaminated with dangerous goods, TDG Regulations may apply. Verify classification of waste with contaminants as per the MSDS.				
Documentation					
Transportation Documents:	Truck Ticker or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Electronics – Printer Cartridges
Waste Information Sheet
September 2016



Filters - Air

Waste Information Sheet

General Information					
Original Use:	Filters are non-regenerable air filters from air intake on compressors, electric motors and air conditioners.				
Physical State:	Sock cartridge, canister units, fibre sheets and/or plates.				
Components:	Particulates. No other data available.				
Potential Hazards					
Class (WHMIS):	Not a controlled product.		MSDS:	Not applicable.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Illegal incineration may produce toxic fumes. Possible spontaneous combustion.				
Health:	Not an inhalation hazard below 38°C. High vapor concentrations may irritate nose. Slight skin irritations.				
Management Methods					
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material	
Storage:	Store with other dry garbage. Well ventilated storage areas.				
Treatment / Disposal:	Prior to disposal, segregate from other types of filters (e.g., lube oil) and landfill.				
Comments:					
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>		N/A	N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Filters – Air
Waste Information Sheet
September 2016



Filters - Glycol

Waste Information Sheet

General Information													
Original Use:	Facilities where glycol is used as a heat trace. Filters used for the removal of corrosion products, and other impurities from glycol when recycled or regenerated in a closed system.												
Physical State:	Cartridge or paper filters.												
Components:	May contain triethylene glycol (TEG), diethylene glycol (DEG), ethylene glycol (EG), propylene glycol (PG) hydrocarbons, boron, chromium, copper, nickel, lead zinc, iron sulphide and carbon.												
Potential Hazards													
Class (WHMIS): D2A	MSDS: Use MSDS of components (e.g.; TEG, DEG, EG).												
Hazard Symbols: <div style="text-align: center; font-size: 2em;">⚠</div>	Protective Equipment: <div style="text-align: center;"> </div>												
Environmental:	Potential groundwater contamination if disposed in a landfill. Wash water may contain high levels of glycol. Incineration may produce toxic fumes.												
Health:	Not an inhalation hazard if < 38°C. High vapor concentration may irritate nose. Avoid prolonged exposure.												
Management Methods													
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">NWT: Hazardous Waste</td> <td style="width: 33%;">Manitoba: Hazardous Waste</td> <td style="width: 33%;"></td> </tr> <tr> <td>Alberta: Hazardous Waste/DOW</td> <td>Ontario: Hazardous Waste</td> <td></td> </tr> <tr> <td>Saskatchewan: Waste Dangerous Good</td> <td>Québec: Residual Hazardous Material</td> <td></td> </tr> </table> <p>Note: Above classification if contaminated – see TDG Comments below.</p>	NWT: Hazardous Waste	Manitoba: Hazardous Waste		Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste		Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material				
NWT: Hazardous Waste	Manitoba: Hazardous Waste												
Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste												
Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material												
Storage:	Store temporarily in drain barrels to allow for the drainage of any free liquids. Transfer to designated filter bin / bag (glycol filters used in sour service may be pyrophoric; store in sealed steel drums). Keep in well ventilated storage area.												
Treatment / Disposal:	<ul style="list-style-type: none"> Scheduled pick up by waste contractor for treatment at recycling/recovery facility. Treated filters are then landfilled (depending on application) as nonhazardous materials. Recycle drained liquids or send to an appropriate (approved) waste management facility. 												
Comments:	<ul style="list-style-type: none"> Use filters with removable cores to reduce waste volumes. Pyrophoric filters cannot be stored in bins or tote bags. 												
Reportable Release Quantity: (Note: based on Class 4.1 or 4.2.)	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">NWT: 25 kg or litres</td> <td style="width: 33%;">Ontario: Any quantity</td> <td style="width: 33%;"></td> </tr> <tr> <td>Alberta: 25 kg or litres</td> <td>Québec: Any quantity</td> <td></td> </tr> <tr> <td>Saskatchewan: 25 kg or litres</td> <td colspan="2">TDG (includes loading / unloading): 25 kg or litres</td> </tr> <tr> <td>Manitoba: 1 kg or litre</td> <td colspan="2"></td> </tr> </table>	NWT: 25 kg or litres	Ontario: Any quantity		Alberta: 25 kg or litres	Québec: Any quantity		Saskatchewan: 25 kg or litres	TDG (includes loading / unloading): 25 kg or litres		Manitoba: 1 kg or litre		
NWT: 25 kg or litres	Ontario: Any quantity												
Alberta: 25 kg or litres	Québec: Any quantity												
Saskatchewan: 25 kg or litres	TDG (includes loading / unloading): 25 kg or litres												
Manitoba: 1 kg or litre													
TDG Information													
Shipping Name	Class	PIN	Packing Group	Special Provisions									
PYROPHORIC SOLIDS MIXTURE, N.O.S. (waste filters contaminated with iron sulphide)	4.2	UN 2846 **ERAP**	I	16,38									
SOLIDS CONTAINING FLAMMABLE LIQUIDS, N.O.S. (Technical Name)	4.2	UN 3175	II	16,56									
Placards:	Class 4.2 as appropriate (in bulk or over 500 kg).												
Comments:	EG, PG, DEG and TEG filters are not TDG regulated. However, after use in gas dehydration processes, glycol filters may be pyrophoric, flammable, or leachable as indicated by TDG classifications above. Pyrophoric solids (Class 4.2) are prohibited for bulk transport. **ERAP** Cannot offer for transport dangerous goods having PIN UN2846 when the quantity of that good exceeds 1,000 kg or litres for the dangerous goods without an Emergency Response Assistance Plan approved by Transport Canada. Verify with the Enbridge Environment Staff.												
Documentation													
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.												
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.												

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Filters – Glycol
Waste Information Sheet
September 2016



Filters - Lubricating Oil

Waste Information Sheet

General Information				
Original Use:	Filters from engines, rotating equipment and lubricating oil clean-up systems. Used for the removal of corrosion products, degradation sludges and other impurities.			
Physical State:	Cloth or paper cartridges of various sizes, metal cartridges.			
Components:	Hydrocarbons, lead, zinc, additives, and other trace heavy metals, N-hexane, naptha. May also contain triphenyl phosphates, anti-rust and anti-oxidant additives. Fibre, water, ash, sand.			
Potential Hazards				
Class (WHMIS): D2B	MSDS: Lubricating Oil.			
Hazard Symbols:	Protective Equipment:			
Environmental:	Potential groundwater contamination (metals leaching) if disposed in a landfill. Heavy metals may release under acidic conditions. Hydrocarbons are toxic in soil and water. Incineration may produce toxic fumes.			
Health:	Not an inhalation hazard if < 38°C. High vapor concentrations may irritate nose and throat. Slight skin irritations.			
Management Methods				
Waste Classification:	<div style="display: flex; justify-content: space-between;"> <div> <p>NWT: Hazardous Waste</p> <p>Alberta: Hazardous Waste/DOW</p> <p>Saskatchewan: Waste Dangerous Good</p> </div> <div> <p>Manitoba: Hazardous Waste</p> <p>Ontario: Hazardous Waste</p> <p>Québec: Residual Hazardous Material</p> </div> </div> <p>Note: Alberta – Waste Type 201 – spent / undrained lube oil filters from internal combustion engines. Testing may be required for classification. Dependent on application.</p>			
Storage:	Store temporarily in drain barrels to allow for the drainage of any free liquids. Transfer to designated filter bin / bag. Keep in well ventilated storage area.			
Treatment / Disposal:	<ul style="list-style-type: none"> Scheduled pick up by waste contractor for recycling/recovery of used oil. Drained liquids should be recycled. 			
Comments:	Install reusable filter systems on compressors.			
Reportable Release Quantity:	<div style="display: flex; justify-content: space-between;"> <div> <p>NWT: 25 kg</p> <p>Alberta: 25 kg or litres</p> <p>Saskatchewan: 100 kg (50 kg off-site)</p> <p>Manitoba: 1 kg</p> </div> <div> <p>Ontario: Any quantity</p> <p>Québec: Any quantity</p> <p>TDG (includes loading / unloading): 25 kg or litres</p> </div> </div>			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments below</i>	-	-	-	-
Placards:				
Comments:	Lubricating oil filters are not TDG regulated. If there is any indication that the lube oil may have any contaminants, then further TDG testing may be required for flammability and leachates. Other possible classes are Flammable Solids N.O.S. (lube oil filters); Class 4.1, UN 3175, PG II.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Filters - Lubricating Oil
Waste Information Sheet
September 2016



Fuel - Diesel
Waste Information Sheet

General Information					
Original Use:	Vehicle fuel.				
Physical State:	Flammable liquid.				
Components:	Mixture of hydrocarbons. May contain benzene, naphthalene, sulphur.				
Potential Hazards					
Class (WHMIS):	B3, D2B		MSDS:	Low Sulphur Diesel	
Hazard Symbols:	 		Protective Equipment:	 	
Environmental:	Possible groundwater or surface water contamination if spilled or leaked. Can be toxic to aquatic life.				
Health:	Causes sever skin irritation. Aspiration hazard if swallowed. Use with adequate ventilation. Avoid contact or inhalation of fumes.				
Management Methods					
Waste Classification:	NWT:	Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste (221-I)	
	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material	
Storage:	Store in tightly closed approved containers at a field facility. Keep closed. Store in a cool, dry, well-ventilated place away from heat, direct sunlight, and all sources of ignition.				
Treatment / Disposal:	Hazardous Waste Management Facility				
Comments:					
Reportable Release Quantity:	NWT:	100 litres	Ontario:	Any quantity	
	Alberta:	200 litres	Québec:	Any quantity	
	Saskatchewan:	100 litres (100 litres off-site)	TDG (includes loading / unloading): 200 litres		
	Manitoba:	100 litres			
TDG Information					
Shipping Name			Class	PIN	Packing Group
DIESEL FUEL			3	UN1202	III
Special Provisions					
82,88					
Placards:	Class 3 (in bulk or over 500 kg).				
Comments:					
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Fuel – Diesel
Waste Information Sheet
September 2016



Fuel - Gasoline
Waste Information Sheet

General Information					
Original Use:	Vehicle fuel.				
Physical State:	Flammable liquid.				
Components:	Mixture of hydrocarbons. May contain ethanol, benzene, toluene, xylene.				
Potential Hazards					
Class (WHMIS):	B3, D2B		MSDS:	Gasoline	
Hazard Symbols:	 		Protective Equipment:	 	
Environmental:	Possible groundwater or surface water contamination if spilled or leaked. Can be toxic to aquatic life.				
Health:	May cause skin irritation, headaches, nausea or dizziness with prolonged exposure. Use with adequate ventilation. Avoid contact or inhalation of fumes.				
Management Methods					
Waste Classification:	NWT:	Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste (221-I)	
	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material	
Storage:	Store in tightly closed approved containers at a field facility. Keep closed. Store in a cool, dry, well-ventilated place away from heat, direct sunlight, and all sources of ignition.				
Treatment / Disposal:	Hazardous Waste Management Facility				
Comments:					
Reportable Release Quantity:	NWT:	100 litres	Ontario:	Any quantity	
	Alberta:	200 litres	Québec:	Any quantity	
	Saskatchewan:	100 litres (100 litres off-site)	TDG (includes loading / unloading): 200 litres		
	Manitoba:	100 litres			
TDG Information					
Shipping Name			Class	PIN	Packing Group
GASOLINE			3	UN1203	II
Special Provisions					
17, 82, 88					
Placards:	Class 3 (in bulk or over 500 kg).				
Comments:					
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Fuel – Gasoline
Waste Information Sheet
September 2016



Garbage - Domestic Waste

Waste Information Sheet

General Information					
Original Use:	Includes waste from offices, miscellaneous warehouse packaging and construction camps. Does not include sanitary sewage. See also Metal-scrap and Containers waste information sheets.				
Physical State:	Mixed garbage. Synonyms: Trash, Refuse.				
Components:	Paper, metal, glass, organic, wood, cloth.				
Potential Hazards					
Class (WHMIS):	Not a controlled product.		MSDS:	Not Applicable.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Accumulated garbage may attract wildlife. Illegal burning may produce toxic fumes. Landfills may cause gas venting and leachate problems. Possible spontaneous combustion. Possible hazardous containers if not properly segregated.				
Health:	Not expected to be a hazard.				
Management Methods					
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material	
Storage:	Store in bins or in areas of low traffic volumes on-site. Segregate waste types to facilitate recycling. Maintain waste volumes in a neat and orderly manner. Protect from wind.				
Treatment / Disposal:	<ul style="list-style-type: none"> Send / transfer to an approved landfill. Segregate and recycle paper, cardboard, glass, metal, and plastic. 				
Comments:	Ontario requires that office buildings greater than 10,000 square metres have a source separation program.				
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name			Class	PIN	Packing Group
<i>Not TDG Regulated</i>			N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply. Cover all open loads during transport.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Garbage - Domestic Waste
Waste Information Sheet
September 2016



Glycol

Waste Information Sheet

General Information					
Original Use:	Engine and compressor coolant. Dehydration for natural gas processing. Heat trace and heat medium (line heaters, utility boilers). Antifreeze for tank farm roof drains and fire pumps.				
Physical State:	Liquid usually mixed 1:1 with water (depending on particular use). Synonyms: Ethylene glycol, antifreeze, monoethylene glycol or glycol alcohol.				
Components:	Glycol, iron oxide (trace), iron sulphide, heavy metals. May contain some additives (corrosion inhibitors) for antifreeze.				
Potential Hazards					
Class (WHMIS):	D2A	MSDS:	Use MSDS of specific components (e.g. TEG, DEG, EG, Antifreeze, Ethylene Glycol).		
Hazard Symbols:			Protective Equipment:		
Environmental:	Storage in unlined pits or general spills can cause surface and groundwater contamination. Fatal to wildlife.				
Health:	Inhalation of fumes may cause throat irritation and headaches. Toxic when ingested; could result in kidney damage. Moderate irritation to skin, eyes and mucous tissues upon contact.				
Management Methods					
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste			
	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (212-L)			
	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material			
	Note: See comment under TDG information.				
Storage:	Store material in steel drums at field facility. Store in a cool well ventilated place.				
Treatment / Disposal:	<ul style="list-style-type: none"> Send to glycol supplier for recycling. Glycol from tank roof drain lines should be contained for use the following year. Vehicle antifreeze should be changed and recycled by a qualified service centre. Filter and reuse in process (may require the addition of corrosion inhibitor). In Alberta, if glycol content < 40%, waste may be injected via Class Ia or Ib injection well. 				
Reportable Release Quantity:	NWT: 100 litres	Ontario: Any quantity			
	Alberta: 200 kg or litres	Québec: Any quantity			
	Saskatchewan: 25 litres (5 litres off-site)	TDG (includes loading / unloading): 200 kg or L			
	Manitoba: 100 litres				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
FLAMMABLE LIQUID, N.O.S. ("Technical Name")		3	UN 1993	I, II or III	16
TOXIC LIQUID, ORGANIC, N.O.S.		6.1	UN2810	I, II or III	16
Placards:	Class 3 (in bulk or over 500 kg).				
Comments:	There are various TDG categories for glycol wastes. The above is one example. OTHER TDG Shipping Names MAY APPLY. Dependent on specific waste chemical. If flash point ≤ 60°C then it will be TDG regulated. Due to processes, transformations and mixtures, this waste may contain dangerous goods and should be tested - if not pure waste glycol. The additives in antifreeze may make this waste TDG regulated as above. Not regulated if not contaminated with a dangerous good.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate; dependent if glycol is contaminated with a dangerous good.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Glycol
Waste Information Sheet
September 2016



H₂S Sensing Tape

Waste Information Sheet




General Information					
Original Use:	Sensing tape used for the detection of H ₂ S leaks.				
Physical State:	White tape strips.				
Components:	Lead acetate and acetic acid.				
Potential Hazards					
Class (WHMIS):	The "tape" itself is not a controlled product.		MSDS:	Lead acetate, acetic acid.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Toxic leachate, soil and groundwater contamination from lead acetate if improperly landfilled. Co-dispose with limestone.				
Health:	Not expected to be hazard however avoid prolonged skin contact. Handle with gloves. Wash thoroughly after handling.				
Management Methods					
Waste Classification:	NWT:	Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste	
	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material	
Storage:	Seal inside plastic bags and keep in closed containers, in covered location away from flammable locations.				
Treatment / Disposal:	Hazardous – Hazardous Waste Disposal Facility. Landfill which accepts hazardous waste.				
Comments:					
Reportable Release Quantity:	NWT:	5 kg or liters	Ontario:	Any quantity	
	Alberta:	5 kg or liters	Québec:	Any quantity	
	Saskatchewan:	5 kg or litres	TDG (includes loading / unloading): 5 kg or litres		
	Manitoba:	5 kg or litres			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
LEAD ACETATE		6.1	UN1616	III	109, 118
Placards:	Class 6.1 (in bulk or over 500 kg)				
Comments:					
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or District office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

H₂S Sensing Tape
Waste Information Sheet
September 2016



Halon
Waste Information Sheet

General Information																				
Original Use:	Pressurized for use in refrigeration and fire extinguishing systems. Federal government has imposed strict control on non-essential uses and the discharge testing of fire extinguishing system.																			
Physical State:	Dense colorless gas with slight ethereal odor. May occur as a liquid under extreme pressure.																			
Components:	Bromotrifluoromethane (Brominated fluorocarbon). Trade names examples are Halon 1301, Fluorocarbon 1301, Trifluorobromomethane, Freon 13B1, R13B1.																			
Potential Hazards																				
Class (WHMIS):	A	MSDS:	Halon 1301																	
Hazard Symbols:		Protective Equipment:	 																	
Environmental:	Linked to depletion of ozone layer in upper atmosphere.																			
Health:	Very low toxicity, weak narcotic. Eye irritant. May cause frost bite and skin burns. High concentrations may cause Asphyxiation without warning.																			
Management Methods																				
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 25%;">Hazardous Waste</td> <td style="width: 25%;">Manitoba:</td> <td style="width: 25%;">Hazardous Waste</td> </tr> <tr> <td>Alberta:</td> <td>Hazardous Waste/DOW</td> <td>Ontario:</td> <td>Hazardous Waste. (331-R)</td> </tr> <tr> <td>Saskatchewan:</td> <td>Waste Dangerous Good</td> <td>Québec:</td> <td>Residual Hazardous Material</td> </tr> </table>				NWT:	Hazardous Waste	Manitoba:	Hazardous Waste	Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste. (331-R)	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material				
NWT:	Hazardous Waste	Manitoba:	Hazardous Waste																	
Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste. (331-R)																	
Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material																	
Storage:	Closed pressurized systems only. Store cylinders in an upright position in a dry well-ventilated area.																			
Treatment / Disposal:	Contact appropriate (approved) supplier, recycler and/or Enbridge Environment Staff for assistance.																			
Comments:	<p>Contact supplier for disposal of any halon wastes - high potential for supplier to re-use and recycle.</p> <p>Halon systems that are no longer required should have the halon storage units removed by supplier. If a halon system is to be tested, send to a testing company that uses an environmentally acceptable testing procedure. Ensure that the company empties the halon into another tank before hydrostatically testing the cylinder and then re-injects the gas once the test is complete. Do not empty halon cylinders or extinguishers before sending the cylinder for structural testing.</p>																			
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 25%;">Any quantity</td> <td style="width: 25%;">Ontario:</td> <td style="width: 25%;">Any quantity</td> </tr> <tr> <td>Alberta:</td> <td>Any quantity</td> <td>Québec:</td> <td>Any quantity</td> </tr> <tr> <td>Saskatchewan:</td> <td>Any quantity</td> <td>TDG (includes loading / unloading):</td> <td>Any quantity</td> </tr> <tr> <td>Manitoba:</td> <td>Any quantity</td> <td></td> <td></td> </tr> </table>				NWT:	Any quantity	Ontario:	Any quantity	Alberta:	Any quantity	Québec:	Any quantity	Saskatchewan:	Any quantity	TDG (includes loading / unloading):	Any quantity	Manitoba:	Any quantity		
NWT:	Any quantity	Ontario:	Any quantity																	
Alberta:	Any quantity	Québec:	Any quantity																	
Saskatchewan:	Any quantity	TDG (includes loading / unloading):	Any quantity																	
Manitoba:	Any quantity																			
TDG Information																				
Shipping Name	Class	PIN	Packing Group	Special Provisions																
<i>See TDG Comments Below</i>	-	-	-	-																
Placards:	Dependent on specific waste chemical.																			
Comments:	Dependent on specific waste chemical.																			
Documentation																				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.																			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.																			



Need further information?
Contact Enbridge Environment Staff in Edmonton.

Halon
Waste Information Sheet
September 2016



Hydrotest Fluids - Methanol

Waste Information Sheet

General Information					
Original Use:	Methanol is used as a hydrotest fluid for pipelines and for dehydration in gas processing. Also used for hydrate removal.				
Physical State:	Low viscosity clear liquid, alcohol-like odor.				
Components:	Methanol.				
Potential Hazards					
Class (WHMIS):	B2, D1B, D2A, D2B.	MSDS:	Use MSDS of specific components (e.g.; Methanol, Methyl Hydrate).		
Hazard Symbols:		Protective Equipment:			
Environmental:	Potential groundwater contamination if spilled. Very toxic to aquatic life.				
Health:	Vapors may irritate nose, throat, lungs, and cause eye irritation. Methanol is readily absorbed by the skin and may produce nervous system effects.				
Management Methods					
Waste Classification:	NWT:	Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste	
	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material	
Storage:	Store in steel drums or tanks at field facility. Keep in a well ventilated area away from heat sources.				
Treatment / Disposal:	<ul style="list-style-type: none"> Reuse fluids for subsequent hydro-testing operations. Send to waste contractor for recovery of product or incineration. Deep well disposal well. 				
Comments:	If large hydrostatic test requires methanol, consideration should be given to renting methanol water mixture from supplier and returning mixture to supplier when test is completed.				
Reportable Release Quantity:	NWT:	100 litres	Ontario:	Any quantity	
	Alberta:	200 kg or litres	Québec:	Any quantity	
	Saskatchewan:	500 litres (100 off-site)	TDG (includes loading / unloading): 200 kg or L		
	Manitoba:	100 litres			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
METHANOL		3 (6.1)	UN 1230	II	43
FLAMMABLE LIQUIDS, N.O.S. ("Technical Name")		3	UN1993	I, II or III	16
Placards:	Class 3 (in bulk or over 500 kg).				
Comments:	First TDGR classification for pure methanol. If contaminated with inert substances or a mixture of two or more dangerous goods, then the second shipping name may apply.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				


Need further information?
Contact Enbridge Environment Staff in Edmonton.

Hydrotest Fluids – Methanol
Waste Information Sheet
September 2016



Hydrotest Fluids - Water

Waste Information Sheet

General Information				
Original Use:	Surface water or municipal source water used as a hydrotest fluid for pipelines.			
Physical State:	Condition of source water. Impurities from testing may discolour water.			
Components:	Possible components include iron, nickel, lead, suspended solids and oil.			
Potential Hazards				
Class (WHMIS):	Not a controlled product.		MSDS:	Not applicable.
Hazard Symbols:			Protective Equipment:	
Environmental:	Potential erosion and surface water sedimentation when released following hydrotest operation.			
Health:	No significant health issues.			
Management Methods				
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material
Storage:	Surface storage in pits and depressions must be in accordance with construction permit and municipal authority. Consultation may also be required with the provincial environment authority.			
Treatment / Disposal:	<ul style="list-style-type: none"> • Reuse fluids for subsequent hydro-testing operations. • Surface land release following testing and approval from municipality, provincial environment authority or NEB (See comments below). • Deep well disposal. 			
Comments:	Hydrotest water must always be analyzed prior to watershed release. Must not raise or lower receiving body of water by $\pm 2^{\circ}\text{C}$. If saline water was used, do not discharge onto arable land. Tank water should also be analyzed prior to release onto tank farm area. Provincial environment department approval is required for water use and / or disposal. A significant advance notification time may be required. Refer to ENBRIDGE procedures. While used hydrostatic test water is not usually a hazardous waste, water may require pre-treatment prior to release – if water becomes contaminated during testing (from sediments and pipeline impurities). Possible treatment methods include filtering and activated carbon treatment.			
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A
	Alberta:	N/A	Québec:	N/A
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A	
	Manitoba:	N/A		
TDG Information				
Shipping Name		Class	PIN	Packing Group
<i>Not TDG Regulated</i>		N/A	N/A	N/A
Placards:	N/A			
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply. Secure all valves and fittings prior to transport.			
Documentation				
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			



Need further information?
Contact Enbridge Environment Staff in Edmonton.

Hydrotest Fluids – Water
Waste Information Sheet
September 2016



Insulation (Non-Asbestos)

Waste Information Sheet

General Information																					
Original Use:	Fireproofing and thermal insulation in buildings, pipes, and vessels.																				
Physical State:	Batts of material or rolls.																				
Components:	Fiberglass, calcium silicate, rockwool, foam material.																				
Potential Hazards																					
Class (WHMIS):	D2A	MSDS:	None.																		
Hazard Symbols:		Protective Equipment:																			
Environmental:	Low hazard. Wildlife may ingest.																				
Health:	May cause severe skin, eye and respiratory irritation. Insulation installation or removal will produce an irritating fibre dust.																				
Management Methods																					
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">NWT:</td> <td style="width: 35%;">Non-Hazardous Waste</td> <td style="width: 15%;">Manitoba:</td> <td style="width: 35%;">Non-Hazardous Waste</td> </tr> <tr> <td>Alberta:</td> <td>Non-Hazardous Waste/Non-DOW</td> <td>Ontario:</td> <td>Non-Hazardous Waste</td> </tr> <tr> <td>Saskatchewan:</td> <td>Non-Hazardous Waste</td> <td>Québec:</td> <td>Residual Material</td> </tr> </table>					NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material				
NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste																		
Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste																		
Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material																		
Storage:	Contain in plastic bags or other sealable container at field facility.																				
Treatment / Disposal:	Send / transfer to an approved landfill.																				
Comments:	<ul style="list-style-type: none"> Repair exposed / damaged piping and building insulation. If possible, reuse insulation from demolition projects for new facility construction. 																				
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">NWT:</td> <td style="width: 35%;">N/A</td> <td style="width: 15%;">Ontario:</td> <td style="width: 35%;">N/A</td> </tr> <tr> <td>Alberta:</td> <td>N/A</td> <td>Québec:</td> <td>N/A</td> </tr> <tr> <td>Saskatchewan:</td> <td>N/A</td> <td colspan="2">TDG (includes loading / unloading): N/A</td> </tr> <tr> <td>Manitoba:</td> <td>N/A</td> <td colspan="2"></td> </tr> </table>					NWT:	N/A	Ontario:	N/A	Alberta:	N/A	Québec:	N/A	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		Manitoba:	N/A		
NWT:	N/A	Ontario:	N/A																		
Alberta:	N/A	Québec:	N/A																		
Saskatchewan:	N/A	TDG (includes loading / unloading): N/A																			
Manitoba:	N/A																				
TDG Information																					
Shipping Name		Class	PIN	Packing Group	Special Provisions																
<i>Not TDG Regulated</i>		N/A	N/A	N/A	N/A																
Placards:	N/A																				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply. Seal before transporting.																				
Documentation																					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate																				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.																				



Need further information?
Contact Enbridge Environment Staff in Edmonton.

Insulation (Non-Asbestos)
Waste Information Sheet
September 2016



Lead Compounds

Waste Information Sheet

General Information				
Original Use:	Lubricants or other products in which the base is a soluble lead.			
Physical State:	Semi-solid			
Components:	Lead chloride, lead fluoborate.			
Potential Hazards				
Class (WHMIS):	MSDS:			
Hazard Symbols:	Protective Equipment:			
				
Environmental:	Lead chloride and lead fluoborate are soluble and can therefore cause potential surface and groundwater contamination.			
Health:	Skin irritant. Toxic in certain concentrations.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste Alberta: Hazardous Waste/DOW Saskatchewan: Waste Dangerous Good If contaminated soil, a leachate test may be required.	Manitoba: Hazardous Waste Ontario: Hazardous Waste Québec: Residual Hazardous Material		
Storage:	Store off ground in impermeable, sealed containers.			
Treatment / Disposal:	<ul style="list-style-type: none"> Hazardous - Hazardous Waste Management Facility Non-hazardous - If leachate test okay, landfill which is licensed to accept this type of waste. 			
Comments:				
Reportable Release Quantity:	NWT: 5 kg or litres Alberta: 5 kg or litres Saskatchewan: 2 kg Manitoba: 5 kg or litres	Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): 5 kg or litres		
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
LEAD COMPOUND, SOLUBLE, N.O.S.	6,1 (9)	UN2291	III	24
Placards:	Class 6.1 (9) (In bulk or over 500 kg)			
Comments:	The above is one example. OTHER TDG Shipping Names MAY APPLY. Dependent on specific waste chemical.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Lead Compounds
Waste Information Sheet
September 2016



**Lubricating Oil -
Hydrocarbon and Synthetic**
Waste Information Sheet








General Information				
Original Use:	Lubrication of oilfield machinery, engines, compressors, and vehicles.			
Physical State:	Hydrocarbon liquids and grease.			
Components:	Chlorinated solvents, naphthalene, benzene, toluene, xylenes, lead, trace metals (i.e. Ba, Cr, V), triphenyl phosphate, butylated triphenyl phosphate, anti-rust and anti-oxidant additives.			
Potential Hazards				
Class (WHMIS):	Not a controlled product.	MSDS:	Lubricating Oil and above chemicals.	
Hazard Symbols:			Protective Equipment:	
Environmental:	Potential groundwater and surface water contamination (hydrocarbons and metals) if applied to roads or other ground surfaces.			
Health:	Not an inhalation hazard if < 38°C. May cause some skin and tissue irritation.			
Management Methods				
Waste Classification:	NWT: Non-Hazardous	Manitoba: Non-Hazardous		
	Alberta: Non-Hazardous Waste/Non-DOW	Ontario: Non-Hazardous (252-L)		
	Saskatchewan: Waste Dangerous Good	Québec: Residual Material		
	Note: Above waste classification applies to new and/or unused lubricating oils unless contaminated with heavy metals such as lead, barium or vanadium. Testing may be required.			
Storage:	Store in sealed drums at field facility. Larger quantities should be stored in storage tanks equipped with spill containment measures. Used lubricating oil <i>must</i> be segregated from other produced / waste liquids.			
Treatment / Disposal:	<ul style="list-style-type: none"> • Send to a lube oil recycling facility. Verify that recycler is licensed to receive and process lube oil. • Return to supplier for recycling. 			
Comments:	Lube oil must be segregated from other waste fluids. Various jurisdictions have specific management requirements for spent lube oil			
Reportable Release Quantity:	NWT: 100 litres	Ontario: Any quantity		
	Alberta: 5 kg or litres	Québec: Any quantity		
	Saskatchewan: 100 litres (50 litres off-site)	TDG (includes loading / unloading): 5 kg or L		
	Manitoba: 100 litres			
TDG Information				
Shipping Name		Class	PIN	Packing Group
See TDG Comments Below		-	-	-
Placards:				
Comments:	Unused (clean) lubricating oils are not regulated under TDG; however, waste lubricating oils, as a result of use in older engines with lead bearings, can contain quantities of metals such as lead, barium or vanadium. Testing may be required. TDG classification and shipping names will depend on specific waste contaminants.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Lubricating Oil - Hydrocarbon / Synthetic
Waste Information Sheet
September 2016



Mercury
Waste Information Sheet

General Information				
Original Use:	Excess mercury from instrument manometers, mercury bulbs in tank level switches, mercoid switches.			
Physical State:	A low viscosity silvery liquid. Odorless. Synonyms: Quicksilver, Hydrargyrum.			
Components:	Mercury.			
Potential Hazards				
Class (WHMIS):	D1A; D2A.		MSDS:	Mercury.
Hazard Symbols:	 		Protective Equipment:	    
Environmental:	Spilled mercury will contaminate pond and drainage ditch sludges and accumulate in drains / gutters within process buildings. Leachate may contain soluble mercury salts.			
Health:	Toxic vapors. Eye irritation. If absorbed by skin, may cause dermatitis. Long or repeated exposure may create emotional disorder and damage to the nervous system, kidneys or liver.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste		
	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (146-H)		
	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material		
Storage:	Store in closed containers and in a cool, well ventilated place away from incompatible materials.			
Treatment / Disposal:	List on a chemical waste exchange program (if pure). Send to a hazardous waste management facility.			
Comments:	Pure mercury may be listed on a chemical waste exchange program for use by other parties. Replace mercury manometers with electronic instruments. Old level switches (wires are known to corrode) replace with ultrasonic level switches.			
Reportable Release Quantity:	NWT: 5 kgs or litres	Ontario: Any quantity		
	Alberta: 5 kgs or litres	Québec: Any quantity		
	Saskatchewan: 100 g	TDG (includes loading / unloading): 5 kgs or litres		
	Manitoba: 5 kgs or litres			
TDG Information				
Shipping Name		Class	PIN	Packing Group
MERCURY		8	UN2809	III
Placards:	Class 8			
Comments:				
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Mercury
Waste Information Sheet
September 2016



Metal - Scrap
Waste Information Sheet




General Information				
Original Use:	Refers to clean material (pipe, pumps, tanks etc.) which is not contaminated with insulation, asbestos, oil or sulphur. See also Waste Information Sheets on Construction and Demolition Material, Insulation (Asbestos) and Insulation (Non-asbestos).			
Physical State:	Solids.			
Components:	Metal (iron, steel, aluminum), traces of organic and inorganic lead, fluorides and other process chemicals.			
Potential Hazards				
Class (WHMIS):	D1A; D2A	MSDS:	None.	
Hazard Symbols:	 	Protective Equipment:	 	
Environmental:	Not considered a hazard. Possible ground or air contamination if not cleaned of hydrocarbon residue.			
Health:	Trace chemicals may cause skin and throat irritation. Particles may cause eye damage and irritation. Possible toxic fumes generated within enclosed vessels, units, spaces.			
Management Methods				
Waste Classification:	NWT: Non-Hazardous Waste Alberta: Non-Hazardous Waste/Non-DOW Saskatchewan: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste Ontario: Non-Hazardous Waste Québec: Residual Material		
Storage:	Store in a low traffic area of field facility. Keep storage area orderly and segregate metals by type for recycling.			
Treatment / Disposal:	Send to a scrap metal recycler. Ensure no liquid or oil residue prior to sending off site. Drain all liquids from equipment. Wipe liquid from surface where possible. All attempts to recycle must be made. Landfill is last resort.			
Comments:	Ensure waste is not contaminated with chemicals, oil, asbestos, etc.			
Reportable Release Quantity:	NWT: N/A Alberta: N/A Saskatchewan: N/A Manitoba: N/A	Ontario: N/A Québec: N/A TDG (includes loading / unloading): N/A		
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>	N/A	N/A	N/A	N/A
Placards:	N/A			
Comments:	If the waste is contaminated with dangerous goods (e.g. equipment has not been cleaned or equipment contains sufficient quantity of liquid hydrocarbons to still classify it as a dangerous good), TDG Regulations may apply. If the cavities within the equipment still contain liquid then the equipment should be classified according to the classification of the liquid and transported as a dangerous good. Seal equipment's orifices prior to transport.			
Documentation				
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Metal Scrap
Waste Information Sheet
September 2016



Methanol
Waste Information Sheet

General Information				
Original Use:	Methanol is used for drying pipelines (after hydrotesting) or for winter testing of pipelines to prevent from freezing. See Disposal Comments below for information on Hydrotest Water.			
Physical State:	Low viscosity clear colorless liquid, alcohol-like odour.			
Components:	Methanol – usually < 0.5%.			
Potential Hazards				
Class (WHMIS):	B2, D1B, D2A, D2B.	MSDS:	Use MSDS of specific components (e.g.; Methanol, Methyl Hydrate).	
Hazard Symbols:		Protective Equipment:	 	
Environmental:	Potential groundwater contamination if spilled. Very toxic to aquatic life.			
Health:	Vapours may irritate nose, throat, lungs and cause eye irritation. Methanol is readily absorbed by the skin and may produce nervous system effects.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta: Hazardous Waste/DOW	Ontario:	Hazardous Waste	
	Saskatchewan: Waste Dangerous Good	Québec:	Residual Hazardous Material	
Storage:	Store in steel drums or tanks in a well ventilated area away from heat sources.			
Treatment / Disposal:	<ul style="list-style-type: none"> Return to supplier for recycling/recovery. Hazardous – Hazardous Waste Management Facility 			
Comments:	If large hydrostatic test requires methanol, consideration should be given to renting methanol water mixture from supplier and returning mixture to supplier when test is completed.			
Reportable Release Quantity:	NWT: 100 litres	Ontario:	Any quantity	
	Alberta: 200 kg or litres	Québec:	Any quantity	
	Saskatchewan: 500 litres (100 off-site)	TDG (includes loading / unloading): 200 kg or L		
	Manitoba: 100 litres			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
METHANOL	3 (6.1)	UN1230	II	43
Placards:	Class 3 (in bulk or over 500 kg)			
Comments:	<ul style="list-style-type: none"> Above TDG classification for pure methanol. If contaminated with non-dangerous goods or mixed with other dangerous goods but methanol in the primary constituent, alternate Shipping Name may apply: FLAMMABLE LIQUIDS, N.O.S. (methanol); Class: 3; PIN: UN1993; Packing Group: II. 			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Methanol
Waste Information Sheet
September 2016



Mud - Drilling
Waste Information Sheet

General Information				
Original Use:	Used in drilling operations to stabilize water sensitive formations, improve borehole stability, alleviate mud rings, reduce drill pipe torque and pumping pressure.			
Physical State:	May be oil based or gel chemical viscous liquid.			
Components:	Mixture of hydrocarbons and may contain corrosives.			
Potential Hazards				
Class (WHMIS):		MSDS: Use MSDS of specific drilling mud type.		
Hazard Symbols:		Protective Equipment:		
Environmental:	Dependent on specific drilling mud type. May be toxic to aquatic species.			
Health:	High vapour concentrations may irritate eyes, skin and breathing, and may result in dizziness and headaches.			
Management Methods				
Waste Classification:	NWT:	Testing Required	Manitoba:	Testing Required
	Alberta:	Testing Required	Ontario:	Testing Required
	Saskatchewan:	Testing Required	Québec:	Testing Required
Storage:	Store in a corrosion resistant (plastic or lined) container at field facility. Keep closed. Store in a cool, well ventilated place away from potential sources of ignition or sparks and from high pH materials.			
Treatment / Disposal:	Recycle where possible Approved Hazardous Waste Management Facility			
Comments:				
Reportable Release Quantity:	NWT:	Dependent on mud type.	Ontario:	Dependent on mud type.
	Alberta:	Dependent on mud type.	Québec:	Dependent on mud type.
	Saskatchewan:	Dependent on mud type.	TDG (includes loading / unloading): Dependent on mud type.	
	Manitoba:	Dependent on mud type.		
TDG Information				
Shipping Name		Class	PIN	Packing Group
<i>See TDG Comments Below</i>		-	-	-
Placards:	Dependent on specific drilling mud waste type.			
Comments:	Drilling mud may be water-based, oil-based, gel, or of other non-aqueous based types. Classification and shipping requirements dependent on specific drilling mud waste type. Testing required.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			



Need further information?
Contact Enbridge Environment Staff in Edmonton.

Mud – Drilling
Waste Information Sheet
September 2016



Oily Rags

Waste Information Sheet

General Information				
Original Use:	Maintenance and spill clean-up operations.			
Physical State:	Oily and dirty cloths.			
Components:	High concentrations of hydrocarbons, solvents and heavy metals, glycols.			
Potential Hazards				
Class (WHMIS):	B4	MSDS:	Use MSDS of specific components (e.g. Crude oil).	
Hazard Symbols:		Protective Equipment:		
Environmental:	Flammable - possible ignition of other landfill wastes. Potential groundwater contamination (from hydrocarbons) if disposed to landfill or directly on ground surface. Incineration without flue gas scrubber may produce toxic fumes.			
Health:	Skin irritation.			
Management Methods				
Waste Classification:	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> NWT: Non-Hazardous Waste Alberta: Non-Hazardous Waste/Non-DOW Saskatchewan: Non-Hazardous Waste </div> <div style="width: 45%;"> Manitoba: Non-Hazardous Waste Ontario: Hazardous Waste (251-I). Québec: Residual Hazardous Material </div> </div> <p>NOTE: Above classification unless low flash point, BTEX component or hydrocarbon content.</p>			
Storage:	Store in drums or containers with loose-fitting lids at field facility (may be provided by cleaning service). Keep in a well ventilated area away from heat sources. Do not mix with other rags used for chemicals.			
Treatment / Disposal:	<ul style="list-style-type: none"> Send or scheduled pick-up to oily rag cleaning service. If rags cannot be recycled, deposit in waste filter bins for removal by waste contractor. May be landfilled with knowledge of waste contractor and landfill operator. 			
Comments:	In provinces where oily rags are considered to be non-hazardous, they can be recycled through a cleaning or drycleaning service. However the cleaning effluent may pose a worse environmental contamination. Question the cleaner's operations on how its effluent is being disposed.			
Reportable Release Quantity:	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> NWT: 25 kg Alberta: 25 kg or litres Saskatchewan: 100 kg (50 kg off-site) Manitoba: 1 kg </div> <div style="width: 45%;"> Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): 25 kg </div> </div>			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
SOLIDS CONTAINING FLAMMABLE LIQUID N.O.S. ("Technical Name")	4.1	UN 3175	II	16,56
Placards:	Class 4.1 as appropriate (in bulk or over 500 kg).			
Comments:	If the rags are heavily oiled, they should be considered as a solid containing a flammable liquid. If dripping, they may be a FLAMMABLE LIQUID, N.O.S. Rags which are contaminated with other substances (e.g. chemicals) may also be TDG regulated. Depending on the level and type of contamination, oily rags may be considered spontaneously combustible, Class 4.2. Testing may be required.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e., manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Oily Rags
Waste Information Sheet
September 2016



Paints, Enamels & Stains

Waste Information Sheet

General Information					
Original Use:	Painting, etc.				
Physical State:	Liquids and dried paint, etc. in containers.				
Components:	Oil based paints, enamels, stain, shellac, varnishes and associated thinners are hazardous materials.				
Potential Hazards					
Class (WHMIS):	Dependent on type of paint.		MSDS:	Dependent on type of paint.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Surface water and groundwater contaminated. Vegetation damage. Fire hazard.				
Health:	High vapour concentrations may cause respiratory problems. Read container labels. Skin and eye irritants.				
Management Methods					
Waste Classification:	NWT:	Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste (145-B)	
	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material	
Storage:	Group common-based paints together. Keep in original containers. Liquid, grouped paints and associated materials should be stored in sealed lined drums or similar containers.				
Treatment / Disposal:	Coordinate paint projects to reduce excess leftover supplies. Use all paint in containers. Non-hazardous paint materials should be recycled. Possible some off-site recycling of some oil and metallic based paints.				
Comments:	See also "Containers - Paint, Stain, Enamel" Waste Information Sheet.				
Reportable Release Quantity: (if Class 3)	NWT:	100 litres	Ontario:	Any quantity	
	Alberta:	200 litres	Québec:	Any quantity	
	Saskatchewan:	25 litres (5 litres off-site)	TDG (includes loading / unloading):	200 litres	
	Manitoba:	100 litres			
Reportable Release Quantity: (if Class 8)	NWT:	5 kg or litres	Ontario:	Any quantity	
	Alberta:	5 kgs or litres	Québec:	Any quantity	
	Saskatchewan:	50 kgs (50 kgs off-site)	TDG (includes loading / unloading):	5 kgs or litres	
	Manitoba:	5 kgs or litres			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
PAINT (if flammable)		3	UN1263	I, II or III	59, 83
PAINT (if corrosive)		8	UN3066	II or III	59
Placards:	Dependent on TDG class.				
Comments:	TDGR classification subject to flash point testing. In addition, possible alternate classification may be - Shipping Name: PAINT or PAINT RELATED MATERIAL (used to describe paint, lacquer, stain, shellac, varnish, polish, liquid filler, liquid lacquer base, and paint thinning/reducing compounds).				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Paints, Enamels & Stains
Waste Information Sheet
September 2016



Pesticides / Herbicides

Waste Information Sheet

General Information				
Original Use:	Chemical solutions used to control unwanted plant growth on leases and right-of-ways.			
Physical State:	Poisonous liquid.			
Components:	Dependent upon type of pesticide.			
Potential Hazards				
Class (WHMIS):	WHMIS testing required to verify. B4; D1B, D2A	MSDS:	Specific to type of pesticide. See container or supplier's information.	
Hazard Symbols:		Protective Equipment:		
Environmental:	Container effluent may cause severe environmental damage (surface and groundwater contamination, vegetation damage, and subsequent soil erosion).			
Health:	Various effects. Inhalation of some herbicides/pesticides can cause death. Herbicides/pesticides can be absorbed through the eyes and skin.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste		
	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste		
	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material		
Storage:	Collect in seal drums or leave in existing containers. Do not allow rain water to enter containers.			
Treatment / Disposal:	Apply herbicides/pesticide to target vegetation areas - but only for non-residual herbicides. Disposal only to a Hazardous Waste Management Facility.			
Comments:	Use certified contractors for herbicide/pesticide applications for all chemical vegetation control, and ensure they properly dispose of all containers and associated wastes to designated facilities.			
Reportable Release Quantity:	NWT: Any quantity (free liquids)	Ontario: Any quantity (free liquids)		
	Alberta: Any quantity (free liquids)	Québec: Any quantity (free liquids)		
	Saskatchewan: Any quantity (free liquids)	TDG (includes loading / unloading): Any quantity (free liquids)		
	Manitoba: Any quantity (free liquids)			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>	-	-	-	-
Placards:	Dependent on specific contaminant.			
Comments:	Classifications for this waste may vary depending on the specific contaminant. There are a large number of TDG categories for herbicides/pesticides. Consult the supplier and TDG Regulations for specific TDG classification. See also "Containers – Herbicides/Pesticides" Waste Information Sheet.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Pesticides / Herbicides
Waste Information Sheet
September 2016



Pigging Waste - Liquid / Wax

Waste Information Sheet




General Information									
Original Use:	Crude oil production, pipeline transmission, and heavy oil production. Generated from pipeline cleaning operations that have pig receiving facilities and from cleaning and emptying pipeline strainer baskets								
Physical State:	Liquid or wax.								
Components:	Hydrocarbon paraffin, demulsifiers.								
Potential Hazards									
Class (WHMIS):	B2; B3; or B4								
Hazard Symbols:	<div style="text-align: center;"> </div>								
MSDS:	Hydrocarbon related MSDSs.								
Protective Equipment:	<div style="text-align: center;"> </div>								
Environmental:	Potential groundwater contamination if liquids are improperly contained in unlined ponds and pits. Hazardous air emissions if non-approved burn disposal. Potential groundwater and/or surface water contamination, vegetation damage if wax residuals applied to ground or roads.								
Health:	Not an inhalation hazard if < 38°C. High vapor concentration may irritate nose. Slight skin irritations.								
Management Methods									
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: Hazardous Waste</td> <td style="width: 50%;">Manitoba: Hazardous Waste</td> </tr> <tr> <td>Alberta: Hazardous Waste/DOW</td> <td>Ontario: Hazardous Waste (251-I)</td> </tr> <tr> <td>Saskatchewan: Waste Dangerous Good</td> <td>Québec: Residual Hazardous Material</td> </tr> </table>	NWT: Hazardous Waste	Manitoba: Hazardous Waste	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (251-I)	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material		
NWT: Hazardous Waste	Manitoba: Hazardous Waste								
Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (251-I)								
Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material								
Storage:	Contain in drums or other steel containers at field facility. Keep away from ignition and heat sources.								
Treatment / Disposal:	<ul style="list-style-type: none"> Send to a licensed oilfield reclaimer for product recovery. Recycle: Liquids - 100% of waste from crude oil pipelines may be recycled to crude oil slop tanks. Oil reclamation, with recycle to pipeline, followed by disposal of solids. Waxes - 100% of waste from crude oil pipelines may be recycled to refinery cooker units, diluted with hot oils and mixed with crude stream. 								
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: 100 litres</td> <td style="width: 50%;">Ontario: Any quantity</td> </tr> <tr> <td>Alberta: 200 litres</td> <td>Québec: Any quantity</td> </tr> <tr> <td>Saskatchewan: 100 litres</td> <td>TDG (includes loading / unloading): 200 litres</td> </tr> <tr> <td>Manitoba: 100 litres</td> <td></td> </tr> </table>	NWT: 100 litres	Ontario: Any quantity	Alberta: 200 litres	Québec: Any quantity	Saskatchewan: 100 litres	TDG (includes loading / unloading): 200 litres	Manitoba: 100 litres	
NWT: 100 litres	Ontario: Any quantity								
Alberta: 200 litres	Québec: Any quantity								
Saskatchewan: 100 litres	TDG (includes loading / unloading): 200 litres								
Manitoba: 100 litres									
TDG Information									
Shipping Name	Class	PIN	Packing Group	Special Provisions					
See TDG Comments below.	-	-	-	-					
Placards:									
Comments:	<p>If wax only with flash point >60°C, then not regulated if leachate test is OK.</p> <p>If ≤ 60°C, use FLAMMABLE LIQUIDS, N.O.S. (petroleum crude oil), Class 3, UN 1993, Packing Group II or III (establish packing group from flash point and boiling point tests).</p> <p>A representative wax sample should have tests performed to determine the possible leachates it may generate or its flammability. If wax test results meet TDG criteria, the wax could be classed as flammable or leachate toxic.</p>								
Documentation									
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.								
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.								

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Pigging Waste Liquids / Wax
Waste Information Sheet
September 2016



**Pipe Coating
(Coal Tar Wraps)**
Waste Information Sheet





General Information					
Original Use:	Coating applied to underground pipes, pipe joints, fittings, couplings, etc. to protect the metal surfaces from corrosion.				
Physical State:	Pliable, coated fabric or other pliable material in a wound roll, resembling a roll of tape. May also be in the form of a viscous liquid or sludge.				
Components:	Various substances; may include epoxies, phenols, polyaromatic hydrocarbons, asbestos and/or PCBs.				
Potential Hazards					
Class (WHMIS):	Dependent on specific coating type.		MSDS:	Use MSDS of specific coal tar wrap type.	
Hazard Symbols:			Protective Equipment:	 	
Environmental:	Coal tar is a known carcinogen to human and animal life.				
Health:	Various exposure limits dependent on the type of coal tar coating. May cause minor skin and eye irritation. Under fire conditions, may emit irritating/toxic fumes.				
Management Methods					
Waste Classification:	NWT:	Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta:	Dangerous Oilfield Waste	Ontario:	Hazardous Waste	
	Saskatchewan:	Hazardous Waste	Québec:	Residual Hazardous Material	
	Testing required. Dependent on specific waste chemical.				
Storage:	Store in a dry environment, away from continuous direct sunlight. Keep in original manufacturers packaging until ready to use.				
Treatment / Disposal:	<ul style="list-style-type: none"> Send to an appropriate waste management facility. Following appropriate disposal procedures if asbestos containing. 				
Comments:	Avoid over supply.				
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
See TDG Comments Below		-	-	-	-
Placards:	Dependent on specific waste chemical.				
Comments:	Dependent on specific waste chemical. If product was originally supplied as a dangerous good, then waste chemical is also a dangerous good. Use Shipping Name, Class, PIN, etc. of original shipment, unless original chemical properties have changed or contaminated with another dangerous good. If a mixture or solution of two or more dangerous goods, verify TDG Information with the Enbridge Environment Staff.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Pipe Coating (Coal Tar Wraps)
Waste Information Sheet
September 2016



Produced Sand
Waste Information Sheet

General Information					
Original Use:	Produced from heavy oil operations and some reservoirs that allow sand fines into the wellbore. Includes the sand, oil and water mixture contained in the bottom of field separator tanks and ecology pits. Also mixtures produced desanding processes (hydrocyclones).				
Physical State:	Sand, water and hydrocarbon mixture.				
Components:	Chlorides, carbonates, oil, aromatics (BTEX), trace heavy metals, arsenic.				
Potential Hazards					
Class (WHMIS):	B4; D2A	MSDS:	Use MSDS of specific components.		
Hazard Symbols:	 		Protective Equipment:	 	
Environmental:	The wastes high salt content may impact vegetation growth if a surface disposal method is used. Possible oil / phenol and salt migration into surface water and groundwater.				
Health:	Not an inhalation hazard if < 38°C. High vapor concentrations may irritate nose. Slight skin irritations.				
Management Methods					
Waste Classification:	NWT: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste			
	Alberta: Non-Dangerous Oilfield Waste	Ontario: Verify with Ontario MOECC			
	Saskatchewan: Non-Hazardous Waste	Québec: Verify with Québec MDDELCC			
Storage:	Secure in impermeable tanks or ecology pits at field facility. Provide bird deterrent measures.				
Treatment / Disposal:	<ul style="list-style-type: none"> Waste may be road-spread (depending on hydrocarbon content). Send to a licensed oilfield reclaimer for hydrocarbon recovery (if sufficient hydrocarbon content). Send to a salt cavern disposal facility (Newalta Hughenden, AB). Send to cement plant. 				
Comments:					
Reportable Release Quantity:	NWT: 25 kg	Ontario: Any quantity			
	Alberta: 2 m ³ (any amount off-site)	Québec: Any quantity			
	Saskatchewan: 1.6 m ³ (any amount off-site)	TDG (includes loading / unloading): 25 kg			
	Manitoba: 1 kg				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. ("Technical Name")		4.1	UN 3175	II	16, 56
Placards:	Class 4.1 or Class 3 (in bulk or over 500 kg)				
Comments:	If there is free liquid oil, use – Shipping Name PETROLEUM DISTILLATES, N.O.S, or PETROLEUM PRODUCTS, N.O.S., Class 3, UN 1268, Packing Group I, II, or III (establish packing group from flash point and boiling point tests).				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Produced Sand
Waste Information Sheet
September 2016



Sewage

Waste Information Sheet

General Information					
Original Use:	Human and waste water sewage generated at camp and office facilities. Synonyms: Biological wastes, black water.				
Physical State:	Liquid to sludge.				
Components:	Biological wastes, chlorine, sodium, and heavy metals.				
Potential Hazards					
Class (WHMIS):	Not Available	MSDS:	Not Available		
Hazard Symbols:	Protective Equipment: <div style="text-align: center;"> </div>				
Environmental:	Heavy metals can severely contaminate soils, surface water and groundwater. Generated gases can be flammable.				
Health:	Untreated sewage effluent can provide a medium for epidemic causing bacteria.				
Management Methods					
Waste Classification:	NWT: Non-Hazardous Waste Alberta: Non-Hazardous Waste/Non-DOW Saskatchewan: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste Ontario: Non-Hazardous Waste Québec: Residual Material			
Storage:	Contain in tanks or separate lined ponds.				
Treatment / Disposal:	<ul style="list-style-type: none"> Water conservation (usage and leak surveys). Effluent irrigation is viable but requires capital investment and engineering design (and applicable approvals/permits). Primary, secondary and tertiary treatment for water recovery, however larger capital investment required. Septic tanks and transport (if required) to local sewage treatment facility, if available, by commercial carrier. Sewage is usually regulated by the provincial public health act and/or clean water legislation. 				
Reportable Release Quantity:	The following release quantities apply if there was not an approval in place to discharge sewage. NWT: Any quantity Alberta: Any quantity Saskatchewan: Any quantity Manitoba: Any quantity Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): Any quantity				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>		N/A	N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply. Be aware of specific legislation applying in each province/territory to the disposal of sewage. Sewage is usually regulated by the provincial public health act and/or clean water legislation.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Sewage
Waste Information Sheet
September 2016



Sludge - Chemical

Waste Information Sheet

General Information				
Original Use:	Laboratory sump. Has various synonyms.			
Physical State:	Liquid sludge			
Components:	Various - dependent on specific analysis.			
Potential Hazards				
Class (WHMIS):	B2; B3; B4; C; D; or E - dependent on specific analysis	MSDS:	Various - dependent on specific analysis.	
Hazard Symbols:			Protective Equipment:	
Environmental:	Potential soil, surface water and groundwater contamination.			
Health:	Treat as a possible severe health hazard. May cause skin, eye and respiratory irritation.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste Alberta: Hazardous Waste/DOW Saskatchewan: Waste Dangerous Good	Manitoba: Hazardous Waste Ontario: Hazardous Waste Québec: Residual Hazardous Material		
Storage:	Leave in-situ or store in lined ponds or in tanks/barrels. Segregate from other waste sludges.			
Treatment / Disposal:	Hazardous - Hazardous Waste Management Facility. Possible contaminated soil treatment facility.			
Comments:	Treatment and disposal depends on specific analysis. Avoid long term collection of sludge - non-hazardous			
Reportable Release Quantity:	NWT: 5 kg or litres Alberta: 5 kg or litres Saskatchewan: 5 kg or litres Manitoba: 5 kg or litres	Ontario: Any quantity Québec: Any quantity	TDG (includes loading / unloading): 5 kg or litres	
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>	-	-	-	-
Placards:	Dependent on TDG Classification			
Comments:	Dependent on specific sludge analysis. Contact Enbridge Environment Staff.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			







Need further information?
Contact Enbridge Environment Staff in Edmonton.

Sludge – Chemical
Waste Information Sheet
September 2016



Sludge - Hydrocarbon

Waste Information Sheet

General Information				
Original Use:	Oil production, transportation and storage operations. Waste sludge from the bottom of crude oil storage tanks, separators, inlet separators, slop tanks, flare knockouts, etc.			
Physical State:	Black viscous liquid sludge (semi-solid). Strong hydrocarbon odor.			
Components:	Hydrocarbons, asphaltenes, corrosion inhibitors, iron oxides, iron sulphides, sand, silt.			
Potential Hazards				
Class (WHMIS):	B4	MSDS:	Use MSDS of specific components (e.g.; Crude oil, Iron sulphide).	
Hazard Symbols:		Protective Equipment:	    	
Environmental:	Waste characterization required to identify pollution concerns. Potential surface, groundwater, and soil contamination. Toxic leachate from possible high lead levels.			
Health:	Not an inhalation hazard if < 38°C. May cause skin, eye, and respiratory irritation.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste		
	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (251-I)		
	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material		
Storage:	<ul style="list-style-type: none"> Large volumes may be temporarily stored in lined pits. For lesser volumes store in tanks or barrels. 			
Treatment / Disposal:	<ul style="list-style-type: none"> Send to a licensed reclaimer for product recovery and disposal. Send to a waste contractor for potential treatment and disposal. Spread and treat waste on-site. Contact Enbridge Environment Staff. 			
Comments:				
Reportable Release Quantity:	NWT: 100 litres (liquid); 25 kg (solid)	Ontario: Any quantity		
	Alberta: 2 m ³ (or any amount off-site)	Québec: Any quantity		
	Saskatchewan: 1.6 m ³ (or any amount off-site)	TDG (includes loading / unloading): 25 kg		
	Manitoba: 100 litres (liquid); 1 kg (solid)			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
See TDG Comments Below	-	-	-	-
Placards:	Dependent on specific contaminant.			
Comments:	Classifications for this waste may vary depending on the specific contaminant. This waste is subject to a wide variability in its flammability, corrosiveness and specific chemical components. This waste has to be tested to determine if it meets any of the TDG classification criteria and, if required, a leachate test. Potential classes are 3, 4.1, 4.2.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Sludge – Hydrocarbon
Waste Information Sheet
September 2016



**Spent Abrasives -
Containing Paint Coating
(Lead or Chromium)**
Waste Information Sheet

General Information																	
Original Use:	Paint coating on tanks and equipment.																
Physical State:	Solids																
Components:	Silica sand or metal shot containing abraded paint coating. Coating may contain lead or chromium. When used on pipes covered with coal tar and/or asbestos, refer to the corresponding WIS Pipe Coating (Coal Tar Wraps) and/or Asbestos.																
Potential Hazards																	
Class (WHMIS):	MSDS:																
Hazard Symbols: <div align="center"> </div>	Protective Equipment: <div align="center"> </div>																
Environmental:	May contaminate soil, surface water and groundwater.																
Health:	Breathing of particulate may cause respiratory complications. Skin and eye irritants.																
Management Methods																	
Waste Classification:	<table style="width:100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 25%;">Testing Required</td> <td style="width: 25%;">Manitoba:</td> <td style="width: 25%;">Testing Required</td> </tr> <tr> <td>Alberta:</td> <td>Testing Required</td> <td>Ontario:</td> <td>Testing Required</td> </tr> <tr> <td>Saskatchewan:</td> <td>Testing Required</td> <td>Québec:</td> <td>Testing Required</td> </tr> </table>	NWT:	Testing Required	Manitoba:	Testing Required	Alberta:	Testing Required	Ontario:	Testing Required	Saskatchewan:	Testing Required	Québec:	Testing Required				
NWT:	Testing Required	Manitoba:	Testing Required														
Alberta:	Testing Required	Ontario:	Testing Required														
Saskatchewan:	Testing Required	Québec:	Testing Required														
Storage:	Store abrasive in original container prior to use. Store spent abrasive in container or tank lot prior to disposal.																
Treatment / Disposal:	Hazardous Waste Management Facility - possible landfill that will receive hazardous wastes - confirm with waste contractor and landfill operator.																
Comments:	Spent abrasive should be analyzed for leachate (TCLP) content prior to disposal (lead, chromium, total hydrocarbon). Leachate criteria varies in different provinces. If required, consult Enbridge Environment Staff for appropriate leachate criteria.																
Reportable Release Quantity:	<table style="width:100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 25%;">5 kg or litres</td> <td style="width: 25%;">Ontario:</td> <td style="width: 25%;">Any quantity</td> </tr> <tr> <td>Alberta:</td> <td>5 kg or litres</td> <td>Québec:</td> <td>Any quantity</td> </tr> <tr> <td>Saskatchewan:</td> <td>2 kg</td> <td colspan="2">TDG (includes loading / unloading): 5 kg or litres</td> </tr> <tr> <td>Manitoba:</td> <td>5 kg or litres</td> <td colspan="2"></td> </tr> </table>	NWT:	5 kg or litres	Ontario:	Any quantity	Alberta:	5 kg or litres	Québec:	Any quantity	Saskatchewan:	2 kg	TDG (includes loading / unloading): 5 kg or litres		Manitoba:	5 kg or litres		
NWT:	5 kg or litres	Ontario:	Any quantity														
Alberta:	5 kg or litres	Québec:	Any quantity														
Saskatchewan:	2 kg	TDG (includes loading / unloading): 5 kg or litres															
Manitoba:	5 kg or litres																
TDG Information																	
Shipping Name	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th align="center">Class</th> <th align="center">PIN</th> <th align="center">Packing Group</th> <th align="center">Special Provisions</th> </tr> </thead> <tbody> <tr> <td align="center" colspan="4">See TDG Comments Below</td> </tr> </tbody> </table>	Class	PIN	Packing Group	Special Provisions	See TDG Comments Below											
Class	PIN	Packing Group	Special Provisions														
See TDG Comments Below																	
Placards:	Dependent on specific contaminant.																
Comments:	Testing required. Classifications for this waste may vary depending on the specific contaminant.																
Documentation																	
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.																
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.																

Need further information?
Contact Enbridge Environment Staff in Edmonton.

**Spent Abrasives -
Containing Paint Coating (Lead or Chromium)**
Waste Information Sheet
September 2016



**Sulfatreat - Hydrogen Sulfide
Treatment**
Waste Information Sheet

General Information				
Original Use:	Removes hydrogen sulfide from gases.			
Physical State:	Granular solid.			
Components:	Montmorillonite, water, iron oxides, silica			
Potential Hazards				
Class (WHMIS):	D2A, D2B	MSDS:	SULFATREAT 410 HP	
Hazard Symbols:		Protective Equipment:		
Environmental:	Non-toxic.			
Health:	Dust may cause eye, skin and respiratory tract irritation. Long term inhalation of particulates may cause lung damage.			
Management Methods				
Waste Classification:	NWT: Non-Hazardous Alberta: Non-Hazardous/DOW Saskatchewan: Non-Hazardous	Manitoba: Non-Hazardous Ontario: Non-Hazardous Québec: Residual Material		
Storage:	Keep away from heat, sparks and flame. Keep segregated from strong acids and strong oxidizers.			
Treatment / Disposal:	Recover and reclaim or recycle, where possible. Send/transfer to an approved landfill, unless believed to have changed properties and/or become contaminated with a dangerous good that would render it a hazardous waste.			
Comments:				
Reportable Release Quantity:	NWT: N/A Alberta: N/A Saskatchewan: N/A Manitoba: N/A	Ontario: N/A Québec: N/A TDG (includes loading / unloading): N/A		
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>	N/A	N/A	N/A	N/A
Placards:	N/A			
Comments:	If the waste is contaminated or has changed properties from its original state, TDG Regulations may apply.			
Documentation				
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			
Need further information? Contact Enbridge Environment Staff in Edmonton.			Sulfatreat – Hydrogen Sulfide Treatment Waste Information Sheet September 2016	



Tank Seals

Waste Information Sheet


General Information				
Original Use:	Storage tank roof seals. "Foam logs" and fabric seals which are stained or soaked with crude oil. Synonyms: Neoprene, rubber or canvas seals.			
Physical State:	Solids (metal, neoprene) contaminated with crude oil.			
Components:	Liquid hydrocarbons, asphalt, possible heavy metals. Waste should be analyzed.			
Potential Hazards				
Class (WHMIS): B4	MSDS: Crude Oil			
Hazard Symbols: <div style="text-align: center;"></div>	Protective Equipment: <div style="text-align: center;"> </div>			
Environmental:	Potential for soil and groundwater contamination if improperly stored or landfilled.			
Health:	High vapour concentrations may irritate inhalation. Slight skin irritations.			
Management Methods				
Waste Classification:	<div style="display: flex; justify-content: space-between;"> <div> NWT: Hazardous Waste Alberta: Hazardous Waste/DOW Saskatchewan: Waste Dangerous Good </div> <div> Manitoba: Hazardous Waste Ontario: Hazardous Waste (251-I) Québec: Residual Hazardous Material </div> </div> <p>Note: Above classification if significant hydrocarbon content.</p>			
Storage:	Temporary storage on-site; if potential exists for liquid contaminants (oil) then store in lined area, tanks or barrels. Prevent additional soil contamination by protecting from rain and snow melt.			
Treatment / Disposal:	<ul style="list-style-type: none"> • Pretreatment: Seals and steel must be cleaned by scraping, wiping, draining, or steam cleaning. • Hazardous – Hazardous Waste Management Facility • Non-hazardous – Landfill: contact landfill operator for specific instructions before shipment. 			
Comments:	<ul style="list-style-type: none"> • See also Waste Information Sheets on Metal - Scrap and Water - Oily. Reduce quantity of oily water that results from steam cleaning by storing steel until sufficient quantities (storage restrictions may apply). Ensure that metal recyclers only take "cleaned" metal. Seals may require sampling prior to disposal. Contact Enbridge Environment Staff for assistance. 			
Reportable Release Quantity:	<div style="display: flex; justify-content: space-between;"> <div> NWT: 25 kg Alberta: 25 kg or litres Saskatchewan: 100 kg (50 kg off-site) Manitoba: 1 kg </div> <div> Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): 25 kg </div> </div>			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
FLAMMABLE SOLID, ORGANIC N.O.S. (“Technical Name”)	4.1	UN 1325 **ERAP**	II or III	16
Placards:	4.1 Flammable Solid			
Comments:	If there is little or no oil content, waste tank seals could be non-hazardous and not TDG regulated. **ERAP** Cannot offer for transport dangerous goods having PIN UN2846 when the quantity of that good exceeds 1,000 kg or litres for the dangerous goods without an Emergency Response Assistance Plan approved by Transport Canada. Verify with the Enbridge Environment Staff.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Tank Seals
Waste Information Sheet
September 2016



Tape - Denso
Waste Information Sheet

General Information					
Original Use:	Tape: Pipeline water-proofing and protection against corrosion. Paste: Priming metal prior to the application of anti-corrosion (Denso) tape. Synonyms: Denso Paste.				
Physical State:	Brown paste or brown paste impregnated tape.				
Components:	Tape: Hydrocarbon was (petrolatum), china clay and polyester fibre fabric. Paste: China clay and petrolatum (petroleum jelly).				
Potential Hazards					
Class (WHMIS):	Not a controlled product.		MSDS:	Denso paste and Denso tape.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Combustion will produce carbon monoxide and carbon dioxide.				
Health:	Prolonged and repeated contact may irritate skin.				
Management Methods					
Waste Classification:	NWT: Non-Hazardous Waste		Manitoba: Non-Hazardous Waste		
	Alberta: Non-Hazardous Waste/Non-DOW		Ontario: Non-Hazardous Waste		
	Saskatchewan: Non-Hazardous Waste		Québec: Residual Material		
Storage:	Store in original supplier packaging/containers. Store in cool conditions. Avoid heat and flame.				
Treatment / Disposal:	Non-hazardous: Landfill - for large waste quantities contact landfill operator in advance.				
Comments:					
Reportable Release Quantity:	NWT: N/A		Ontario: N/A		
	Alberta: N/A		Québec: N/A		
	Saskatchewan: N/A		TDG (includes loading / unloading): N/A		
	Manitoba: N/A				
TDG Information					
Shipping Name			Class	PIN	Packing Group
<i>Not TDG Regulated</i>			N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				


Need further information?
Contact Enbridge Environment Staff in Edmonton.

Tape – Denso
Waste Information Sheet
September 2016



Tires

Waste Information Sheet

General Information					
Original Use:	Automobile and truck tires. Used tires for pipe supports in pipeline construction. Synonyms: Rubber.				
Physical State:	Solid				
Components:	Rubber, Steel belt, additives.				
Potential Hazards					
Class (WHMIS):	Not a controlled product.		MSDS:	Not applicable.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Non-biodegradable or crushable.				
Health:	No hazards.				
Management Methods					
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material	
Storage:	Store in neat short stacks with space between rows - not in a haphazard pile. Do not store for extensive time periods. Avoid rainwater collection.				
Treatment / Disposal:	Most provinces have a tire recycling program in place. Perform vehicle maintenance at service stations with a tire recycling program in place.				
Comments:	Ensure that tires are segregated at landfill. Possible spontaneous combustion in landfills due to air cavities - non-biodegradable or crushable.				
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name			Class	PIN	Packing Group
<i>Not TDG Regulated</i>			N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Tires
Waste Information Sheet
September 2016



Wash Fluids - Solvents

Waste Information Sheet

General Information				
Original Use:	Waste includes solvents from equipment cleaning operations.			
Physical State:	Clear / cloudy liquid. Hydrocarbon odor.			
Components:	Tetra and trichloroethylene, xylene, acetone, ethyl acetate, methyl isobutyl ketone, n-butyl alcohol, cyclohexane, methanol, creosols, cresylic acid, toluene, carbon disulphide, isobutane, pyridine, ammonia based substances and hydrocarbon bases (kerosene).			
Potential Hazards				
Class (WHMIS):	D2A, B2	MSDS:	Use MSDS of specific wash components.	
Hazard Symbols:			Protective Equipment:	
Environmental:	A highly mobile waste stream. Potential for groundwater and soil contamination. Possible toxic vapors and fire hazard with on-site recycling operations.			
Health:	May cause skin, eye and respiratory irritation. Most solvents are toxic.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste		
	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste		
	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material		
Storage:	Store in closed tanks or sealed drums at field facility. Keep containers closed and away from sources of heat and ignition. Store unused fluids in original containers inside of sealed drums with sorbents.			
Treatment / Disposal:	<ul style="list-style-type: none"> Hydrocarbon / solvent / crude oil mixtures may be recycled. Send to a licensed solvent recycler. Send to a Hazardous Waste Management Facility 			
Comments:	<ul style="list-style-type: none"> Use non-hydrocarbon based wash fluids when possible. Do not use chlorinated hydrocarbons (e.g. methylene) as cleaning solvents. Halogenated organic solvents must be segregated from all other waste streams. 			
Reportable Release Quantity: (if Class 3)	NWT: 100 litres	Ontario: Any quantity		
	Alberta: 200 litres	Québec: Any quantity		
	Saskatchewan: 25 litres (5 litres off-site)	TDG (includes loading / unloading): 200 litres		
	Manitoba: 100 litres			
Reportable Release Quantity: (if Class 6)	NWT: 5 kg or litres	Ontario: Any quantity		
	Alberta: 5 kgs or litres	Québec: Any quantity		
	Saskatchewan: 25 litres (5 litres off-site)	TDG (includes loading / unloading): 5 kgs or litres		
	Manitoba: 50 litres (10 litres off-site)			
TDG Information				
Shipping Name		Class	PIN	Packing Group
See TDG Comments below.		-	-	-
Placards:	Class 3, 6, 8 or 9 as appropriate (in bulk or over 500 kg.).			
Comments:	Solvents can be classified as Flammable Liquids (Class 3), Poisonous (Class 6), and Corrosive (Class 8). Refer to supplier information for TDG classification.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Wash Fluids – Solvents
Waste Information Sheet
September 2016



Wash Fluids - Water

Waste Information Sheet

General Information				
Original Use:	Waste includes water used for equipment, buildings and process area water / steam cleaning and maintenance, drains, and runoff water.			
Physical State:	Liquid.			
Components:	Water, iron oxides, calcium carbonate, sand / silt, trace hydrocarbons, crude oil, lube oil, salts, metals (lead, chromium, thallium).			
Potential Hazards				
Class (WHMIS): D2A	MSDS: Use MSDS of specific wash components.			
Hazard Symbols: <div style="text-align: center; font-size: 2em;">⚠</div>	Protective Equipment: <div style="text-align: center;"> </div>			
Environmental:	Potential groundwater contamination (from hydrocarbon and metal leaching) if improperly stored in an unlined pond. Potential surface water and soil contamination.			
Health:	Not an inhalation hazard if < 38°C. High vapor concentrate may irritate nose and throat. Slight skin irritations.			
Management Methods				
Waste Classification: NWT: Testing Required Alberta: Testing Required Saskatchewan: Testing Required	Manitoba: Testing Required Ontario: Testing Required Québec: Testing Required			
Storage:	Process wash waters are usually handled in a closed system (sumps). For open systems contain in drums or, if necessary, in lined ponds (if no possibility of mixing with other water).			
Treatment / Disposal:	<ul style="list-style-type: none"> Dispose to slop system. If significant quantities, send to third party disposal well. Contact Enbridge Environment Staff for assistance 			
Comments:	Recover hydrocarbons before disposal. Minimize the generation of mists or vapours. Waste waters with more than 3% oils may allow for the recovery of hydrocarbons at approved reclaimers or via on-site separation equipment.			
Reportable Release Quantity:	NWT: 5 kgs or litres Alberta: 5 kgs or litres Saskatchewan: 5 kgs or litres Manitoba: 5 kgs or litres Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): 5 kgs or litres			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>	-	-	-	-
Placards:	Dependent on specific contaminant.			
Comments:	Classifications for this waste may vary depending on the specific contaminant and is dependent on the nature of cleaners and surfaces cleaned. If waste is commingled with other produced waters then use the classification for produced water. If separated (not commingled), the TDG classification is dependent on the nature of the cleaners used and other contaminants (hydrocarbons).			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Wash Fluids – Water
Waste Information Sheet
September 2016



Water - Oily

Waste Information Sheet

General Information																				
Original Use:	Wash waters, cooling waters, buildings, drains, steam cleaning operations and may include run-off water. Collected in sumps. Synonyms: Waste water, waste water pond water, run-off holding pond water, roof run-off water, steam cleaning water.																			
Physical State:	Liquid																			
Components:	Water, iron oxides, calcium carbonate, sand/silt, oil and grease, trace metals (lead, chromium, thallium), BTEX.																			
Potential Hazards																				
Class (WHMIS):	B4	MSDS:	Crude Oil.																	
Hazard Symbols:			Protective Equipment:																	
Environmental:	Waste may contain polyaromatic hydrocarbons and volatile which will generate toxic fumes during decomposition of the waste. May also contain trace metals and sulfides. Potential groundwater contamination (metals, hydrocarbons) if stored in an unlined pond																			
Health:	Not an inhalation hazard below 38°C. High vapour concentrate may irritate nose. Slight skin irritations.																			
Management Methods																				
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 35%;">Non-Hazardous Waste</td> <td style="width: 25%;">Manitoba:</td> <td style="width: 15%;">Non-Hazardous Waste</td> </tr> <tr> <td>Alberta:</td> <td>Non-Hazardous Waste/Non-DOW</td> <td>Ontario:</td> <td>Non-Hazardous Waste (251-L)</td> </tr> <tr> <td>Saskatchewan:</td> <td>Non-Hazardous Waste</td> <td>Québec:</td> <td>Residual Material</td> </tr> </table> <p>NOTE: Above classification unless low flash point, BTEX or hydrocarbon content.</p>				NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste (251-L)	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material				
NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste																	
Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste (251-L)																	
Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material																	
Storage:	Oil water should usually be handled in a closed system. Store in tanks. If necessary, impervious earthen/lined ponds if there is no possibility of mixing with other waters.																			
Treatment / Disposal:	<ul style="list-style-type: none"> Waste waters containing more than 3% oils may allow for the recovery of hydrocarbons at approved reclaimers. Deep Well Disposal. Possible watershed release after treatment and approval from government environment department. Contact Enbridge Environment Staff for assistance. 																			
Comments:	The construction and operation of any facilities designed for the treatment of waste waters will require approval by the provincial environmental agency.																			
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 35%;">100 litres</td> <td style="width: 25%;">Ontario:</td> <td style="width: 15%;">Any quantity</td> </tr> <tr> <td>Alberta:</td> <td>200 litres</td> <td>Québec:</td> <td>Any quantity</td> </tr> <tr> <td>Saskatchewan:</td> <td>Any quantity</td> <td>TDG (includes loading / unloading):</td> <td>200 litres</td> </tr> <tr> <td>Manitoba:</td> <td>100 litres</td> <td></td> <td></td> </tr> </table>				NWT:	100 litres	Ontario:	Any quantity	Alberta:	200 litres	Québec:	Any quantity	Saskatchewan:	Any quantity	TDG (includes loading / unloading):	200 litres	Manitoba:	100 litres		
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Alberta:	200 litres	Québec:	Any quantity																	
Saskatchewan:	Any quantity	TDG (includes loading / unloading):	200 litres																	
Manitoba:	100 litres																			
TDG Information																				
Shipping Name		Class	PIN	Packing Group																
<i>See TDG Comments Below</i>		-	-	-																
Placards:	Dependent on specific contaminant.																			
Comments:	Generally not TDG regulated. However, the TDG classification is dependent on the hydrocarbon content (flammable) and leachate test. If hydrocarbon contents are high the waste may be Classed as; FLAMMABLE LIQUIDS, N.O.S. ("Technical Name"), Class 3, UN 1993.																			
Documentation																				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.																			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.																			



Need further information?
Contact Enbridge Environment Staff in Edmonton.

Water – Oily
Waste Information Sheet
September 2016



Water - Produced

Waste Information Sheet

General Information				
Original Use:	Includes all water separated from hydrocarbon streams during all phases of oil and gas production and transportation.			
Physical State:	Liquid. Synonyms - salt water, tank drawdown water.			
Components:	Chlorides, benzene, toluene, ethylbenzene, naphthalene, phenols, water, dissolved solids and organic carbon.			
Potential Hazards				
Class (WHMIS):	B2, B3, D1B, D2A	MSDS:		
Hazard Symbols:		Protective Equipment: <div style="display: flex; justify-content: space-around; align-items: center;">    </div>		
Environmental:	Potential groundwater contamination. Potential surface water and soil contamination (salt) from spillage. Possible contamination of disposal formation (if deep well disposed). Extremely persistent compound which is toxic to the environment in high concentrations.			
Health:	Not hazard below 38°C. High vapor concentrate may irritate nose. Slight skin irritations.			
Management Methods				
Waste Classification:	NWT: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste		
	Alberta: Non-Hazardous Waste/Non-DOW	Ontario: Non-Hazardous Waste		
	Saskatchewan: Non-Hazardous Waste	Québec: Residual Material		
Storage:	Minimize the generation of mists or vapors. Store in tanks.			
Treatment / Disposal:	Produced formation waters should be segregated from all other waste waters. Should only be handled in a closed system. Deep well disposal.			
Comments:	Drainage onto tank lots can increase lease restoration costs.			
Reportable Release Quantity:	NWT: 100 litres	Ontario: Any quantity		
	Alberta: 200 litres	Québec: Any quantity		
	Saskatchewan: Any quantity	TDG (includes loading / unloading): 200 litres		
	Manitoba: 100 litres			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>	-	-	-	-
Placards:				
Comments:	Generally not TDG regulated, but may be classified as a flammable product dependent on hydrocarbon content. May also be tested for possibility of leachates. Contact Enbridge Environment Staff.			
Documentation				
Transportation Documents:				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			
Need further information? Contact Enbridge Environment Staff in Edmonton.			Water – Produced Waste Information Sheet September 2016	

Appendix B

Spill Contingency Plan



DILLON
CONSULTING

ENBRIDGE PIPELINES (NW) INC.
Spill Contingency Plan

Line 21 Planned Maintenance at KP 158 near Little Smith Creek

August 2020, Rev. 2 – 18-8582

Plain Language Summary

Enbridge Pipelines (NW) Inc. (Enbridge) is proposing to replace a segment of the Line 21 pipeline southeast of kilometre post (KP) 158 near Little Smith Creek in the Northwest Territories (the Project).

This Spill Contingency Plan (the Plan) has been developed for use by Enbridge and its Contractors and applies to all Project activities as described in **Section 2.0**. It was developed in accordance with the Crown-Indigenous Relations and Northern Affairs Canada *Guidelines for Spill Contingency Planning* (Indian and Northern Affairs Canada 2007). A copy of this Plan will be available to all Project personnel.

This Plan forms part of an application package prepared to satisfy the requirements of the Sahtú Land and Water Board (SLWB) for a Type A Land Use Permit and Type B Water License. In conjunction with this Plan, Enbridge has prepared a Waste Management Plan, Closure and Reclamation Plan, and Environmental and Socio-Economic Assessment for the Project. A Project-specific Environmental Protection Plan will be prepared prior to construction.

The purpose of this Plan is to provide guidance to on-site personnel in the event of an accidental release of wastes or hazardous materials during Project activities. It provides the protocols for personnel to follow in response to a spill. To be effective, it is important that all personnel are familiar with their responsibilities and the steps to take in the event of a spill.

This Plan will be effective at the commencement of construction activities and will be updated to reflect site-specific conditions, as required.

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Acronyms, Abbreviations and Definitions

CIRNAC	<i>Crown-Indigenous Relations and Northern Affairs Canada</i>
Enbridge	Enbridge Pipelines (NW) Inc.
EPP	<i>Environmental Protection Plan</i>
GNWT	Government of Northwest Territories
HDD	<i>Horizontal Directional Drill</i>
INAC	Indian and Northern Affairs Canada
km	kilometre(s)
KP	Kilometre Post
L	Litre(s)
m	metre(s)
NPS	Nominal Pipe Size
NWT	Northwest Territories
ROW	Right-of-Way
SLWB	Sahtú Land and Water Board
the Project	<i>Replacement of a segment of the Line 21 pipeline southeast of KP 158 near Little Smith Creek in the Northwest Territories</i>
the Plan	<i>Spill Contingency Plan</i>

1.0 Introduction and Background

Enbridge Pipelines (NW) Inc. (Enbridge) is proposing to replace a segment of the Line 21 pipeline southeast of kilometre post (KP) 158 near Little Smith Creek in the Northwest Territories (NWT) (the Project). Enbridge retained Dillon Consulting Limited (Dillon) to prepare a Spill Contingency Plan (the Plan) in support of regulatory and permitting applications for the Project.

Contact information for Enbridge is provided in Table 1.

Table 1: Project Contacts

Name	Role	Address	Telephone	Email
Robert Gagnon	Project Manager	10175 101 St NW, Edmonton, Alberta T5J 0H3	(780) 392-4878	Robert.Gagnon@enbridge.com
Sarah McKenzie	Regulatory Lead	10175 101 St NW, Edmonton, Alberta T5J 0H3	(780) 420-5375	Sarah.McKenzie@enbridge.com

1.1 Purpose and Scope of Plan

This Plan has been developed for use by Enbridge and its Contractors and applies to all Project activities as described in **Section 2.0**. It was developed in accordance with the Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) *Guidelines for Spill Contingency Planning* (Indian and Northern Affairs Canada [INAC] 2007). A copy of this Plan will be available to all Project personnel.

This Plan forms part of an application package prepared to satisfy the requirements of the Sahtú Land and Water Board (SLWB) for a Type A Land Use Permit and Type B Water License. In conjunction with this Plan, Enbridge has prepared a Waste Management Plan, Closure and Reclamation Plan, and Environmental and Socio-Economic Assessment for the Project. A Project-specific Environmental Protection Plan (EPP) will be prepared prior to construction.

The purpose of this Plan is to provide guidance to on-site personnel in the event of an accidental release of wastes or hazardous materials during Project activities. It provides the protocols for personnel to follow in response to a spill. To be effective, it is important that all personnel are familiar with their responsibilities and the steps to take in the event of a spill.

This Plan will be effective at the commencement of construction activities and will be updated to reflect site-specific conditions, as required.

1.0 Introduction and Background 2

1.2 Environmental Policy

Enbridge believes that minimizing the environmental footprint and impact associated with our activities delivers value to shareholders, customers and employees. Enbridge's Environmental Management System, including its environmental protection program, has been established to protect and sustain the environment throughout the lifecycle of design, construct, maintain and operate, and decommission and abandon, and to anticipate, prevent, manage, and mitigate conditions that could adversely affect the environment.

Enbridge's Environmental Policy provides the philosophy and approach for responsible environmental management and supports values of integrity, safety, and respect, which guide our actions, policies, procedures and culture.

Enbridge's goal is to foster an educational, just, and flexible organizational culture where environmental excellence is an integral element in the conduct of our business.

Enbridge is committed to:

- Identifying interactions and potential impacts on the environment;
- Minimizing adverse environmental effects through effective planning and execution;
- Complying with government regulations and applicable industry standards;
- Effectively responding to unanticipated events;
- Providing appropriate training to ensure employees and contract workers understand their responsibility to protect the environment;
- Promoting a culture where environmental excellence is everyone's responsibility;
- Actively engaging with the public and government regarding environmental activities;
- Learning from past experiences in order to continually improve competency and performance; and
- Maintaining a non-retaliatory culture that encourages reporting and investigation of environmental hazards, potential hazards, near-misses, incidents, and non-compliances.

2.0 Project Description

The Project is located in the Sahtú Region of the NWT, approximately 80 kilometres (km) southeast of the hamlet of Tulita and approximately 140 km southeast of the Town of Norman Wells (see Figure 1 in Appendix A).

The Project is required to protect the Line 21 pipeline from potential impacts of slope instability at a meander bend along Little Smith Creek near KP 158 and to support the continued safe operation of the pipeline.

2.1 Project Components

The Project involves the removal of an approximately 510-metre (m) segment of the existing Line 21 pipeline (nominal pipe size [NPS] 12) and replacing it with a new, approximately 520-m NPS 12 pipeline segment at a greater depth of cover. Enbridge is planning to install the new pipeline segment via horizontal directional drill (HDD) within the existing Enbridge right-of-way (ROW), and no new land rights are required for operation; however, some temporary workspace, located on privately-held Sahtú lands administered by the Tulita District Land Corporation, will be required in order to accommodate construction activities.

The Project will require upgrades to existing access roads, as well as the following temporary infrastructure:

- Construction camps (up to three small camps);
- Laydown yard (fuel and equipment storage);
- Potential barge landing (upgrades to an existing site on the Mackenzie River); and
- Temporary workspace:
 - HDD work sites (entry and exit points, and false ROW for trenchless pipe drag section); and
 - Pipeline stopple/tie-in locations

Refer to Figure 1 and Figure 2 in Appendix A for the locations of Project components.

2.2 Environmentally Sensitive Areas

Little Smith Creek, the Mackenzie River, and some low-lying wet areas near the access road to the barge landing site are considered environmentally sensitive areas, in addition to a 30-m setback from each feature. No sensitive habitat or rare species were observed during field surveys conducted for the Project.

Figure 2 in Appendix A shows the location of the environmentally sensitive areas in relation to the Project, as well as the 30-m buffer.

2.0 Project Description 4

2.3 Potential Contaminants

Over the course of the construction phase of the Project, several materials may be used or generated that could potentially be contaminants if released to the environment, including:

- Fuels (gasoline, diesel, and propane);
- Lubricating oils and grease;
- Hydraulic and motor oil;
- Antifreeze and other coolants;
- Camp sewage and greywater; and
- Solid waste from construction.

Waste information sheets for potential contaminants that may be encountered on the Project are provided in Appendix B.

Anticipated fuel types and containment requirements are presented in Table 2.

Table 2: Anticipated Fuel Types and Quantities

Fuel Type	Number of Containers	Capacity of Container	Type of Container	Proposed Storage Location(s)
Gasoline	4	1,500 L	Pick-up Truck Tank	Camp/Laydown Yard
Gasoline	1	20,000 L	Double Containment Tank	Camp/Laydown Yard
Diesel	2	50,000 L	Double Containment Tank	Camp/Laydown Yard
Diesel	4	1,500 L	Pick-up Truck Tank	Camp/Laydown Yard
Propane	20	1,000 L	Steel Tank	Camp/Laydown Yard
Propane	20	20 Lbs	Steel Tank	Construction Site

2.4 Activities Potentially Causing or Resulting in Spills or Releases

Spills may result from any of the following occurrences:

- Overfilling, leaks, or ruptures of storage drums or tanks;
- Valve or line failure in systems, vehicles, or heavy equipment;
- Heat expansion due to overfilling or improper storage;
- Vehicular accidents;
- Fuel transfer;
- Equipment or containment structure failures;
- Improper or unauthorized discharge to the ground surface; and
- Vandalism.

The following potential environmental impacts may result from spills. These potential impacts represent the worst-case scenario, as per the *Guidelines for Spill Contingency Planning* (INAC 2007).

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Spill Contingency Plan - Line 21 Planned Maintenance at KP 158 near Little Smith Creek

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2.0 Project Description 5

- Gasoline: Harmful to wildlife and aquatic life. It is not readily biodegradable and has the potential for bioaccumulation in the environment. Gasoline is quick to volatilize. Runoff into water bodies must be avoided.
- Diesel fuel: Harmful to wildlife and aquatic life. It is not readily biodegradable and has the potential for bioaccumulation in the environment. Diesel burns slowly, therefore, the risk to the environment is reduced during recovery, as burn can be more readily contained than volatile fuels. Runoff into waterbodies must be avoided.
- Propane: Harmful to wildlife and the surrounding environment. It has the potential to accumulate in the environment. Propane is extremely volatile and is the most flammable material stored on-site.
- Waste oil/grease: Harmful to wildlife and aquatic life. It is not readily biodegradable and has the potential for bioaccumulation in the environment. Runoff into waterbodies must be avoided.

Should significant quantities of potential contaminants be released to the terrestrial or aquatic environment, adverse impacts to human health, vegetation, wildlife, and fish could occur. Equipment, storage areas, and containers will be regularly inspected by Project personnel to reduce the potential for a spill or release.

3.0 Response Organization

The Contractor will be responsible for implementing this Plan during the construction program. The figure below presents the notification and implementation procedure for the Plan upon discovering a leak or release.

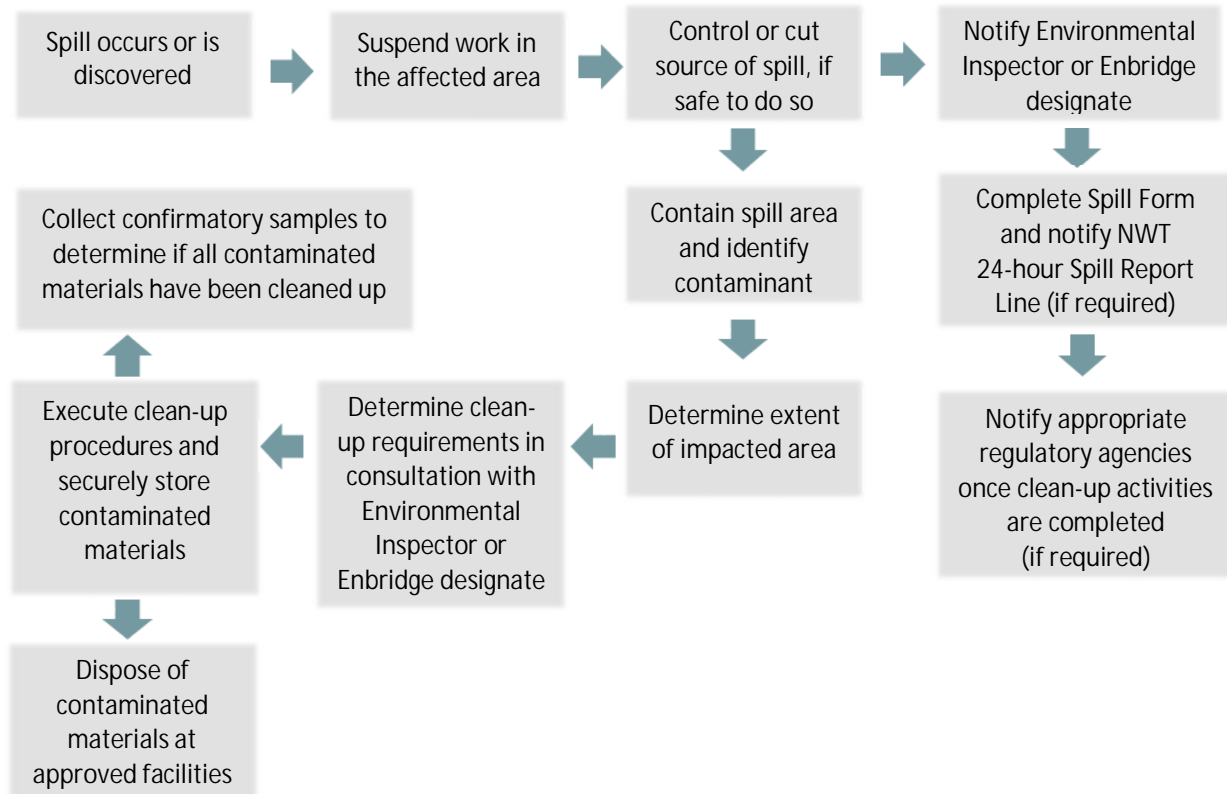


Figure 1: Spill Response Flow Chart

A reportable spill is defined as a release of a substance that is likely to be an imminent environmental or human health hazard or meets the criteria outlined in the NWT Reportable Spill Volume Guidelines in Appendix C.

A spill that meets the criteria outlined in Appendix C must be reported to the NWT 24-hour Spill Report Line at 867-920-8130 within 24 hours of discovering the spill. The SLWB and Government of NWT (GNWT) Inspector must be notified of the spill as soon as possible, and within 24 hours of discovery of a reportable spill. The Enbridge Senior Environmental Advisor will be responsible for reporting the spill to the regulatory agencies. Key contact information is provided in Table 3, below.

3.0 Response Organization 7

Table 3: Key Contacts for Spill Reporting

Name	Role	Telephone	Email
Brad Kilgour	Senior Environmental Advisor	Office: 780-392-4348 Cell: 780-991-0665	Brad.Kilgour@enbridge.com
Bert Fillion	Construction Manager – Core Projects	Office: 780-508-7507 Cell: 780-982-5991	Bert.Fillion@enbridge.com

The NT-NU Spill Form, or a Contractor spill form that has been approved by Enbridge, will be used for this type of report (Appendix D).

4.0 Spill Prevention

The most likely scenarios under which a spill could occur during Project activities would be leakage or line failure from heavy equipment or other vehicles, spilling during fuel transfer, or vehicular accident. The likelihood of a major spill is low, as any large quantities of contaminants will be limited to fuel and greywater storage. Mitigation measures to reduce the risk of inadvertent releases of drilling fluid have been incorporated directly into the Project design.

The following is a list of spill prevention mitigation measures that will be implemented for the Project:

- All potentially hazardous materials will be stored at a designated storage area more than 100 m from the high-water mark of any waterbody.
- All fuel storage vessels will have secondary containment such as containment trays, berms, and/or double-walled tanks.
- All active fuel storage tanks/containers, including secondary containment, will be inspected regularly.
- Emergency spill response kits will be kept and maintained on site at select locations.
- Spill mats and/or drip pans/trays will be placed under all mobile fueling containers and under equipment when not in use for 2 hours or more.
- All equipment used will be in good working order and free of leaks.
- Regular inspection and maintenance will be conducted for all heavy equipment and vehicles used for the Project, including fuel transfer hoses and fuel/oil lines.
- Equipment or vehicles with deficiencies will be taken out of service and repaired.
- All sewage and solid waste will be contained and sealed in watertight containers/tanks.
- Tanks used for transporting greywater will be watertight and will be regularly and properly inspected and maintained by the operator.
- Fuel storage containers and tanks will be appropriately labeled.
- Fuel storage cache details will be reported to the SLWB and GNWT Inspector in writing within 10 days of establishing a fuel cache, if required.
- Drips that make contact with the ground will be cleaned up as soon as possible, along with leaks and other contaminated material.
- No materials will be discharged to the surface without approval from the Environmental Inspector, following applicable sampling.

5.0 Identification and Initial Actions

The following actions will be taken when a spill has been identified:

- Suspend work in the area;
- If possible, identify the spilled contaminant;
- Assess the hazard to persons in the area of the spill;
- If possible, without further assistance, control any danger to human life or the environment;
- Assess whether the spill can be readily stopped or brought under control;
- If safe to do so, and if possible, try to stop the spillage and/or spread of contaminants;
- Gather information about the status of the situation;
- Report the spill immediately to the on-site supervisor or Environmental Inspector who will report the spill to the 24-Hour Emergency Spill Report Line (867-920-8130), if required;
- Resume any effective action to contain, clean up or stop the flow of spilled contaminant. See **Section 6.0** for more information on spill response procedures; and
- A contact list of Project personnel will be included in the Project-specific EPP.

All spills will be reported to the Environmental Inspector immediately upon discovery. The Environmental Inspector will be responsible for notifying both the Enbridge Construction Manager and Senior Environmental Advisor of any spills and ensure all required spill reports are completed and submitted within 24-hours.

All reportable spills involving a watercourse, lake, or wetland, or any significant environmental feature, as outlined in Appendix C, must be reported to the 24-hour NWT 24-Hour Spill Report Line. Reporting to the Spill Report Line will be completed by the Environmental Inspector or Enbridge designate.

The following steps are required for reporting spills to the 24-hour Spill Report Line:

1. Fill out NT-NU Spill Report Form;
2. Contact 24-Hour Emergency Spill Report Line at 867-920-8130; and
3. Email or fax completed NT-NU Spill Report Form with Spill Number to Spill Center (spill@gov.nt.ca).

The report will be completed in accordance with the NWT *Spill Contingency Planning and Reporting Regulations* (R-068-93), and will contain the following information:

- Date and time of spill;
- Location of spill;
- Direction spill is moving;
- Name and phone number of a contact person close to the location of the spill;
- Type of contaminant spilled and quantity spilled;
- Cause of spill;

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5.0 Identification and Initial Actions 10

- Whether spill is continuing or has stopped;
- Description of existing contaminant;
- Action taken to contain, recover, clean up, and dispose of spilled contaminant;
- Name, address, and phone number of person reporting the spill; and
- Name of person in charge of the management and control of contaminants at the time of the spill.

Within 30 days of a reportable spill, a detailed report will be submitted to the SLWB and GNWT Inspector, which includes the following additional information:

- Description of root causes;
- Actions taken to clean up the impacted area;
- Date of when clean-up activities were completed; and
- Discussion if any procedural changes that were made to prevent similar spills from occurring in the future.

6.0 Response Procedures

The following subsections outline the general spill response procedures to be taken to contain and clean up a spilled contaminant, as well as disposing of contaminated materials. Note that the spill response will be adapted to the site conditions.

6.1 Spills on Land

1. Once a spill is identified, all sources of ignition and equipment should be turned off (e.g., no smoking, shut off engines) and activities in the vicinity should be suspended. Notify the Environmental Inspector or Enbridge designate of the spill as soon as possible;
2. The spilled material should be identified, if possible;
3. The affected area should be delineated and secured, ensuring the area is safe for entry and does not represent a threat to the health or safety of spill responders. Public access to the area should be restricted;
4. If possible, identify where the spill is coming from (the source). Determine if the spill is still occurring (i.e., still leaking) or if the spillage has stopped. If the spill has not stopped, determine if it is safe to stop or control the spill (e.g., plug hole, close valve, upright container);
5. Deploy spill kits as appropriate and, if necessary, dyke around the spill to contain the material;
6. If the spill is too large to be controlled with the spill response materials on hand, contact the Environmental Inspector or Enbridge designate to request assistance or additional equipment;
7. If the spill is small enough to be controlled with the spill response materials on hand, prevent spilled contaminants from spreading or entering waterways by using sorbent materials or a dyke downslope from the spill;
8. Once the spill has been controlled and further spreading prevented, clean up the remaining spilled contaminant and store contaminated materials in a secure container/location for disposal; and
9. Initiate reporting in accordance with the spill reporting requirements in **Section 5.0**.

6.2 Spills In or Near Water

1. Once a spill is identified, all sources of ignition and equipment should be turned off (e.g., no smoking, shut off engines) and activities in the vicinity should be suspended. Notify the Environmental Inspector or Enbridge designate of the spill as soon as possible.
2. If the spill is small enough to be controlled with the spill response materials on hand, such as sorbent booms, contain the spill and prevent further material from entering the waterbody and prevent contaminants from flowing offsite and/or downstream.
3. Place sorbent sheets on the water within the boomed area to help limit the spread of the contaminant. For narrow waterways, such as streams, place one or more sorbent booms across the waterway downstream of the spill location and anchor the booms on each bank.

6.0 Response Procedures 12

4. Once the spill has been controlled and further spreading prevented, clean up the remaining spilled contaminant within the boomed area. Store contaminated materials in a secure container for proper disposal.
5. Initiate reporting in accordance with the spill reporting requirements in **Section 5.0**.

ENBRIDGE PIPELINES (NW) INC.

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7.0 Site Restoration

Following initial spill response and containment, all impacted materials (e.g., soils, vegetation) will be removed from the site. Impacted absorptive materials will be collected in appropriate waste containers and marked for disposal. Impacted soil within the Project footprint boundaries will be delineated, excavated and disposed of at an approved disposal facility. All waste disposals will be completed in accordance with the Project-specific Waste Management Plan.

Confirmatory sampling will be conducted to ensure all impacted soil is removed. Soil sampling will be coordinated through the designated Environmental Inspector to ensure all required sampling is completed. Additional clean fill material will be brought to site, as needed.

If areas outside of the Project footprint boundaries are impacted, mitigation measures and remediation plans will be discussed with the GNWT Inspector prior to implementation. All work required offsite will be approved by the GNWT Inspector prior to initiation.

Water will be considered impacted if any visible hydrocarbon sheen or odor is present. Impacted water will be collected using pumps or vacuum trucks and stored in sealed drums or tanks for sampling and disposal at an approved facility. The Environmental Inspector will assess whether sampling is required.

8.0 Spill Response Equipment

8.1 Spill Kit Locations

Marked spill kits will be located throughout the Project construction work areas. Additional spill kits will be located as needed in temporary workspace and camp/laydown areas, which could include fuel storage areas, equipment, and/or worksite trailers. Locations for spill kits will be communicated to all staff during Project activities.

8.2 Spill Kit Contents

The Contractor is responsible to supply and stage the spill kits for the Project. Each spill kit will be regularly inspected to ensure it is adequately stocked. Spill kits will contain, but are not limited to, the following types of materials:

- Absorbent materials (such as booms, pads and granular material);
- Disposal bags or containers;
- Filter cloth; and
- A copy of this Plan.

In addition to the spill kit contents listed above, extra spill response materials will also be readily available for use, including, but not limited to, the following:

- Open top steel drum with lid, bolting ring and gasket;
- Disposable large 5 mil polyethylene bags;
- Aquadams;
- Containment bladder;
- Berm materials;
- Sand bags;
- Hand tools;
- Filter bags;
- Pumps and hosing; and
- Drip trays.

8.3 Heavy and Mobile Equipment Available for Spill Response

The following equipment will be available to respond to potential spills:

- Loader;
- Dozers;
- Excavator;
- Hydrovac;
- Vacuum truck; and,
- Personnel vehicles.

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Spill Contingency Plan - Line 21 Planned Maintenance at KP 158 near Little Smith Creek

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9.0 Training

Project-specific EPP training is required by all individuals working on Project sites. The EPP training will include a review of permit and licence conditions, mitigation plans (including this Plan), and site-specific environmental mitigation for the Project. The level of EPP training will be dependent on the role and responsibility of the individual. Managers and foremen/supervisors with additional responsibility for the Project will receive more detailed EPP training to ensure they understand all permit and licence conditions, environmental policies, and required environmental mitigation and can effectively direct employees. Field workers will receive a level of EPP training tailored to the execution of their scope of work.

10.0 Monitoring and Evaluation

The Environmental Inspector will be responsible for ensuring all Project personnel are aware of environmental conditions, commitments and guidelines for the Project and that the Project is executed in compliance with this Plan, the EPP, and all other associated management plans and contingency plans, as well as applicable regulatory permits and approvals.

The Environmental Inspector will work with Indigenous Monitors to oversee the implementation of this Plan in conjunction with the EPP. Regular inspections will occur over the course of the Project and daily inspection reports will be prepared and distributed to the Project team.

This Plan will be updated as required and all Enbridge personnel are encouraged to comment and assist in its improvement.

11.0 Contingencies

In the event that an unforeseen issue arises during construction for which no mitigation measures have been approved, the Enbridge Senior Environmental Advisor and the Environmental Inspector will develop appropriate measures in consultation with the Construction Manager, Project Manager, and, when appropriate, regulatory agencies.

New or amended mitigation measures will be incorporated into this Plan by the Enbridge Senior Environmental Advisor and the revised Plan will be reviewed by the Project Manager and Construction Manager before it is issued to the Project team with an issued and effective date. The revised Plan will come into effect on the effective date. The Environmental Inspector will be responsible for distributing the revised copy of the Plan to all appropriate Project personnel.

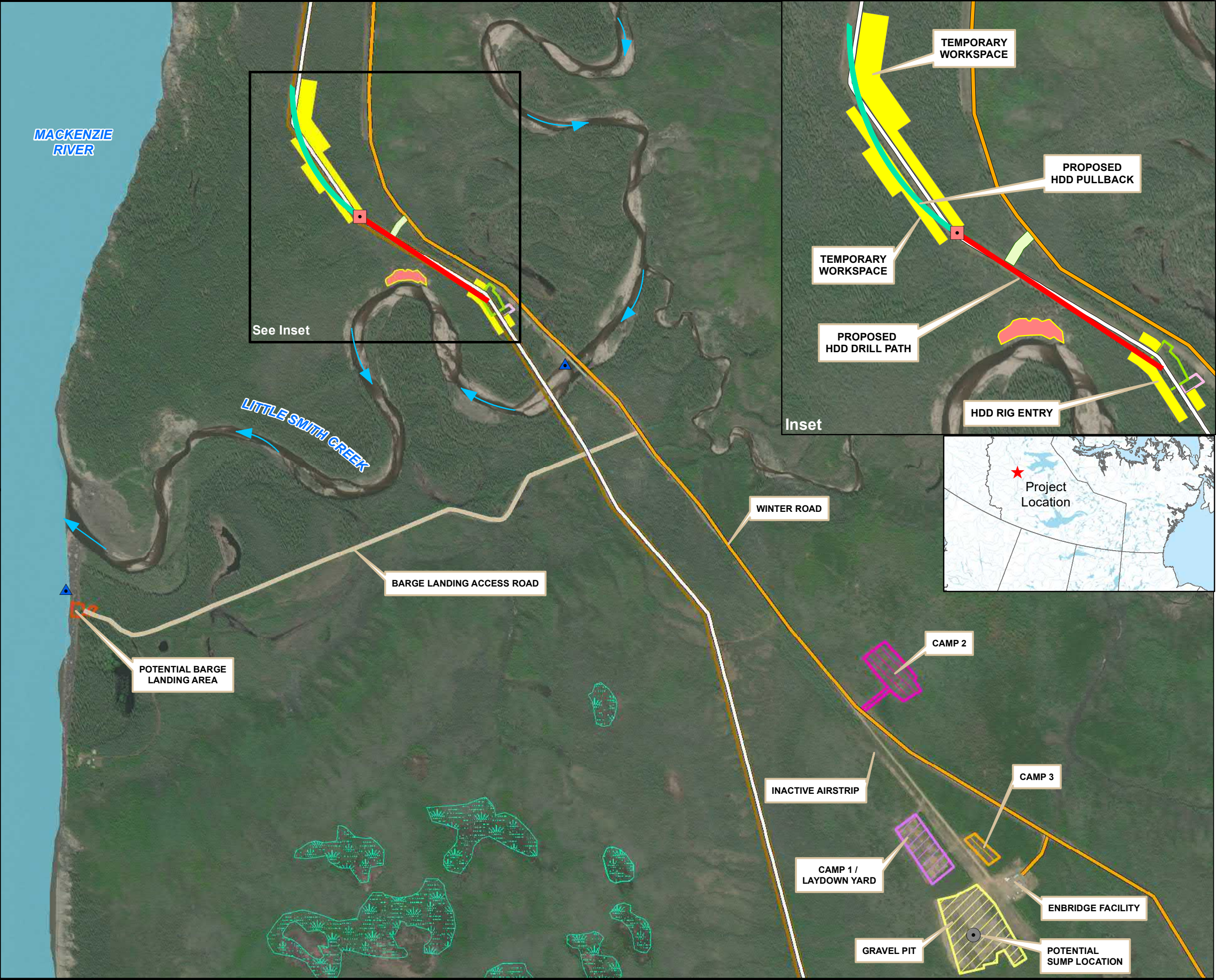
If an issue arises and an adequate resolution cannot be determined between the Environmental Inspector and the Construction Manager, it shall be escalated to the Project Manager who will discuss and resolve the issue with the Enbridge Senior Environmental Advisor.

References

Indian and Northern Affairs Canada (INAC). 2007. *Guidelines for Spill Contingency Planning*. Prepared by Water Resources Division, Indian and Northern Affairs Canada, Yellowknife, NT. April 2007. 30 pp.

Appendix A

Site Figures



ENBRIDGE PIPELINES (NW) INC.
LINE 21 PLANNED MAINTENANCE AT KP 158 NEAR LITTLE SMITH CREEK

PROJECT OVERVIEW

FIGURE 1

- HDD Exit
- Potential Water Withdrawal Location
- Potential Sump Location
- Flow Direction
- Proposed HDD Pullback
- Proposed HDD Drill Path
- Waterbody
- Wetland
- Slope Failure
- North Entrance
- Existing Line 21 Pipeline
- Winter Road
- Barge Landing Access Road
- Potential Barge Landing Area
- Camp 1 / Laydown Yard
- Camp 2
- Camp 3
- HDD Rig Entry
- Temporary Workspace
- Gravel Pit
- Existing Line 21 ROW
- Stopple Entry

0 100 200 400 Meters

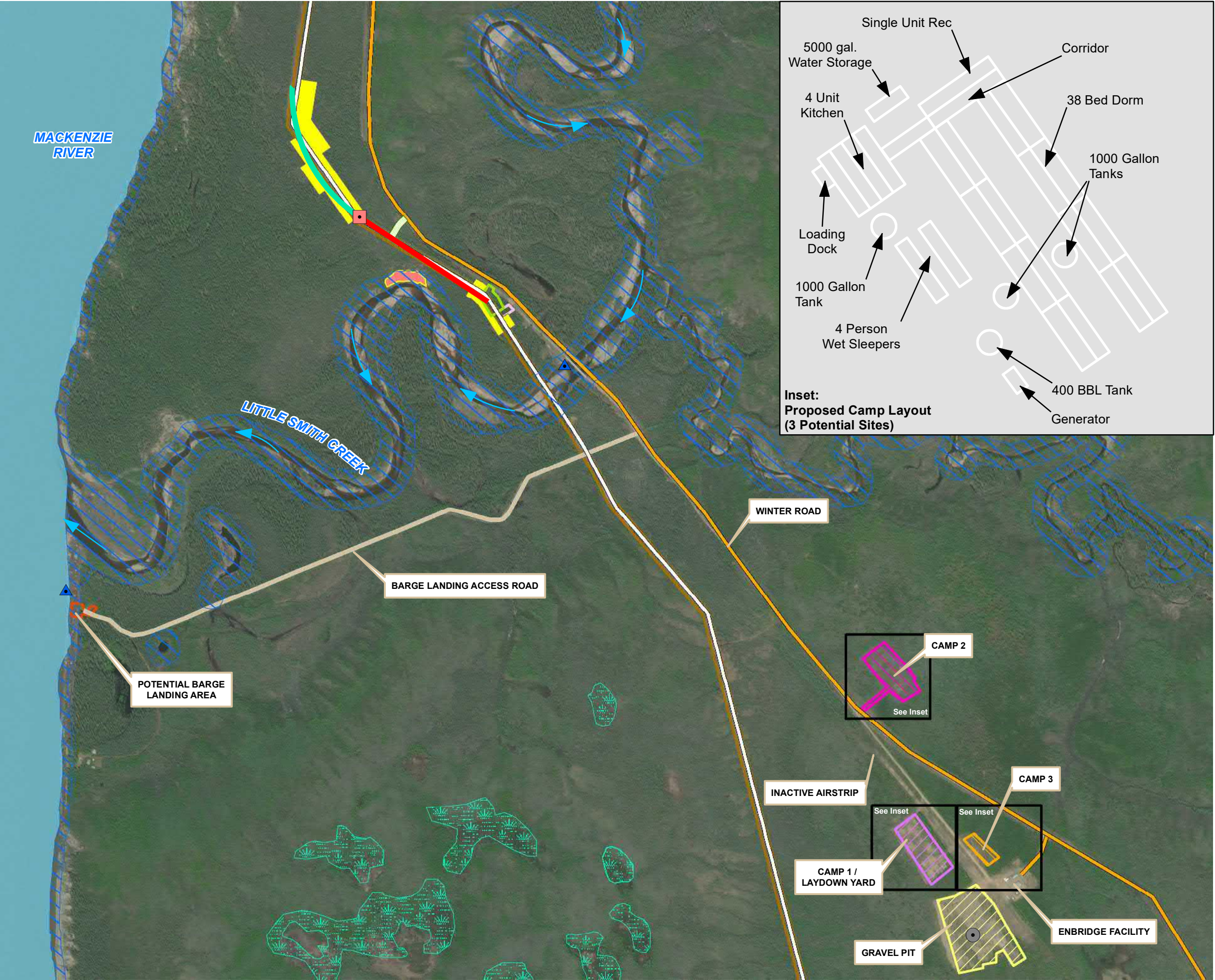
SCALE 1:11,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY NRCan, DILLON CONSULTING & ESRI

MAP CREATED BY: PH
MAP CHECKED BY: AL
MAP PROJECTION: NAD 1983 UTM Zone 10N



PROJECT: 188582
STATUS: DRAFT
DATE: 2020-08-24



ENBRIDGE PIPELINES (NW) INC.
LINE 21 PLANNED MAINTENANCE AT KP 158 NEAR LITTLE SMITH CREEK

CAMP AREAS AND CHEMICAL AND WASTE STORAGE LOCATIONS

FIGURE 2

- Potential Water Withdrawal Location
- HDD Exit
- Potential Sump Location
- Existing Line 21 Pipeline
- Winter Road
- Barge Landing Access Road
- Flow Direction
- Waterbody
- Wetland
- Environmentally Sensitive Area with 30 m buffer
- Slope Failure
- Proposed HDD Drill Path
- Proposed HDD Pullback
- HDD Rig Entry
- Temporary Workspace
- North Entrance
- Gravel Pit
- Stoppie Entry
- Camp 1 / Laydown Yard
- Camp 2
- Camp 3
- Potential Barge Landing Area
- Existing Line 21 ROW

0 100 200 400 Meters

SCALE 1:11,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY NRCAN, DILLON CONSULTING & ESRI

MAP CREATED BY: PH
MAP CHECKED BY: AL
MAP PROJECTION: NAD 1983 UTM Zone 10N



PROJECT: 188582
STATUS: DRAFT
DATE: 2020-08-24

Appendix B

Waste Information Sheets



Acid (un-neutralized)

Waste Information Sheet

General Information					
Original Use:	Water treatment, descaling, and as a cleaning agent in on-site laboratories for cleaning viscometers, etc. Synonyms: Acetic, Chromic, Hydrochloric acids.				
Physical State:	Corrosive liquid.				
Components:	Specific to the waste acid and use. Various concentrations from 1% to concentrated.				
Potential Hazards					
Class (WHMIS):	E; D1A; D1B	MSDS:	Use MSDS of specific acid.		
Hazard Symbols:			Protective Equipment:		
Environmental:	Leaching of metals if acid comes in contact with soil. Possible groundwater contamination if spilled or leaks at storage sites. Surface water contamination if not neutralized.				
Health:	Respiratory irritant. Corrosive on contact. Severe burns. Avoid contact or inhalation of fumes.				
Management Methods					
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste			
	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste			
	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material			
Storage:	Store in a corrosion resistant (plastic or lined) container at field facility. Keep closed. Store in a cool, well ventilated place away from high pH materials				
Treatment / Disposal:	<ul style="list-style-type: none"> Return to supplier if possible (if product is not contaminated). Neutralization may be required by either ENBRIDGE or waste contractor. Alberta: dispose in a Class Ia disposal well (pH 4.5 - 12.5), or a Class Ib well (pH 6.0 - 9.0). 				
Comments:	<ul style="list-style-type: none"> Reduce potential wastes by ordering acids in bulk. Alberta: Heavy metal content may restrict the usage of Class Ib disposal wells. Deep well disposal is only a limited option in Alberta where acids in small quantities may possibly already be mixed with large process or produced water volumes through operations. Best option is with inventory control (reduce), and using a Waste Material Exchange if volumes are large. 				
Reportable Release Quantity:	NWT: 5 kg or litres	Ontario: Any quantity			
	Alberta: 5 kg or litres	Québec: Any quantity			
	Saskatchewan: 5 kg or litres	TDG (includes loading / unloading): 5 kg or litres			
	Manitoba: 5 kg or litres				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>		-	-	-	-
Placards:	Dependent on specific waste chemical.				
Comments:	Dependent on specific waste chemical. If product was originally supplied as a dangerous good, then waste chemical is also a dangerous good. Use Shipping Name, Class, PIN, etc. of original shipment, unless original chemical properties have changed or contaminated with another dangerous good. If a mixture or solution of two or more dangerous goods, verify TDG Information with the Enbridge Environment Staff.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Acid (un-neutralized)
Waste Information Sheet
September 2016



Asbestos

Waste Information Sheet

General Information									
Original Use:	Insulation on piping vessels, boiler equipment and building. Building panels. Waste may also be called insulation crysotile, crocidolite, amosite, mysorite, avibest, amphibole.								
Physical State:	Fibre material, gray, white, or blue. No odor.								
Components:	Asbestos, may also contain fibreglass and foam materials. Asbestos is a group of impure magnesium silicate materials which occur in a fibrous form.								
Potential Hazards									
Class (WHMIS):	D2A								
MSDS:	Use MSDS of specific components (e.g.; asbestos) or ENBRIDGE MSDS Asbestos Gasket.								
Hazard Symbols:	<div style="text-align: center;"> </div>								
Protective Equipment:	<div style="text-align: center;"> </div>								
Environmental:	Known carcinogen to human and animal life.								
Health:	Various exposure limits dependent on the type of asbestos. Causes asbestosis, lung cancer and mesothelioma.								
Management Methods									
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">NWT: Hazardous Waste</td> <td style="width: 33%;">Manitoba: Hazardous Waste</td> </tr> <tr> <td>Alberta: Non-Hazardous Waste/Non-DOW</td> <td>Ontario: Non-Hazardous Waste</td> </tr> <tr> <td>Saskatchewan: Waste Dangerous Good</td> <td>Québec: Residual Material</td> </tr> </table>	NWT: Hazardous Waste	Manitoba: Hazardous Waste	Alberta: Non-Hazardous Waste/Non-DOW	Ontario: Non-Hazardous Waste	Saskatchewan: Waste Dangerous Good	Québec: Residual Material		
NWT: Hazardous Waste	Manitoba: Hazardous Waste								
Alberta: Non-Hazardous Waste/Non-DOW	Ontario: Non-Hazardous Waste								
Saskatchewan: Waste Dangerous Good	Québec: Residual Material								
Storage:	Double bag waste in properly labeled, sealed, polyethylene bags (minimum 6-mil thickness). If bags breaks, soak area with water and reseal.								
Treatment / Disposal:	Send / transfer to an approved landfill.								
Comments:	Notify landfill operator and / or local health board in advance of disposal. Waste must be buried immediately upon arrival at a landfill. Refer to Appendix B of ENBRIDGE Waste Management Plan.								
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">NWT: Any quantity</td> <td style="width: 33%;">Ontario: Any quantity</td> </tr> <tr> <td>Alberta: Any quantity</td> <td>Québec: Any quantity</td> </tr> <tr> <td>Saskatchewan: Any quantity</td> <td>TDG (includes loading / unloading): 25 kg</td> </tr> <tr> <td>Manitoba: Any quantity</td> <td></td> </tr> </table>	NWT: Any quantity	Ontario: Any quantity	Alberta: Any quantity	Québec: Any quantity	Saskatchewan: Any quantity	TDG (includes loading / unloading): 25 kg	Manitoba: Any quantity	
NWT: Any quantity	Ontario: Any quantity								
Alberta: Any quantity	Québec: Any quantity								
Saskatchewan: Any quantity	TDG (includes loading / unloading): 25 kg								
Manitoba: Any quantity									
TDG Information									
Shipping Name	Class	PIN	Packing Group	Special Provisions					
WHITE ASBESTOS	9	UN 2590	III						
BLUE ASBESTOS or BROWN ASBESTOS	9	UN 2212	II						
Placards:	Class 9 (in bulk or over 500 kg).								
Comments:	Handle in accordance with O&MP procedures. Refer to Appendix B of ENBRIDGE Waste Management Plan for guidance regarding packaging, transport and disposal.								
Documentation									
Transportation Documents:	Dependent on waste classification.								
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.								

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Asbestos
Waste Information Sheet
September 2016



Batteries - Alkaline (Dry)

Waste Information Sheet

General Information					
Original Use:	Batteries for gas detectors. Long life C & D cells, 9 volt, AA, etc.				
Physical State:	Various solid forms.				
Components:	Mercury, manganese dioxide.				
Potential Hazards					
Class (WHMIS):	MSDS: Mercury, manganese dioxide				
Hazard Symbols:	Protective Equipment:				
Environmental:	Lowers pH in aqueous environments. Battery fluids may have high heavy metals content. Can contaminate soil and water through landfill leachate. Do not incinerate. Small quantity "consumer" household batteries (non-vehicle) do not pose a serious threat to environment if landfilled.				
Health:	Ingestion of alkali may produce severe pain and burning of the mouth, throat and esophagus. Nausea and vomiting may follow.				
Management Methods					
Waste Classification:	NWT: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste			
	Alberta: Non-Hazardous Waste/Non-DOW	Ontario: Non-Hazardous Waste			
	Saskatchewan: Non-Hazardous Waste	Québec: Residual Material			
Storage:	Significant volumes: store damaged batteries in corrosion resistant (lined) or plastic drums. Batteries in good condition can be stored on drip pan. Keep containers closed and store in a cool, dry, and well ventilated place, off the ground, away from incompatible materials.				
Treatment / Disposal:	(if the 4R options cannot be applied): Landfill - verify with provincial environmental agency or landfill operator. See Disposal Comments.				
Comments:	If available, use municipal, supplier, or retailer battery collection programs. Alkaline batteries containing liquids should only be taken to a Hazardous Waste Disposal facility, they should not be landfilled.				
Reportable Release Quantity:	NWT: N/A	Ontario: N/A			
	Alberta: N/A	Québec: N/A			
	Saskatchewan: N/A	TDG (includes loading / unloading): N/A			
	Manitoba: N/A				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated – See TDG Comments Below</i>		N/A	N/A	N/A	N/A
Placards:	N/A				
Comments:	Small alkaline batteries that are dry inside are not regulated. If the waste is contaminated with dangerous goods, TDG Regulations may apply.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				





Need further information?
Contact Enbridge Environment Staff in Edmonton.

Batteries - Alkaline (Dry)
Waste Information Sheet
September 2016



Batteries - Alkaline (Wet)

Waste Information Sheet

General Information					
Original Use:	Various uses in electrical standby and alarm systems.				
Physical State:	Various solid forms.				
Components:	Mercury, manganese dioxide.				
Potential Hazards					
Class (WHMIS):	E, possible D1B, D2A		MSDS:	Mercury, manganese dioxide	
Hazard Symbols:	 		Protective Equipment:	 	
Environmental:	Lower pH in aqueous environments. Battery fluids may have high heavy metals content. Can contaminate soil and water through landfill leachate. Do not incinerate. Small quantity "consumer" household batteries (non-vehicle) do not pose a serious threat to environment if landfilled.				
Health:	Ingestion of alkali may produce severe pain and burning of the mouth, throat and esophagus. Nausea and vomiting may follow.				
Management Methods					
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste			
	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (121-C)			
	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material			
Storage:	Significant volumes: store damaged batteries in corrosion resistant (lined) or plastic drums. Batteries in good condition can be stored on drip pan. Keep containers closed and store in a cool, dry and well ventilated place, off the ground, away from incompatible materials.				
Treatment / Disposal:	Enquire with local battery reconditioner for recycling. Hazardous - Hazardous Waste Disposal Facility				
Comments:	If available, use municipal, supplier or retailer battery collection programs. Alkaline batteries containing liquids should only be taken to a Hazardous Waste Disposal facility, they should not be landfilled.				
Reportable Release Quantity:	NWT: 5 kgs or litres	Ontario: Any quantity			
	Alberta: 5 kgs or litres	Québec: Any quantity			
	Saskatchewan: 5 kgs or litres	TDG (includes loading / unloading): 5 kg or litres			
	Manitoba: 5 kgs or litres				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
BATTERIES, WET, FILLED WITH ALKALI, electric storage		8	UN2795	III	-
Placards:	Class 8 (in bulk or over 500 kg)				
Comments:					
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				





Need further information?
Contact Enbridge Environment Staff in Edmonton.

Batteries - Alkaline (Wet)
Waste Information Sheet
September 2016



Batteries - Dry Cell (Ni-Cd)

Waste Information Sheet

General Information				
Original Use:	Rechargeable dry cell batteries in DC systems. Possible small quantities in cordless appliances.			
Physical State:	Various solid forms.			
Components:	Nickel Cadmium.			
Potential Hazards				
Class (WHMIS):	E	MSDS:	Use MSDS of specific component.	
Hazard Symbols:		Protective Equipment:	  	
Environmental:	Lowers pH in aqueous environments. Can contaminate soil and water through landfill leachate. Do not incinerate. Small quantity 'consumer' household batteries (non-vehicle) do not pose a serious threat to environment if landfilled.			
Health:	If damaged may cause severe burns and permanent tissue damage to eyes and skin.			
Management Methods				
Waste Classification:	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> NWT: Non-Hazardous Alberta: Non-Hazardous Waste/Non-DOW Saskatchewan: Non-Hazardous Waste Non-hazardous classification unless contains KOH. </div> <div style="width: 45%;"> Manitoba: Non-Hazardous Ontario: Non-Hazardous (122-C/146) Québec: Residual Material </div> </div>			
Storage:	Store in a steel drum (18 gauge minimum) with absorbent at field facility.			
Treatment / Disposal:	Send to an approved Ni-Cd battery recycler.			
Comments:				
Reportable Release Quantity:	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> NWT: N/A Alberta: N/A Saskatchewan: N/A Manitoba: N/A </div> <div style="width: 45%;"> Ontario: N/A Québec: N/A TDG (includes loading / unloading): N/A </div> </div>			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>	N/A	N/A	N/A	N/A
Placards:	N/A			
Comments:	Not regulated by TDG if sealed. Non-hazardous classification unless contains KOH. If the waste is contaminated with dangerous goods TDG Regulations may apply.			
Documentation				
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Batteries - Dry Cell (Ni-Cd)
Waste Information Sheet
September 2016



Batteries - Wet Cell (Lead Acid)

Waste Information Sheet

General Information					
Original Use:	Variety of automotive, electric storage, portable or emergency electricity and lighting, and instruments.				
Physical State:	Various solid forms. Synonyms: Battery acid, battery fluid, lead acid (see also Acids and Caustic).				
Components:	Sulphuric acid, caustic, lead and various chemicals. May be acid or dry filled. Acid may contain heavy metals and caustics. Household (alkaline) batteries contain carbon, manganese and zinc.				
Potential Hazards					
Class (WHMIS):	E; D1B; D2A	MSDS:	Use MSDS of specific components (e.g.; Acid, Lead, Battery Acid, Battery Fluid, Fluid Alkali, Sulphuric Acid).		
Hazard Symbols:			Protective Equipment:		
Environmental:	Lower pH in aqueous environments. Battery fluids may have high heavy metals contents. Can contaminate soil and water through landfill leachate. Do not incinerate.				
Health:	Extremely corrosive vapor and liquids - can cause lung tissue damage. May cause severe burns and permanent tissue damage to eyes and skin. Lead poisoning.				
Management Methods					
Waste Classification:	NWT: Hazardous Waste	Manitoba:	Hazardous Waste		
	Alberta: Hazardous Waste/DOW	Ontario:	Hazardous Waste (112-C)		
	Saskatchewan: Waste Dangerous Good	Québec:	Residual Hazardous Material		
Storage:	Store damaged batteries in corrosion resistant (plastic or lined) containers at field facility. Undamaged batteries may be stored on a drip pan. Keep containers closed and in a cool, dry, and well ventilated place, off the ground, away from incompatible materials.				
Treatment / Disposal:	Send to an approved battery recycler.				
Comments:	Drain batteries of fluids and / or contain for transport. Treat fluids as per "Acid" Waste Information Sheet.				
Reportable Release Quantity:	NWT: 5 kg or litres	Ontario:	Any quantity		
	Alberta: 5 kg or litres	Québec:	Any quantity		
	Saskatchewan: 50 kg (10 kg off-site)	TDG (includes loading / unloading): 5 kg or litres			
	Manitoba: 5 kg or litres				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
BATTERIES, WET, FILLED WITH ACID, electric storage		8	UN 2794	III	
Placards:	Class 8 (in bulk or over 500 kg).				
Comments:	There are various TDG categories for batteries and battery fluids. The above is one example. OTHER TDG Shipping Names MAY APPLY. Good batteries may be shipped unpackaged, but secured on a drip pan and individually labeled with a Class 8 label and PIN. Poor condition batteries should be shipped in labeled corrosion resistant drums with sorbents.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Batteries - Wet Cell (Lead Acid)
Waste Information Sheet
September 2016



Chemicals - Laboratory

Waste Information Sheet

General Information													
Original Use:	Onsite quality control laboratories. Organic chemicals are carbon based materials, including solvents and other petroleum-derived products. Inorganic chemicals are non-carbon based materials, including many acids, bases, and mineral based compounds.												
Physical State:	May be liquid, solid or gas; dependent on specific waste.												
Components:	Dependent on specific waste. Organic chemicals, Inorganic chemicals - acids, alkalis, and inorganic reagents.												
Potential Hazards													
Class (WHMIS):	B2; B3; B4; C; D; or E												
MSDS:	Varies with waste chemical.												
Hazard Symbols:	Protective Equipment:												
Environmental:	Limited environmental hazard due to small volume. Possible volatile flammable and corrosive liquids. Potential fire hazards.												
Health:	Health hazard - extent is dependent on the specific chemical.												
Management Methods													
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">NWT: Hazardous Waste</td> <td style="width: 33%;">Manitoba: Hazardous Waste</td> <td style="width: 33%;"></td> </tr> <tr> <td>Alberta: Hazardous Waste/DOW</td> <td>Ontario: Hazardous Waste (148-C)</td> <td></td> </tr> <tr> <td>Saskatchewan: Waste Dangerous Good</td> <td>Québec: Residual Hazardous Material</td> <td></td> </tr> </table>	NWT: Hazardous Waste	Manitoba: Hazardous Waste		Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (148-C)		Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material				
NWT: Hazardous Waste	Manitoba: Hazardous Waste												
Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (148-C)												
Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material												
Storage:	Collect in lined drums or original containers if recycling. Monitor volumes and chemicals entering containers. Segregate different waste chemicals. Store in a cool, well ventilated area.												
Treatment / Disposal:	<ul style="list-style-type: none"> Segregate and reuse chemicals on-site if possible. Return to supplier if possible. Send to a chemical recycling facility. Send to an appropriate (approved) waste management facility 												
Comments:	Waste classification is subject to testing.												
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">NWT: 5 kg or litres</td> <td style="width: 33%;">Ontario: Any quantity</td> <td style="width: 33%;"></td> </tr> <tr> <td>Alberta: 5 kg or litres</td> <td>Québec: Any quantity</td> <td></td> </tr> <tr> <td>Saskatchewan: 5 kg or litres</td> <td colspan="2">TDG (includes loading / unloading): Dependent on specific waste chemical</td> </tr> <tr> <td>Manitoba: 5 kg or litres</td> <td colspan="2"></td> </tr> </table>	NWT: 5 kg or litres	Ontario: Any quantity		Alberta: 5 kg or litres	Québec: Any quantity		Saskatchewan: 5 kg or litres	TDG (includes loading / unloading): Dependent on specific waste chemical		Manitoba: 5 kg or litres		
NWT: 5 kg or litres	Ontario: Any quantity												
Alberta: 5 kg or litres	Québec: Any quantity												
Saskatchewan: 5 kg or litres	TDG (includes loading / unloading): Dependent on specific waste chemical												
Manitoba: 5 kg or litres													
TDG Information													
Shipping Name	Class	PIN	Packing Group	Special Provisions									
<i>See TDG Comments Below</i>	-	-	-	-									
Placards:	Dependent on specific waste chemical.												
Comments:	Dependent on specific waste chemical. If product was originally supplied as a dangerous good, then waste chemical is also a dangerous good. Use Shipping Name, Class, PIN, etc. of original shipment, unless original chemical properties have changed or contaminated with another dangerous good. If a mixture or solution of two or more dangerous goods, verify TDG Information with the Enbridge Environment Staff.												
Documentation													
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.												
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.												

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Chemicals – Laboratory
Waste Information Sheet
September 2016



Chemicals - Miscellaneous

Waste Information Sheet

General Information					
Original Use:	Various – dependent on specific chemical.				
Physical State:	Various – liquid or slurry. Synonyms: Cleaners, lubricants, epoxies, glues, solvents, etc.				
Components:	Various – dependent on specific chemical. Refer to supplier information.				
Potential Hazards					
Class (WHMIS):	Dependent on specific chemical.		MSDS:	Refer to container label or supplier information.	
Hazard Symbols:	Refer to container label or supplier MSDS.		Protective Equipment:	Refer to container label or supplier MSDS.	
Environmental:	Possible soil and groundwater contamination from spills.				
Health:	Dependent on specific product. Refer to container label or supplier information.				
Management Methods					
Waste Classification:	NWT:	Testing Required.	Manitoba:	Testing Required.	
	Alberta:	Testing Required.	Ontario:	Testing Required.	
	Saskatchewan:	Testing Required.	Québec:	Testing Required.	
Waste Classification:	All provinces & NWT: Dependent on specific chemical. Testing may be required.				
Storage:	Dependent on specific chemical.				
Treatment / Disposal:	<ul style="list-style-type: none"> Return to supplier, reuse or recycle (dependent on chemical type). Send to chemical reclaimer / recycler if applicable. Send to appropriate (approved) waste management facility. Recycle through Waste Material Exchange (if possible, appropriate). 				
Comments:	<ul style="list-style-type: none"> Avoid over-supply. Order in bulk. Investigate the use of low toxicity, safer chemicals. Inquire with supplier. 				
Reportable Release Quantity:	NWT:	5 kg or litres	Ontario:	Any quantity	
	Alberta:	5 kg or litres	Québec:	Any quantity	
	Saskatchewan:	5 kg or litres	TDG (includes loading / unloading): Dependent on specific waste chemical.		
	Manitoba:	5 kg or litres			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>		-	-	-	-
Placards:	Dependent on specific chemical.				
Comments:	Testing required. Dependent on specific waste chemical. If product was originally supplied as a dangerous good, then waste chemical is also a dangerous good. Use Shipping Name, Class, PIN, etc., of original shipment unless original chemical properties have changed or contaminated with another Dangerous Good. If a mixture or solution of two or more dangerous goods, verify TDG Information with the Enbridge Environment Staff.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Chemicals - Miscellaneous
Waste Information Sheet
September 2016



Chemicals - Stabilizer

Waste Information Sheet

General Information					
Original Use: Print shop chemicals from ENBRIDGE Tower, Edmonton Physical State: Aqueous clear solution Components:					
Potential Hazards					
Class (WHMIS):			MSDS: ENBRIDGE MSDS #144 - Silvermaster Stabilizer		
Hazard Symbols: <div style="text-align: center;"> </div>			Protective Equipment: <div style="text-align: center;"> </div>		
Environmental: Combustion will produce sulphurous gases. Non-toxic with dilution. Health: May cause nausea. If contact on skin - flush immediately.					
Management Methods					
Waste Classification: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> NWT: Testing Required. Alberta: Testing Required. Saskatchewan: Testing Required. </div> <div style="width: 45%;"> Manitoba: Testing Required. Ontario: Testing Required. Québec: Testing Required. </div> </div>					
Storage: Labeled plastic jugs. Treatment / Disposal: Hazardous - Not applicable unless contaminated with a dangerous good.					
Comments: Reportable Release Quantity: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> NWT: N/A Alberta: N/A Saskatchewan: N/A Manitoba: N/A </div> <div style="width: 45%;"> Ontario: N/A Québec: N/A TDG (includes loading / unloading): N/A </div> </div>					
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>		N/A	N/A	N/A	N/A
Placards: Dependent on specific chemical. Comments: Testing required. Dependent on specific waste chemical. If product was originally supplied as a dangerous good, then waste chemical is also a dangerous good. Use Shipping Name, Class, PIN, etc., of original shipment unless original chemical properties have changed or contaminated with another Dangerous Good. If a mixture or solution of two or more dangerous goods, verify TDG Information with the Enbridge Environment Staff.					
Documentation					
Transportation Documents: Truck Ticket or Waybill, TDG Shipping Document, or provincial Manifest / Movement Document, as appropriate.					
Company Records: Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or District office.					

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Chemicals – Stabilizer
Waste Information Sheet
September 2016



Construction and Demolition Material

Waste Information Sheet

General Information					
Original Use:	Demolition or new construction projects.				
Physical State:	Various solids.				
Components:	Clean material (wood, metal, drywall, etc.) which is not contaminated with fiberglass insulation, asbestos, and sulphur. See also Metal - Scrap, Insulation (Asbestos), Insulation (Non-asbestos), and Contaminated Debris and Soil waste information sheets.				
Potential Hazards					
Class (WHMIS):	Not a controlled product.		MSDS:	Not applicable.	
Hazard Symbols:	Not applicable.		Protective Equipment:	Follow occupational health / safety and manufacturer requirements for all equipment operations. Use caution with dust.	
Environmental:	Possible toxic fumes if incinerated.				
Health:	Not a hazard.				
Management Methods					
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material	
Storage:	Ensure wastes are stored in an orderly manner that does not pose a safety risk. Segregate potentially hazardous substances such as asbestos.				
Treatment / Disposal:	Send to an approved landfill. Notify landfill before shipment if significant quantities.				
Comments:	<ul style="list-style-type: none"> Reuse materials when possible. Recycle plastics, rubber, wood, paper, metal, drywall where practical. Ontario requires that construction or demolition projects of more than one building or greater than 2000 square metres must implement a source separation program for brick and Portland cement concrete, corrugated cardboard, drywall, steel, and wood which is not treated, painted or laminated. Materials can be sent to a site operating under an Environmental Compliance Approval or to users of the material for recycling. 				
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>		N/A	N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Construction and Demolition Material
Waste Information Sheet
September 2016



Containers - Aerosol Cans

Waste Information Sheet

General Information									
Original Use:	Spray cans for contact cleaners, lubricants, paints.								
Physical State:	Metal cans (usually <1 litre) under pressure.								
Components:	Various, dependent on original contents. Aerosol component may contain nitrous oxide, organic solvents, ketone, acetone or chlorofluorocarbons.								
Potential Hazards									
Class (WHMIS):	Various								
Hazard Symbols:	<div style="text-align: center;"> </div>								
MSDS:	Various								
Protective Equipment:	<div style="text-align: center;"> </div>								
Environmental:	Chlorofluorocarbons (CFCs) suspected of damage to ozone layer. Few aerosols still contain CFCs. Containers under pressure - can explode with incineration or compaction.								
Health:	Various health effects due to the fine mist and inhalation. Includes possible carcinogenesis and nervous system disorders.								
Management Methods									
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: Non-Hazardous Waste</td> <td style="width: 50%;">Manitoba: Non-Hazardous Waste</td> </tr> <tr> <td>Alberta: Non-Hazardous Waste/Non-DOW</td> <td>Ontario: Non-Hazardous Waste</td> </tr> <tr> <td>Saskatchewan: Non-Hazardous Waste</td> <td>Québec: Residual Material</td> </tr> </table>	NWT: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste	Alberta: Non-Hazardous Waste/Non-DOW	Ontario: Non-Hazardous Waste	Saskatchewan: Non-Hazardous Waste	Québec: Residual Material		
NWT: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste								
Alberta: Non-Hazardous Waste/Non-DOW	Ontario: Non-Hazardous Waste								
Saskatchewan: Non-Hazardous Waste	Québec: Residual Material								
Storage:	Store in cool, well ventilated area.								
Treatment / Disposal:	<ul style="list-style-type: none"> Empty – Metal cans can be recycled through appropriate recycler Non-hazardous – Landfill (small quantity - verify with landfill operator) Hazardous – Hazardous Waste Disposal Facility (depending on original content) 								
Comments:	If small quantity, take advantage of provincial toxic container collection programs which are available in Alberta, Manitoba and Ontario. Do not puncture or incinerate.								
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: N/A</td> <td style="width: 50%;">Ontario: N/A</td> </tr> <tr> <td>Alberta: N/A</td> <td>Québec: N/A</td> </tr> <tr> <td>Saskatchewan: N/A</td> <td>TDG (includes loading / unloading): N/A</td> </tr> <tr> <td>Manitoba: N/A</td> <td></td> </tr> </table>	NWT: N/A	Ontario: N/A	Alberta: N/A	Québec: N/A	Saskatchewan: N/A	TDG (includes loading / unloading): N/A	Manitoba: N/A	
NWT: N/A	Ontario: N/A								
Alberta: N/A	Québec: N/A								
Saskatchewan: N/A	TDG (includes loading / unloading): N/A								
Manitoba: N/A									
TDG Information									
Shipping Name	Class	PIN	Packing Group	Special Provisions					
<i>See TDG Comments Below</i>	-	-	-	-					
Placards:	N/A								
Comments:	If available in a consumer commodity, then not regulated. Where TDG regulated, TDG classification subject to original supplier shipment's TDG classification. May also be TDG exempt by minimum quantity. When a container is emptied, but not cleaned or purged of dangerous goods, the words "Empty – Last Contained" must be written on the shipping document.								
Documentation									
Transportation Documents:	Dependent on waste classification.								
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.								

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Containers - Aerosol Cans
Waste Information Sheet
September 2016



**Containers - Crude Oil
Sample Bottles**
Waste Information Sheet

General Information				
Original Use:	Bottles from samples taken for on-site and off-site laboratory QA/QC analysis. Includes both glass and plastic bottles and residue samples.			
Physical State:	Solid containers with oil residues.			
Components:	In residue: hydrocarbons (oil and condensate), varsol, benzene, sulphur. May contain dissolved hydrogen sulphide.			
Potential Hazards				
Class (WHMIS):	B2; B3; D2A	MSDS:	Use MSDS of specific components.	
Hazard Symbols:			Protective Equipment:	
Environmental:	Potential groundwater contamination from bottles wash liquids and leachate if stored in a landfill.			
Health:	Not an inhalation hazard if < 38°C. High vapor concentrations may irritate nose, throat and lungs. May irritate eyes and skin on contact. May contain H ₂ S.			
Management Methods				
Waste Classification:	NWT: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste		
	Alberta: Non-Hazardous Waste/Non-DOW	Ontario: Non-Hazardous Waste		
	Saskatchewan: Non-Hazardous Waste	Québec: Residual Material		
Storage:	Store empty containers in drums at field facility.			
Treatment / Disposal:	<ul style="list-style-type: none"> Rinse / wash and reuse glass bottles on-site. Send broken or damaged bottles to an approved landfill. Recycle glass if contaminated with less than 3% oil (visually clean, maybe small residue). 			
Comments:				
Reportable Release Quantity:	NWT: N/A	Ontario: N/A		
	Alberta: N/A	Québec: N/A		
	Saskatchewan: N/A	TDG (includes loading / unloading): N/A		
	Manitoba: N/A			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>	-	-	-	-
Placards:	Dependent on waste classification.			
Comments:	If the container contains residues of dangerous goods, then the applicability of TDG requirements are dependent on the nature of the dangerous goods. If the container is empty but not cleaned, write "Residue – last contained" on the shipping document – in addition to Shipping Name, etc. Common waste classification includes Class 3, PETROLEUM CRUDE OIL, UN 1267.			
Documentation				
Transportation Documents:	Dependent on waste classification.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Containers - Crude Oil Sample Bottles
Waste Information Sheet
September 2016



Containers - Drums / Barrels

Waste Information Sheet

General Information	
Original Use:	Transport and storage of liquid products.
Physical State:	Metal and plastic. Some are returnable. May be empty, rinsed or not rinsed.
Components:	Used drums should be treated as hazardous (dangerous oilfield/waste dangerous good) and/or toxic until proven otherwise. Refer to drum labels and shipping information for contents (chemicals, lube oil, solvents, and alcohol).
Potential Hazards	
Class (WHMIS):	Dependent upon contents of original drum.
MSDS:	Dependent on contents of original drum. See drum label.
Hazard Symbols:	Dependent on contents of original drum. See drum label.
Protective Equipment:	Dependent on contents of original drum. See drum label.
Environmental:	Depends on original contents. Containers may have to be rinsed according to pre-treatment comments. Rinse liquid disposal is a concern if drum contents are hazardous.
Health:	Dependent on contents of original drum. Regardless, wear protective clothing.
Management Methods	
Waste Classification:	<div style="display: flex; justify-content: space-between;"> <div> NWT: Non-Hazardous Waste Alberta: Non-Hazardous Waste/Non-DOW Saskatchewan: Non-Hazardous Waste </div> <div> Manitoba: Non-Hazardous Waste Ontario: Non-Hazardous Waste Québec: Residual Material </div> </div> <p>NOTE: Above classification unless not completely empty and containing a hazardous waste. "Empty Container" is generally defined as a container that contains less than 2.5 cm of residue at the bottom of the container or less than 3% of the original contents, whichever is the lesser amount.</p>
Storage:	Store drums / barrels on their sides with all bungs securely in place at field facility. Use sorbents and / or provide leak containment. Do not give or sell to others. Do not store barrels which contain unknown materials – confirm material and use or properly dispose.
Treatment / Disposal:	<ul style="list-style-type: none"> Return barrels / drums to original supplier. Triple rinse barrels / drums and send to scrap metal dealer / barrel reconditioner. Triple rinse and send to an approved landfill. (Contact Enbridge Environment Staff for appropriate rinsing material)
Comments:	Purchase chemicals in bulk whenever possible to avoid the handling and disposal of barrels.
Reportable Release Quantity:	<div style="display: flex; justify-content: space-between;"> <div> NWT: N/A Alberta: N/A Saskatchewan: N/A Manitoba: N/A </div> <div> Ontario: N/A Québec: N/A TDG (includes loading / unloading): N/A </div> </div>
TDG Information	
Shipping Name	Class
<i>See TDG Comments Below</i>	-
Packing Group	Special Provisions
-	-
Placards:	Dependent on waste classification.
Comments:	<p>If the container contains residues of dangerous goods, the shipping name, TDG classification, and waste classification is dependent on the nature of the dangerous goods. If the container is empty but not cleaned, write "Residue – last contained" on the shipping document – in addition to Shipping Name, etc.</p> <p><i>The following exemption permits may apply to this waste: 95 2060 (in Alberta), SU 2801 (for Federal).</i></p>
Documentation	
Transportation Documents:	Dependent on waste classification.
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.



Need further information?
Contact Enbridge Environment Staff in Edmonton.

Containers - Drums / Barrels
Waste Information Sheet
September 2016



Containers - Gas Detection Calibration

Waste Information Sheet

General Information					
Original Use:	For H ₂ S, propane, methane and nitrogen. Refers to nonfillable containers which cannot be purged. Synonyms: Gas bomb containers.				
Physical State:	Solid				
Components:	Aluminum container				
Potential Hazards					
Class (WHMIS):	Various - refer to container label or supplier information.		MSDS:	Various - refer to container label or supplier information.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Explosion hazard. Minor air contaminant.				
Health:	Various health effects - dependent on gas.				
Management Methods					
Waste Classification:	NWT:	Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste	
	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material	
	Above classification assumes that containers cannot be purged.				
Storage:	Store in secure packaging/location away from heat sources.				
Treatment / Disposal:	Return to supplier if possible. Possible recycling to supplier but is dependent on type of cylinder. Hazardous – contact a hazardous waste contractor.				
Comments:	Verification on disposal method and transportation requirements should be obtained from provincial environment and transportation authorities. May possibly be landfilled.				
Reportable Release Quantity:	NWT:	adverse effect	Ontario:	adverse effect	
	Alberta:	adverse effect	Québec:	adverse effect	
	Saskatchewan:	adverse effect	TDG (includes loading / unloading): adverse effect		
	Manitoba:	adverse effect			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
See TDG Comments Below		-	-	-	-
Placards:	Dependent on type of gas.				
Comments:	When a container is emptied but not cleaned or purged of dangerous goods, the words "Empty – Last Contained" must be written on the shipping document.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Containers - Gas Detection Calibration
Waste Information Sheet
September 2016



Containers - Miscellaneous

Waste Information Sheet

General Information																	
Original Use:	Various containers from cleaners, lubricants, epoxies, glues, solvents, etc.																
Physical State:	Plastic, metal pails, buckets, tubs, tubes, cups, etc.																
Components:	Various																
Potential Hazards																	
Class (WHMIS):	Various - refer to container label or supplier information.																
MSDS:	Various - refer to container label or supplier information.																
Hazard Symbols:	Various - dependent on product in container.																
	Protective Equipment: Various - dependent on product. <div style="text-align: center;"> </div>																
Environmental:	Possible groundwater and soil contamination from leaching of container's product.																
Health:	Dependent on specific product. Refer to container label or supplier information.																
Management Methods																	
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 25%;">Testing Required</td> <td style="width: 25%;">Manitoba:</td> <td style="width: 25%;">Testing Required</td> </tr> <tr> <td>Alberta:</td> <td>Testing Required</td> <td>Ontario:</td> <td>Testing Required</td> </tr> <tr> <td>Saskatchewan:</td> <td>Testing Required</td> <td>Québec:</td> <td>Testing Required</td> </tr> </table>	NWT:	Testing Required	Manitoba:	Testing Required	Alberta:	Testing Required	Ontario:	Testing Required	Saskatchewan:	Testing Required	Québec:	Testing Required				
NWT:	Testing Required	Manitoba:	Testing Required														
Alberta:	Testing Required	Ontario:	Testing Required														
Saskatchewan:	Testing Required	Québec:	Testing Required														
Storage:	Store in an organized protected area away from heat sources. Prevent moisture from entering containers.																
Treatment / Disposal:	<ul style="list-style-type: none"> Hazardous - Hazardous Waste Disposal Facility Non-hazardous - Landfill via waste contractor Some jurisdictions restrict the recycle/reuse of metal drums. 																
Comments:	<ul style="list-style-type: none"> In Alberta, containers are regulated under the Alberta Waste Control Regulation. If they contained a substance listed in Table 4B of the Alberta Users Guide for Waste Managers then the container must be triple rinsed. In Saskatchewan, Manitoba and the N.W.T., an empty container that contained dangerous goods is considered as hazardous waste unless it has been cleaned or purged. Within Ontario's Regulation 347, there are exemptions for empty containers that previously contained a product; however, these exemptions are based on the product's specific ingredients as identified on the MSDS. If the container is not exempt it shall be considered as hazardous waste. 																
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 25%;">Any quantity if hazardous chemical</td> <td style="width: 25%;">Ontario:</td> <td style="width: 25%;">Any quantity if a hazardous chemical</td> </tr> <tr> <td>Alberta:</td> <td>Any quantity if hazardous chemical</td> <td>Québec:</td> <td>Any quantity if a hazardous chemical</td> </tr> <tr> <td>Saskatchewan:</td> <td>Any quantity if hazardous chemical</td> <td>TDG (includes loading / unloading):</td> <td>Any quantity if hazardous chemical</td> </tr> <tr> <td>Manitoba:</td> <td>Any quantity if hazardous chemical</td> <td></td> <td></td> </tr> </table>	NWT:	Any quantity if hazardous chemical	Ontario:	Any quantity if a hazardous chemical	Alberta:	Any quantity if hazardous chemical	Québec:	Any quantity if a hazardous chemical	Saskatchewan:	Any quantity if hazardous chemical	TDG (includes loading / unloading):	Any quantity if hazardous chemical	Manitoba:	Any quantity if hazardous chemical		
NWT:	Any quantity if hazardous chemical	Ontario:	Any quantity if a hazardous chemical														
Alberta:	Any quantity if hazardous chemical	Québec:	Any quantity if a hazardous chemical														
Saskatchewan:	Any quantity if hazardous chemical	TDG (includes loading / unloading):	Any quantity if hazardous chemical														
Manitoba:	Any quantity if hazardous chemical																
TDG Information																	
Shipping Name	Class	PIN	Packing Group	Special Provisions													
<i>See TDG Comments Below</i>	-	-	-	-													
Placards:	Dependent on waste classification.																
Comments:	If product was originally supplied as a dangerous good, then waste container is a dangerous good, unless the container was cleaned or purged. If the container contains residues of dangerous goods, then the applicability of TDG requirements are dependent on the nature of the dangerous goods. Use shipping name, etc., of original shipment. When a container is emptied but not cleaned or purged of dangerous goods, the words "Empty – Last Contained" must be written on the shipping document.																
Documentation																	
Transportation Documents:	Dependent on waste classification.																
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.																


Need further information?
Contact Enbridge Environment Staff in Edmonton.

Containers – Miscellaneous
Waste Information Sheet
September 2016



Containers - Paint, Stain, Enamel

Waste Information Sheet

General Information						
Original Use:	Containers used to package paints as sent from the manufacturer.					
Physical State:	Metal and plastic cans and pails.					
Components:	Metal, plastic and paint (chemical) residues.					
Potential Hazards						
Class (WHMIS):	Specific to container - see container info.		MSDS:	Specific to container - see container info.		
Hazard Symbols:			Protective Equipment:			
Environmental:	Potential toxic leachate from the storage or landfill of the containers if not drained and dried. Refer to "Storing a Waste", Section 4.0 of ENBRIDGE Waste Management Plan.					
Health:	Liquids may be irritant to eyes and skin.					
Management Methods						
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste		
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste		
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material		
	Above classification assumes that the containers are drained and contents are dry.					
Storage:	Do not allow rain water to enter containers.					
Treatment / Disposal:	Thoroughly drain (use) and dry all containers before storage or landfill.					
Comments:						
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A		
	Alberta:	N/A	Québec:	N/A		
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A			
	Manitoba:	N/A				
TDG Information						
Shipping Name			Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>			N/A	N/A	N/A	N/A
Placards:	N/A					
Comments:	Assumed not controlled by TDG if the paint residue is dry and therefore flash point is > 60°C. If the waste is contaminated with dangerous goods, TDG Regulations may apply.					
Documentation						
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate					
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.					

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Containers - Paint, Stain, Enamel
Waste Information Sheet
September 2016



Containers – Herbicides/Pesticides

Waste Information Sheet

General Information									
Original Use:	In the petroleum industry, herbicide/pesticide containers usually originate from the application of herbicides for weed control. Herbicides/pesticide containers are hazardous, whether empty or full.								
Physical State:	Metal and plastic cans and pails.								
Components:	2,4-D, Glyphosate, Bromacil, Picloram, Atrazine, other fungicides and insecticides.								
Potential Hazards									
Class (WHMIS):	B4; D1B; D2A								
Hazard Symbols:	<div style="display: flex; align-items: center; justify-content: center;"> </div>								
MSDS:	Specific to type of pesticide. See container or supplier's information.								
Protective Equipment:	<div style="display: flex; align-items: center; justify-content: center;"> </div>								
Environmental:	Container effluent may cause severe environmental damage (surface and groundwater contamination, vegetation damage, and subsequent soil erosion). Some pesticides may remain active in waterbody sediments for extended periods.								
Health:	Various effects. Inhalation of some herbicides/pesticides can cause death. Herbicides/pesticides can be absorbed through the eyes and skin.								
Management Methods									
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: Hazardous Waste</td> <td style="width: 50%;">Manitoba: Hazardous Waste</td> </tr> <tr> <td>Alberta: Hazardous Waste/DOW</td> <td>Ontario: Hazardous Waste</td> </tr> <tr> <td>Saskatchewan: Waste Dangerous Good</td> <td>Québec: Residual Hazardous Material</td> </tr> </table>	NWT: Hazardous Waste	Manitoba: Hazardous Waste	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material		
NWT: Hazardous Waste	Manitoba: Hazardous Waste								
Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste								
Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material								
Storage:	Do not allow rainwater to enter empty containers. Avoid the long-term storage of empty containers.								
Treatment / Disposal:	<ul style="list-style-type: none"> Triple rinse containers with rinsate going back into spray tank. Send to designated pesticide container collection facility (contact Enbridge Environment Staff for assistance). 								
Comments:	Use certified contractors for herbicide/pesticide applications for all chemical vegetation control, and ensure they properly dispose of all containers and associated wastes to designated facilities.								
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: Any quantity (free liquids)</td> <td style="width: 50%;">Ontario: Any quantity (free liquids)</td> </tr> <tr> <td>Alberta: Any quantity (free liquids)</td> <td>Québec: Any quantity (free liquids)</td> </tr> <tr> <td>Saskatchewan: Any quantity (free liquids)</td> <td>TDG (includes loading / unloading): Any quantity (free liquids)</td> </tr> <tr> <td>Manitoba: Any quantity (free liquids)</td> <td></td> </tr> </table>	NWT: Any quantity (free liquids)	Ontario: Any quantity (free liquids)	Alberta: Any quantity (free liquids)	Québec: Any quantity (free liquids)	Saskatchewan: Any quantity (free liquids)	TDG (includes loading / unloading): Any quantity (free liquids)	Manitoba: Any quantity (free liquids)	
NWT: Any quantity (free liquids)	Ontario: Any quantity (free liquids)								
Alberta: Any quantity (free liquids)	Québec: Any quantity (free liquids)								
Saskatchewan: Any quantity (free liquids)	TDG (includes loading / unloading): Any quantity (free liquids)								
Manitoba: Any quantity (free liquids)									
TDG Information									
Shipping Name	Class	PIN	Packing Group	Special Provisions					
<i>See TDG Comments Below</i>	-	-	-	-					
Placards:	Dependent on specific pesticide.								
Comments:	There are a large number of TDGR categories for herbicides/pesticides. Consult the supplier and TDGR for Specific TDG classification. If the container is empty, write "Residue – last contained" on the shipping document.								
Documentation									
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.								
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.								

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Containers – Herbicides/Pesticides
Waste Information Sheet
September 2016



Contaminated Debris and Soil - Chemical / Solvent

Waste Information Sheet







General Information				
Original Use:	Generated by the accidental spillage of chemicals and solvents during operation or maintenance. Includes contaminated soils, vegetation and absorbent materials.			
Physical State:	Solid, semi-liquid (chemical, solvent and contaminated solids).			
Components:	Various chemicals, hydrocarbons (solvents), soil, water, sorbent and other spill debris.			
Potential Hazards				
Class (WHMIS):	B4	MSDS:	Use MSDS of specific components, (e.g. solvent).	
Hazard Symbols:	Refer to container label or supplier MSDS.	Protective Equipment:		
Environmental:	Potential extensive groundwater / surface water and soil contamination if contaminated debris / soil is left in place or directly on ground surface or if disposed in a landfill.			
Health:	Dependent on specific product / chemical. Typically not an inhalation hazard if < 38°C. High vapor concentration may irritate nose, throat and lungs. May irritate eyes and skin on contact.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste Alberta: Hazardous Waste/DOW Saskatchewan: Waste Dangerous Good	Manitoba: Hazardous Waste Ontario: Hazardous Waste Québec: Residual Hazardous Material		
Storage:	Contain material in sealed drums, or lined and bermed area, away from heat and ignition sources at field facility.			
Treatment / Disposal:	<ul style="list-style-type: none"> On-site / off-site land treatment / biodegradation. Send to an appropriate (approved) waste management facility. On-site / off site treatment through chemical application and treatment (e.g. lime application for acid effected soils). Possibly send to a waste contractor for solvent / chemical recovery. 			
Comments:	Contact Enbridge Environment Staff on a case specific basis. Testing may be required.			
Reportable Release Quantity:	NWT: 25 kg or litres Alberta: 25 kg or litres Saskatchewan: 25 kg or litres Manitoba: 1 kg or litres	Ontario: Any quantity Québec: Any quantity	TDG (includes loading / unloading): Depending on specific contaminant.	
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>	-	-	-	-
Placards:	Dependent on specific contaminant.			
Comments:	Classifications for this waste may vary depending on the specific contaminant. Likely Classes based on common solvents and chemicals used in the oil and gas industry include 4.1, 6.1, or 8.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Contam. Debris & Soil - Chemical / Solvent
Waste Information Sheet
September 2016



**Contaminated Debris and
Soil - Mercury**
Waste Information Sheet





General Information				
Original Use:	Generated from the spillage of mercury from instrument manometers.			
Physical State:	Solid (mercury contaminated soils).			
Components:	Mercury, soil, water, sorbent and other spill debris.			
Potential Hazards				
Class (WHMIS):	D1A; D2A	MSDS:	Mercury	
Hazard Symbols:		Protective Equipment:	    	
Environmental:	Spilled mercury will contaminate pond and drainage ditch sludge and can accumulate in drains/gutters within process buildings. Leachate may contain soluble mercury salts.			
Health:	Toxic vapors. Eye irritation. If absorbed by skin, may cause dermatitis. Long or repeated exposure may create emotional disorder and damage to the nervous system, kidneys or liver.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta: Hazardous Waste/DOW	Ontario:	Hazardous Waste	
	Saskatchewan: Waste Dangerous Good	Québec:	Residual Hazardous Material	
Storage:				
Treatment / Disposal:	<ul style="list-style-type: none"> If large quantity of mercury is spilled, the metal may be collected and cleaned for reuse. On-site solidification, Hazardous Waste Disposal Facility if mercury levels are above regulated landfill regulations. 			
Comments:	Contact Enbridge Environment Staff on a case specific basis. Testing may be required.			
Reportable Release Quantity:	NWT: 5 kg or litres	Ontario:	Any quantity	
	Alberta: 5 kg or litres	Québec:	Any quantity	
	Saskatchewan: 100 g	TDG (includes loading / unloading): 5 kg or L		
	Manitoba: 5 kg or litres			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
CORROSIVE SOLID, N.O.S. ("Technical Name")	8	UN1759	I, II or III	16
Placards:	Class 8			
Comments:	After shipping name put: "(soil/debris contaminated with mercury)". TDG regulation is dependent on whether or not contaminant levels are above regulated landfill regulation. Testing may be required. For sufficient quantities of mercury, see "Mercury" Waste Information Sheet.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Contam. Debris & Soil – Mercury
Waste Information Sheet
September 2016



**Contaminated Debris and
Soil - Oil / Condensate**
Waste Information Sheet

General Information																	
Original Use:	Generated by the accidental spillage of crude oil or condensate. Includes contaminated soils, vegetation, and absorbent materials.																
Physical State:	Solid (oil / condensate and contaminated solids).																
Components:	Oil, condensate, BTEX, heavy metals (As, Cd, Cr, Pb, Hg, Ni, Tl or Se), salts, soils, boron, barium, other spill debris and absorbent materials.																
Potential Hazards																	
Class (WHMIS): B4	MSDS: Crude Oil.																
Hazard Symbols:	Protective Equipment:																
	  																
Environmental:	Potential groundwater contamination from hydrocarbons if disposed in landfill. Migration of hydrocarbons also possible with land treatment. Light ends may be extremely mobile (water soluble).																
Health:	Typically not an inhalation hazard if < 38°C. High vapor concentrations may irritate nose, throat, and lungs. May irritate eyes and skin on contact. Personnel protection required. Level of protection will vary with the waste.																
Management Methods																	
Waste Classification:	<table border="0"> <tr> <td>NWT:</td> <td>Non-Hazardous Waste</td> <td>Manitoba:</td> <td>Non-Hazardous Waste</td> </tr> <tr> <td>Alberta:</td> <td>Non-Hazardous Waste/Non-DOW</td> <td>Ontario:</td> <td>Non-Hazardous Waste</td> </tr> <tr> <td>Saskatchewan:</td> <td>Non-Hazardous Waste</td> <td>Québec:</td> <td>Residual Material.</td> </tr> </table>	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material.				
NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste														
Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste														
Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material.														
Note: Classified as Hazardous Waste/WDG/DOW if BTEX, flash point and hydrocarbon exceed criteria.																	
Storage:	If saturated - store in steel drums. Temporary storage on drying pads or lined areas.																
Treatment / Disposal:	Recover free liquids, contain contaminated soil within a bermed and lined storage cell, contact Enbridge Environment Staff for treatment and disposal options																
Comments:	Minimize contamination potential through the use of spill containment measures such as dikes and drip pans. Various jurisdictions have specific rules around the management of hydrocarbon contaminated materials. Contact the Enbridge Environment Staff to provide assistance.																
Reportable Release Quantity:	<table border="0"> <tr> <td>NWT:</td> <td>25 kg</td> <td>Ontario:</td> <td>Any quantity</td> </tr> <tr> <td>Alberta:</td> <td>25 kg</td> <td>Québec:</td> <td>Any quantity</td> </tr> <tr> <td>Saskatchewan:</td> <td>Any quantity</td> <td>TDG (includes loading / unloading):</td> <td>25 kg or litres</td> </tr> <tr> <td>Manitoba:</td> <td>1 kg</td> <td></td> <td></td> </tr> </table>	NWT:	25 kg	Ontario:	Any quantity	Alberta:	25 kg	Québec:	Any quantity	Saskatchewan:	Any quantity	TDG (includes loading / unloading):	25 kg or litres	Manitoba:	1 kg		
NWT:	25 kg	Ontario:	Any quantity														
Alberta:	25 kg	Québec:	Any quantity														
Saskatchewan:	Any quantity	TDG (includes loading / unloading):	25 kg or litres														
Manitoba:	1 kg																
TDG Information																	
Shipping Name	Class	PIN	Packing Group	Special Provisions													
SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. (soil / debris contaminated with Petroleum Crude Oil).	4.1	UN 3175	II	16, 56													
Placards:	Class 4.1 (in bulk or over 500 kg).																
Comments:	May not be TDG regulated. Classified as Hazardous Waste/WDG/DOW if BTEX, flash point and hydrocarbon exceed regulated criteria.																
Documentation																	
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.																
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.																

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Contaminated Debris & Soil - Oil/Condensate
Waste Information Sheet
September 2016



Contaminated Debris and Soil - Pesticide

Waste Information Sheet





General Information					
Original Use:	Generated by the accidental spillage or over use of pesticides (i.e. herbicides) during weed control operations. Includes sterilized contaminated soils and affected vegetation.				
Physical State:	Solid (pesticide and contaminated solids).				
Components:	Various pesticides (bromacil, diuron, sodium metaborate, ureabor, tebuthiron, picloram, atrazine, dicamba, 2,4-D), soils, absorbents, and other spill debris.				
Potential Hazards					
Class (WHMIS):	B4; D1B; D2A	MSDS:	Use MSDS of specific pesticide.		
Hazard Symbols:			Protective Equipment:		
Environmental:	Potential groundwater and surface water contamination. Wind drift to agricultural or non-contaminated areas. Surface water contamination from soil leaching.				
Health:	Avoid inhalation - can cause nervous system disorders. Eye irritation. Can be readily absorbed through the skin and cause severe irritations.				
Management Methods					
Waste Classification:	NWT: Hazardous Waste Alberta: Dangerous Oilfield Waste Saskatchewan: Waste Dangerous Good	Manitoba: Hazardous Waste Ontario: Hazardous Waste Québec: Residual Hazardous Material			
Storage:	Store debris in steel drums at field facility. Temporary storage on drying pads or lined areas. Keep containers closed and in a cool, well ventilated area.				
Treatment / Disposal:	<ul style="list-style-type: none"> • If possible treat contaminated soil on-site through the application of activated carbon / charcoal (contact Enbridge Environment Staff). • Spread affected soils over areas of site requiring vegetation control. • Send to an approved landfill – co-disposal with activated carbon / charcoal. Notify landfill before shipment. 				
Comments:	Contact Enbridge Environment Staff on a case specific basis.				
Reportable Release Quantity:	NWT: 5 kg or litres Alberta: 5 kg or litres Saskatchewan: 5 kg or litres Manitoba: 5 kg or litres	Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): 5 kg or litres			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
SOLIDS CONTAINING TOXIC LIQUID, N.O.S (Soil / debris contaminated with "Specific Chemical Name")		6.1	UN 3243	II	16, 57
Placards:	Class 6.1 (in bulk or over 500 kg).				
Comments:	Many pesticides are not classified as poisonous substances in TDG. Check classification of the original product.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or District office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Contaminated Debris & Soil – Pesticide
Waste Information Sheet
September 2016



**Contaminated Debris and
Soil - Produced Water**
Waste Information Sheet

General Information				
Original Use:	Generated by the accidental spillage of emulsion and produced water. Includes contaminated soils, vegetation, and absorbent materials.			
Physical State:	Solid and liquid (salt water and contaminated solids).			
Components:	Aromatic hydrocarbons, oil and grease, water, sand, sodium, calcium, magnesium and potassium. Many types of salt may be in waste. Most common is sodium chloride (NaCl) – average 2.6%.			
Potential Hazards				
Class (WHMIS):	B4; D2A	MSDS:	Use MSDS of specific components.	
Hazard Symbols:	 		Protective Equipment:	 
Environmental:	Produced water with a high salt content will damage vegetation; extremely persistent compound which is toxic to environment in high concentrations.			
Health:	Not an inhalation hazard < 38°C. High vapor concentrations may irritate nose, throat and lungs. May irritate eyes and skin on contact. May contain H ₂ S.			
Management Methods				
Waste Classification:	NWT: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste		
	Alberta: Non-Hazardous Waste/Non-DOW	Ontario: Non-Hazardous Waste		
	Saskatchewan: Non-Hazardous Waste	Québec: Residual Material		
Storage:	If saturated - store in steel drums. Temporary storage on drying pads or lined areas.			
Treatment / Disposal:	<ul style="list-style-type: none"> Recover free liquids, contain contaminated soil within a bermed and lined storage cell, contact Enbridge Environment Staff for treatment and disposal options Small to medium volumes of contaminated soil should be sent to an approved landfill. 			
Comments:	Contact Enbridge Environment Staff on a case specific basis.			
Reportable Release Quantity:	NWT: 25 kg	Ontario: Any quantity		
	Alberta: 2 m ³ (any amount off-site)	Québec: Any quantity		
	Saskatchewan: 1.6 m ³ (any amount off-site)	TDG (includes loading / unloading): 25 kg or litres		
	Manitoba: 1 kg			
TDG Information				
Shipping Name		Class	PIN	Packing Group
See TDG Comments Below		-	-	-
Placards:	Dependent on specific contaminant.			
Comments:	Classifications for this waste may vary depending on the specific contaminant. If waste contains significant quantities of petroleum crude oil, waste could be classed as SOLIDS CONTAINING FLAMMABLE LIQUIDS, N.O.S. ("Technical Name of Contaminant"). Refer to <i>Contaminated Debris and Soil – Oil/Condensate</i> Waste Information Sheet.			
Documentation				
Transportation Documents:	Dependent on specific contaminant.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Contaminated Debris & Soil - Produced Water
Waste Information Sheet
September 2016



**Contaminated Debris & Soil -
Refined Products**
Waste Information Sheet


General Information									
Original Use:	This waste is generated by the accidental spillage of refined products. Includes contaminated soils, vegetation and absorbent materials.								
Physical State:	Solid (liquid and contaminated solids).								
Components:	Refined products, heavy metals (As, Cd, Cr, Pb, Hg, Ni, Tl or Se) soils, boron, barium, other spill debris and absorbent materials.								
Potential Hazards									
Class (WHMIS):	B4								
Hazard Symbols:									
MSDS:	All refined products.								
Protective Equipment:									
Environmental:	Potential groundwater contamination from hydrocarbons if disposed in landfill.								
Health:	Migration of hydrocarbons also possible with land treatment. Not an inhalation hazard below 38°C. High vapor concentrations may irritate nose, throat and lungs. May irritate eyes and skin on contact.								
Management Methods									
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: Hazardous Waste</td> <td style="width: 50%;">Manitoba: Hazardous Waste</td> </tr> <tr> <td>Alberta: Hazardous Waste/DOW</td> <td>Ontario: Hazardous Waste</td> </tr> <tr> <td>Saskatchewan: Waste Dangerous Good</td> <td>Québec: Residual Hazardous Material</td> </tr> </table>	NWT: Hazardous Waste	Manitoba: Hazardous Waste	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material		
NWT: Hazardous Waste	Manitoba: Hazardous Waste								
Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste								
Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material								
Storage:	Store in steel vessels, drums, etc. Temporary storage on drying pads or in/on lined pits or ground.								
Treatment / Disposal:	<ul style="list-style-type: none"> Recover free liquids, contain contaminated soil within a bermed and lined storage cell, contact Enbridge Environment Staff for treatment and disposal options Non-hazardous, Landfill, Bioremediation 								
Comments:	Minimize contamination potential through the use of spill containment measures such as dikes and drip pans. Various jurisdictions have specific rules around the management of hydrocarbon contaminated materials. Contact the Enbridge Environment Staff to provide assistance.								
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: 25 kg</td> <td style="width: 50%;">Ontario: Any quantity</td> </tr> <tr> <td>Alberta: 25 kg</td> <td>Québec: Any quantity</td> </tr> <tr> <td>Saskatchewan: 1.6 m³ (any amount off-site)</td> <td>TDG (includes loading / unloading): 25 kg or litres</td> </tr> <tr> <td>Manitoba: 1 kg</td> <td></td> </tr> </table>	NWT: 25 kg	Ontario: Any quantity	Alberta: 25 kg	Québec: Any quantity	Saskatchewan: 1.6 m ³ (any amount off-site)	TDG (includes loading / unloading): 25 kg or litres	Manitoba: 1 kg	
NWT: 25 kg	Ontario: Any quantity								
Alberta: 25 kg	Québec: Any quantity								
Saskatchewan: 1.6 m ³ (any amount off-site)	TDG (includes loading / unloading): 25 kg or litres								
Manitoba: 1 kg									
TDG Information									
Shipping Name	Class	PIN	Packing Group	Special Provisions					
SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. (soil / debris contaminated with petroleum crude oil)	4.1	UN3175	II	16,56					
Placards:	Class 4.1 (in bulk or over 500 kg)								
Comments:	May not be TDG regulated. Dependent on flash point test.								
Documentation									
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.								
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.								

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Contaminated Debris & Soil - Refined Products
Waste Information Sheet
September 2016



**Contaminated Groundwater,
Sludges/Slurries**
Waste Information Sheet

General Information																	
Original Use:	This waste is generated by the removal of groundwater and/or material classified as a sludge/slurry (i.e., a loose combination of soil and water).																
Physical State:	Liquid or semi-solid.																
Components:	Road salt, pesticides and herbicides, accidental spills of hazardous and non-hazardous materials.																
Potential Hazards																	
Class (WHMIS): N/A	MSDS: None																
Hazard Symbols:	Protective Equipment: 																
Environmental:	Waste characterization required to identify pollution concerns.																
Health:	No hazards.																
Management Methods																	
Waste Classification:	<table border="0"> <tr> <td>NWT:</td> <td>Testing Required</td> <td>Manitoba:</td> <td>Testing Required</td> </tr> <tr> <td>Alberta:</td> <td>Testing Required</td> <td>Ontario:</td> <td>Testing Required</td> </tr> <tr> <td>Saskatchewan:</td> <td>Testing Required</td> <td>Québec:</td> <td>Testing Required</td> </tr> </table>	NWT:	Testing Required	Manitoba:	Testing Required	Alberta:	Testing Required	Ontario:	Testing Required	Saskatchewan:	Testing Required	Québec:	Testing Required				
NWT:	Testing Required	Manitoba:	Testing Required														
Alberta:	Testing Required	Ontario:	Testing Required														
Saskatchewan:	Testing Required	Québec:	Testing Required														
Storage:	Large volumes may be temporarily stored in lined pits. For lesser volumes store in tanks or barrels.																
Treatment / Disposal:	<ul style="list-style-type: none"> Recover free liquids, contain contaminated sludge/slurry within a bermed and lined storage cell, contact Enbridge Environment Staff for treatment and disposal options. Non-hazardous. 																
Comments:	Minimize contamination potential through the use of spill containment measures. Various jurisdictions have specific rules around the management of materials that pose a contamination risk. Contact the Enbridge Environment Staff to provide assistance.																
Reportable Release Quantity:	<table border="0"> <tr> <td>NWT:</td> <td>N/A</td> <td>Ontario:</td> <td>N/A</td> </tr> <tr> <td>Alberta:</td> <td>N/A</td> <td>Québec:</td> <td>N/A</td> </tr> <tr> <td>Saskatchewan:</td> <td>N/A</td> <td>TDG (includes loading / unloading):</td> <td>N/A</td> </tr> <tr> <td>Manitoba:</td> <td>N/A</td> <td></td> <td></td> </tr> </table>	NWT:	N/A	Ontario:	N/A	Alberta:	N/A	Québec:	N/A	Saskatchewan:	N/A	TDG (includes loading / unloading):	N/A	Manitoba:	N/A		
NWT:	N/A	Ontario:	N/A														
Alberta:	N/A	Québec:	N/A														
Saskatchewan:	N/A	TDG (includes loading / unloading):	N/A														
Manitoba:	N/A																
TDG Information																	
Shipping Name	Class	PIN	Packing Group	Special Provisions													
<i>Not TDG Regulated</i>	N/A	N/A	N/A	N/A													
Placards:	N/A																
Comments:	If the material is contaminated with dangerous goods, TDG Regulations may apply..																
Documentation																	
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate																
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.																

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Contaminated Groundwater, Sludges/Slurries
Waste Information Sheet
September 2016



Drag Reducing Agent (DRA)
– Flow Improver
Waste Information Sheet





General Information				
Original Use:	This material is injected into the pipeline system to reduce friction and viscosity elements to improve the overall “flowability” of pipeline liquids.			
Physical State:	Opaque amber to light green liquid, hydrocarbon/solvent-like odour.			
Components:	Various petroleum hydrocarbons (> 90%).			
Potential Hazards				
Class (WHMIS):	B3, D2B	MSDS:	Use MSDS for specific product (e.g. CDR Flow Improver from Conoco Inc., Houston, TX, USA).	
Hazard Symbols:	 	Protective Equipment:	 	
Environmental:	A highly mobile waste stream. Potential for groundwater and soil contamination. Possible toxic vapours and fire hazard with on-site recycling operations.			
Health:	May cause minor skin, eye and lung irritation. Toxic if ingested.			
Management Methods				
Waste Classification:	NWT:	Hazardous Waste	Manitoba:	Hazardous Waste
	Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste
	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material
Storage:	Store in steel drums or tanks in a well ventilated area away from heat sources.			
Treatment / Disposal:	Return to supplier or solvent recycler for recycling. Send to an appropriate (approved) waste management facility			
Comments:	May need to test to determine actual classification due to variety of products			
Reportable Release Quantity:	NWT:	100 litres	Ontario:	Any quantity
	Alberta:	200 kg or litres	Québec:	Any quantity
	Saskatchewan:	500 litres (100 off-site)	TDG (includes loading / unloading): 200 kg or L	
	Manitoba:	100 litres		
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
PETROLEUM PRODUCTS, N.O.S.	3	UN1268	I, II or III	None
Placards:	Class 3 (in bulk or over 500 kg)			
Comments:	The above classification is based on a pure product. If the waste is contaminated with other materials, OTHER TDG Shipping Names MAY APPLY.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Drag Reducing Agent (DRA) – Flow Improver
Waste Information Sheet
September 2016



**Drag Reducing Agent
(DRA) – Liquid Power or
EP-1000 Extreme Power**
Waste Information Sheet

General Information				
Original Use:	This material is injected into the pipeline system to reduce friction and viscosity elements to improve the overall "flowability" of pipeline liquids.			
Physical State:	White liquid with a mild odour.			
Components:	Water and calcium (CDR Liquid Power), Ethylene glycol, alcohols, C12-14-secondary, ethoxylated (EP-1000 Extreme Power) and other unknown constituents (protected by product patent) (both).			
Potential Hazards				
Class (WHMIS):	N/A	MSDS:	Use MSDS for specific product (i.e. CDR Liquid Power from Conoco Inc. and Extreme Power EP 1000 from Phillips Specialty Products Inc., both in Houston, TX, USA).	
Hazard Symbols:	N/A	Protective Equipment:	   	
Environmental:	No significant impacts. Mild caustic - may cause localized pH alteration in soils or surface waters.			
Health:	May cause minor skin, eye and lung irritation.			
Management Methods				
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material
Storage:	Store in steel drums or tanks in a well ventilated area. Segregate from strong oxidizing agents.			
Treatment / Disposal:	Return to supplier (if "un-spent"). Send to an appropriate (approved) waste management facility			
Comments:				
Reportable Release Quantity:	NWT:	Any vol. causing an adverse impact	Ontario:	Any quantity
	Alberta:	Any vol. causing an adverse impact	Québec:	Any quantity
	Saskatchewan:	Any vol. causing an adverse impact	TDG (includes loading / unloading): N/A	
	Manitoba:	Any vol. causing an adverse impact		
TDG Information				
Shipping Name		Class	PIN	Packing Group
Not TDG Regulated		N/A	N/A	N/A
Placards:	N/A			
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply.			
Documentation				
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

**Drag Reducing Agent (DRA) – Liquid
Power or EP-1000 Extreme Power**
Waste Information Sheet
September 2016



**Electronics – Computer/
Printer Equipment**
Waste Information Sheet

General Information					
Original Use:	Includes broken and obsolete computer desktop, laptop and notebook computer terminals, keyboards, mouse, disk drives, monitors and printers from offices.				
Physical State:	Solid				
Components:	Plastic casings containing various components including heavy metals, such as lead, cadmium and mercury, and valuable materials such as aluminum, ferrous metals and copper.				
Potential Hazards					
Class (WHMIS):	Not a controlled product.		MSDS:	Not Applicable.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Illegal burning may produce toxic fumes. Decomposition in landfills may cause leaching of toxins into the soil and groundwater.				
Health:	Not expected to be a hazard unless casing is forcibly broken or damaged to expose potentially hazardous components.				
Management Methods					
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material	
Storage:	Store in bins or in areas of low traffic volumes on-site. Segregate computer monitors from other waste computer equipment to facilitate recycling. Maintain waste volumes in a neat and orderly manner. Protect from high heat and moisture.				
Treatment / Disposal:	<ul style="list-style-type: none"> If available, use provincial, municipal, supplier, or retailer waste electrical and electronic equipment (WEEE) stewardship (take-back and recycling) programs. Landfill – verify with provincial environmental agency or landfill operator. 				
Comments:					
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>		N/A	N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Electronics – Computer / Printer Equipment
Waste Information Sheet
September 2016



**Electronics – Printer
Cartridges**
Waste Information Sheet

General Information					
Original Use:	Includes empty ink and toner cartridges from office computer equipment and printers.				
Physical State:	Solid				
Components:	Small quantities of various chemicals, depending on the cartridge manufacturer (Propanol, ethanol, iron oxide).				
Potential Hazards					
Class (WHMIS):	Not a controlled product.		MSDS:	Use MSDS of specific cartridge.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Illegal burning may produce toxic fumes. Decomposition in landfills may cause leaching of toxins into the soil and groundwater.				
Health:	Encased in a cartridge and are not accessible unless forcibly broken or damaged. Not expected to be a health risk under normal circumstances. Exposure to the chemical components of damaged or broken cartridges may cause eye irritation.				
Management Methods					
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material	
Storage:	Store in bins or in areas of low traffic volumes on-site. Segregate from other waste to facilitate recycling. Maintain waste volumes in a neat and orderly manner. Protect from high heat and moisture.				
Treatment / Disposal:	<ul style="list-style-type: none"> • If available, use provincial, municipal, supplier, or retailer stewardship programs. Some manufacturers can rebuild toner cartridges with new drums; refilled ink-jet cartridges or self-refill kits can also be purchased. • BE CAREFUL when using refilled cartridges or self-refill kits; may not be compatible with printer. • Where opportunities for the 4R's are unavailable, landfill, unless the chemical content warrants management as hazardous waste. Check the MSDS. 				
Comments:					
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>		N/A	N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is broken, damaged or contaminated with dangerous goods, TDG Regulations may apply. Verify classification of waste with contaminants as per the MSDS.				
Documentation					
Transportation Documents:	Truck Ticker or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Electronics – Printer Cartridges
Waste Information Sheet
September 2016



Filters - Air

Waste Information Sheet

General Information					
Original Use:	Filters are non-regenerable air filters from air intake on compressors, electric motors and air conditioners.				
Physical State:	Sock cartridge, canister units, fibre sheets and/or plates.				
Components:	Particulates. No other data available.				
Potential Hazards					
Class (WHMIS):	Not a controlled product.		MSDS:	Not applicable.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Illegal incineration may produce toxic fumes. Possible spontaneous combustion.				
Health:	Not an inhalation hazard below 38°C. High vapor concentrations may irritate nose. Slight skin irritations.				
Management Methods					
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material	
Storage:	Store with other dry garbage. Well ventilated storage areas.				
Treatment / Disposal:	Prior to disposal, segregate from other types of filters (e.g., lube oil) and landfill.				
Comments:					
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>		N/A	N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Filters – Air
Waste Information Sheet
September 2016



Filters - Glycol

Waste Information Sheet

General Information													
Original Use:	Facilities where glycol is used as a heat trace. Filters used for the removal of corrosion products, and other impurities from glycol when recycled or regenerated in a closed system.												
Physical State:	Cartridge or paper filters.												
Components:	May contain triethylene glycol (TEG), diethylene glycol (DEG), ethylene glycol (EG), propylene glycol (PG) hydrocarbons, boron, chromium, copper, nickel, lead zinc, iron sulphide and carbon.												
Potential Hazards													
Class (WHMIS): D2A	MSDS: Use MSDS of components (e.g.; TEG, DEG, EG).												
Hazard Symbols: <div style="text-align: center; font-size: 2em;">⚠</div>	Protective Equipment: <div style="text-align: center;"> </div>												
Environmental:	Potential groundwater contamination if disposed in a landfill. Wash water may contain high levels of glycol. Incineration may produce toxic fumes.												
Health:	Not an inhalation hazard if < 38°C. High vapor concentration may irritate nose. Avoid prolonged exposure.												
Management Methods													
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">NWT: Hazardous Waste</td> <td style="width: 33%;">Manitoba: Hazardous Waste</td> <td style="width: 33%;"></td> </tr> <tr> <td>Alberta: Hazardous Waste/DOW</td> <td>Ontario: Hazardous Waste</td> <td></td> </tr> <tr> <td>Saskatchewan: Waste Dangerous Good</td> <td>Québec: Residual Hazardous Material</td> <td></td> </tr> </table> <p>Note: Above classification if contaminated – see TDG Comments below.</p>	NWT: Hazardous Waste	Manitoba: Hazardous Waste		Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste		Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material				
NWT: Hazardous Waste	Manitoba: Hazardous Waste												
Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste												
Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material												
Storage:	Store temporarily in drain barrels to allow for the drainage of any free liquids. Transfer to designated filter bin / bag (glycol filters used in sour service may be pyrophoric; store in sealed steel drums). Keep in well ventilated storage area.												
Treatment / Disposal:	<ul style="list-style-type: none"> Scheduled pick up by waste contractor for treatment at recycling/recovery facility. Treated filters are then landfilled (depending on application) as nonhazardous materials. Recycle drained liquids or send to an appropriate (approved) waste management facility. 												
Comments:	<ul style="list-style-type: none"> Use filters with removable cores to reduce waste volumes. Pyrophoric filters cannot be stored in bins or tote bags. 												
Reportable Release Quantity: (Note: based on Class 4.1 or 4.2.)	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">NWT: 25 kg or litres</td> <td style="width: 33%;">Ontario: Any quantity</td> <td style="width: 33%;"></td> </tr> <tr> <td>Alberta: 25 kg or litres</td> <td>Québec: Any quantity</td> <td></td> </tr> <tr> <td>Saskatchewan: 25 kg or litres</td> <td colspan="2">TDG (includes loading / unloading): 25 kg or litres</td> </tr> <tr> <td>Manitoba: 1 kg or litre</td> <td colspan="2"></td> </tr> </table>	NWT: 25 kg or litres	Ontario: Any quantity		Alberta: 25 kg or litres	Québec: Any quantity		Saskatchewan: 25 kg or litres	TDG (includes loading / unloading): 25 kg or litres		Manitoba: 1 kg or litre		
NWT: 25 kg or litres	Ontario: Any quantity												
Alberta: 25 kg or litres	Québec: Any quantity												
Saskatchewan: 25 kg or litres	TDG (includes loading / unloading): 25 kg or litres												
Manitoba: 1 kg or litre													
TDG Information													
Shipping Name	Class	PIN	Packing Group	Special Provisions									
PYROPHORIC SOLIDS MIXTURE, N.O.S. (waste filters contaminated with iron sulphide)	4.2	UN 2846 **ERAP**	I	16,38									
SOLIDS CONTAINING FLAMMABLE LIQUIDS, N.O.S. (Technical Name)	4.2	UN 3175	II	16,56									
Placards:	Class 4.2 as appropriate (in bulk or over 500 kg).												
Comments:	EG, PG, DEG and TEG filters are not TDG regulated. However, after use in gas dehydration processes, glycol filters may be pyrophoric, flammable, or leachable as indicated by TDG classifications above. Pyrophoric solids (Class 4.2) are prohibited for bulk transport. **ERAP** Cannot offer for transport dangerous goods having PIN UN2846 when the quantity of that good exceeds 1,000 kg or litres for the dangerous goods without an Emergency Response Assistance Plan approved by Transport Canada. Verify with the Enbridge Environment Staff.												
Documentation													
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.												
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.												

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Filters – Glycol
Waste Information Sheet
September 2016



Filters - Lubricating Oil

Waste Information Sheet

General Information				
Original Use:	Filters from engines, rotating equipment and lubricating oil clean-up systems. Used for the removal of corrosion products, degradation sludges and other impurities.			
Physical State:	Cloth or paper cartridges of various sizes, metal cartridges.			
Components:	Hydrocarbons, lead, zinc, additives, and other trace heavy metals, N-hexane, naptha. May also contain triphenyl phosphates, anti-rust and anti-oxidant additives. Fibre, water, ash, sand.			
Potential Hazards				
Class (WHMIS): D2B	MSDS: Lubricating Oil.			
Hazard Symbols:	Protective Equipment:			
Environmental:	Potential groundwater contamination (metals leaching) if disposed in a landfill. Heavy metals may release under acidic conditions. Hydrocarbons are toxic in soil and water. Incineration may produce toxic fumes.			
Health:	Not an inhalation hazard if < 38°C. High vapor concentrations may irritate nose and throat. Slight skin irritations.			
Management Methods				
Waste Classification:	<div style="display: flex; justify-content: space-between;"> <div> <p>NWT: Hazardous Waste</p> <p>Alberta: Hazardous Waste/DOW</p> <p>Saskatchewan: Waste Dangerous Good</p> </div> <div> <p>Manitoba: Hazardous Waste</p> <p>Ontario: Hazardous Waste</p> <p>Québec: Residual Hazardous Material</p> </div> </div> <p>Note: Alberta – Waste Type 201 – spent / undrained lube oil filters from internal combustion engines. Testing may be required for classification. Dependent on application.</p>			
Storage:	Store temporarily in drain barrels to allow for the drainage of any free liquids. Transfer to designated filter bin / bag. Keep in well ventilated storage area.			
Treatment / Disposal:	<ul style="list-style-type: none"> Scheduled pick up by waste contractor for recycling/recovery of used oil. Drained liquids should be recycled. 			
Comments:	Install reusable filter systems on compressors.			
Reportable Release Quantity:	<div style="display: flex; justify-content: space-between;"> <div> <p>NWT: 25 kg</p> <p>Alberta: 25 kg or litres</p> <p>Saskatchewan: 100 kg (50 kg off-site)</p> <p>Manitoba: 1 kg</p> </div> <div> <p>Ontario: Any quantity</p> <p>Québec: Any quantity</p> <p>TDG (includes loading / unloading): 25 kg or litres</p> </div> </div>			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments below</i>	-	-	-	-
Placards:	Lubricating oil filters are not TDG regulated. If there is any indication that the lube oil may have any contaminants, then further TDG testing may be required for flammability and leachates. Other possible classes are Flammable Solids N.O.S. (lube oil filters); Class 4.1, UN 3175, PG II.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Filters - Lubricating Oil
Waste Information Sheet
September 2016



Fuel - Diesel
Waste Information Sheet





General Information					
Original Use:	Vehicle fuel.				
Physical State:	Flammable liquid.				
Components:	Mixture of hydrocarbons. May contain benzene, naphthalene, sulphur.				
Potential Hazards					
Class (WHMIS):	B3, D2B		MSDS:	Low Sulphur Diesel	
Hazard Symbols:			Protective Equipment:		
Environmental:	Possible groundwater or surface water contamination if spilled or leaked. Can be toxic to aquatic life.				
Health:	Causes sever skin irritation. Aspiration hazard if swallowed. Use with adequate ventilation. Avoid contact or inhalation of fumes.				
Management Methods					
Waste Classification:	NWT:	Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste (221-I)	
	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material	
Storage:	Store in tightly closed approved containers at a field facility. Keep closed. Store in a cool, dry, well-ventilated place away from heat, direct sunlight, and all sources of ignition.				
Treatment / Disposal:	Hazardous Waste Management Facility				
Comments:					
Reportable Release Quantity:	NWT:	100 litres	Ontario:	Any quantity	
	Alberta:	200 litres	Québec:	Any quantity	
	Saskatchewan:	100 litres (100 litres off-site)	TDG (includes loading / unloading): 200 litres		
	Manitoba:	100 litres			
TDG Information					
Shipping Name			Class	PIN	Packing Group
DIESEL FUEL			3	UN1202	III
Special Provisions					
82,88					
Placards:	Class 3 (in bulk or over 500 kg).				
Comments:					
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Fuel – Diesel
Waste Information Sheet
September 2016



Fuel - Gasoline
Waste Information Sheet

General Information					
Original Use:	Vehicle fuel.				
Physical State:	Flammable liquid.				
Components:	Mixture of hydrocarbons. May contain ethanol, benzene, toluene, xylene.				
Potential Hazards					
Class (WHMIS):	B3, D2B		MSDS:	Gasoline	
Hazard Symbols:	 		Protective Equipment:	 	
Environmental:	Possible groundwater or surface water contamination if spilled or leaked. Can be toxic to aquatic life.				
Health:	May cause skin irritation, headaches, nausea or dizziness with prolonged exposure. Use with adequate ventilation. Avoid contact or inhalation of fumes.				
Management Methods					
Waste Classification:	NWT:	Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste (221-I)	
	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material	
Storage:	Store in tightly closed approved containers at a field facility. Keep closed. Store in a cool, dry, well-ventilated place away from heat, direct sunlight, and all sources of ignition.				
Treatment / Disposal:	Hazardous Waste Management Facility				
Comments:					
Reportable Release Quantity:	NWT:	100 litres	Ontario:	Any quantity	
	Alberta:	200 litres	Québec:	Any quantity	
	Saskatchewan:	100 litres (100 litres off-site)	TDG (includes loading / unloading):	200 litres	
	Manitoba:	100 litres			
TDG Information					
Shipping Name			Class	PIN	Packing Group
GASOLINE			3	UN1203	II
Special Provisions			17, 82, 88		
Placards:	Class 3 (in bulk or over 500 kg).				
Comments:					
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				


Need further information?
Contact Enbridge Environment Staff in Edmonton.

Fuel – Gasoline
Waste Information Sheet
September 2016



Garbage - Domestic Waste

Waste Information Sheet

General Information					
Original Use:	Includes waste from offices, miscellaneous warehouse packaging and construction camps. Does not include sanitary sewage. See also Metal-scrap and Containers waste information sheets.				
Physical State:	Mixed garbage. Synonyms: Trash, Refuse.				
Components:	Paper, metal, glass, organic, wood, cloth.				
Potential Hazards					
Class (WHMIS):	Not a controlled product.		MSDS:	Not Applicable.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Accumulated garbage may attract wildlife. Illegal burning may produce toxic fumes. Landfills may cause gas venting and leachate problems. Possible spontaneous combustion. Possible hazardous containers if not properly segregated.				
Health:	Not expected to be a hazard.				
Management Methods					
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material	
Storage:	Store in bins or in areas of low traffic volumes on-site. Segregate waste types to facilitate recycling. Maintain waste volumes in a neat and orderly manner. Protect from wind.				
Treatment / Disposal:	<ul style="list-style-type: none"> Send / transfer to an approved landfill. Segregate and recycle paper, cardboard, glass, metal, and plastic. 				
Comments:	Ontario requires that office buildings greater than 10,000 square metres have a source separation program.				
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
Not TDG Regulated		N/A	N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply. Cover all open loads during transport.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Garbage - Domestic Waste
Waste Information Sheet
September 2016



Glycol

Waste Information Sheet

General Information					
Original Use:	Engine and compressor coolant. Dehydration for natural gas processing. Heat trace and heat medium (line heaters, utility boilers). Antifreeze for tank farm roof drains and fire pumps.				
Physical State:	Liquid usually mixed 1:1 with water (depending on particular use). Synonyms: Ethylene glycol, antifreeze, monoethylene glycol or glycol alcohol.				
Components:	Glycol, iron oxide (trace), iron sulphide, heavy metals. May contain some additives (corrosion inhibitors) for antifreeze.				
Potential Hazards					
Class (WHMIS):	D2A	MSDS:	Use MSDS of specific components (e.g. TEG, DEG, EG, Antifreeze, Ethylene Glycol).		
Hazard Symbols:			Protective Equipment:		
Environmental:	Storage in unlined pits or general spills can cause surface and groundwater contamination. Fatal to wildlife.				
Health:	Inhalation of fumes may cause throat irritation and headaches. Toxic when ingested; could result in kidney damage. Moderate irritation to skin, eyes and mucous tissues upon contact.				
Management Methods					
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste			
	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (212-L)			
	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material			
	Note: See comment under TDG information.				
Storage:	Store material in steel drums at field facility. Store in a cool well ventilated place.				
Treatment / Disposal:	<ul style="list-style-type: none"> Send to glycol supplier for recycling. Glycol from tank roof drain lines should be contained for use the following year. Vehicle antifreeze should be changed and recycled by a qualified service centre. Filter and reuse in process (may require the addition of corrosion inhibitor). In Alberta, if glycol content < 40%, waste may be injected via Class Ia or Ib injection well. 				
Reportable Release Quantity:	NWT: 100 litres	Ontario: Any quantity			
	Alberta: 200 kg or litres	Québec: Any quantity			
	Saskatchewan: 25 litres (5 litres off-site)	TDG (includes loading / unloading): 200 kg or L			
	Manitoba: 100 litres				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
FLAMMABLE LIQUID, N.O.S. ("Technical Name")		3	UN 1993	I, II or III	16
TOXIC LIQUID, ORGANIC, N.O.S.		6.1	UN2810	I, II or III	16
Placards:	Class 3 (in bulk or over 500 kg).				
Comments:	There are various TDG categories for glycol wastes. The above is one example. OTHER TDG Shipping Names MAY APPLY. Dependent on specific waste chemical. If flash point ≤ 60°C then it will be TDG regulated. Due to processes, transformations and mixtures, this waste may contain dangerous goods and should be tested - if not pure waste glycol. The additives in antifreeze may make this waste TDG regulated as above. Not regulated if not contaminated with a dangerous good.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate; dependent if glycol is contaminated with a dangerous good.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Glycol
Waste Information Sheet
September 2016



H₂S Sensing Tape

Waste Information Sheet




General Information					
Original Use:	Sensing tape used for the detection of H ₂ S leaks.				
Physical State:	White tape strips.				
Components:	Lead acetate and acetic acid.				
Potential Hazards					
Class (WHMIS):	The "tape" itself is not a controlled product.		MSDS:	Lead acetate, acetic acid.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Toxic leachate, soil and groundwater contamination from lead acetate if improperly landfilled. Co-dispose with limestone.				
Health:	Not expected to be hazard however avoid prolonged skin contact. Handle with gloves. Wash thoroughly after handling.				
Management Methods					
Waste Classification:	NWT:	Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste	
	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material	
Storage:	Seal inside plastic bags and keep in closed containers, in covered location away from flammable locations.				
Treatment / Disposal:	Hazardous – Hazardous Waste Disposal Facility. Landfill which accepts hazardous waste.				
Comments:					
Reportable Release Quantity:	NWT:	5 kg or liters	Ontario:	Any quantity	
	Alberta:	5 kg or liters	Québec:	Any quantity	
	Saskatchewan:	5 kg or litres	TDG (includes loading / unloading): 5 kg or litres		
	Manitoba:	5 kg or litres			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
LEAD ACETATE		6.1	UN1616	III	109, 118
Placards:	Class 6.1 (in bulk or over 500 kg)				
Comments:					
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or District office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

H₂S Sensing Tape
Waste Information Sheet
September 2016



Halon
Waste Information Sheet

General Information																				
Original Use:	Pressurized for use in refrigeration and fire extinguishing systems. Federal government has imposed strict control on non-essential uses and the discharge testing of fire extinguishing system.																			
Physical State:	Dense colorless gas with slight ethereal odor. May occur as a liquid under extreme pressure.																			
Components:	Bromotrifluoromethane (Brominated fluorocarbon). Trade names examples are Halon 1301, Fluorocarbon 1301, Trifluorobromomethane, Freon 13B1, R13B1.																			
Potential Hazards																				
Class (WHMIS):	A	MSDS:	Halon 1301																	
Hazard Symbols:		Protective Equipment:	 																	
Environmental:	Linked to depletion of ozone layer in upper atmosphere.																			
Health:	Very low toxicity, weak narcotic. Eye irritant. May cause frost bite and skin burns. High concentrations may cause Asphyxiation without warning.																			
Management Methods																				
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 25%;">Hazardous Waste</td> <td style="width: 25%;">Manitoba:</td> <td style="width: 25%;">Hazardous Waste</td> </tr> <tr> <td>Alberta:</td> <td>Hazardous Waste/DOW</td> <td>Ontario:</td> <td>Hazardous Waste. (331-R)</td> </tr> <tr> <td>Saskatchewan:</td> <td>Waste Dangerous Good</td> <td>Québec:</td> <td>Residual Hazardous Material</td> </tr> </table>				NWT:	Hazardous Waste	Manitoba:	Hazardous Waste	Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste. (331-R)	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material				
NWT:	Hazardous Waste	Manitoba:	Hazardous Waste																	
Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste. (331-R)																	
Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material																	
Storage:	Closed pressurized systems only. Store cylinders in an upright position in a dry well-ventilated area.																			
Treatment / Disposal:	Contact appropriate (approved) supplier, recycler and/or Enbridge Environment Staff for assistance.																			
Comments:	<p>Contact supplier for disposal of any halon wastes - high potential for supplier to re-use and recycle.</p> <p>Halon systems that are no longer required should have the halon storage units removed by supplier. If a halon system is to be tested, send to a testing company that uses an environmentally acceptable testing procedure. Ensure that the company empties the halon into another tank before hydrostatically testing the cylinder and then re-injects the gas once the test is complete. Do not empty halon cylinders or extinguishers before sending the cylinder for structural testing.</p>																			
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 25%;">Any quantity</td> <td style="width: 25%;">Ontario:</td> <td style="width: 25%;">Any quantity</td> </tr> <tr> <td>Alberta:</td> <td>Any quantity</td> <td>Québec:</td> <td>Any quantity</td> </tr> <tr> <td>Saskatchewan:</td> <td>Any quantity</td> <td>TDG (includes loading / unloading):</td> <td>Any quantity</td> </tr> <tr> <td>Manitoba:</td> <td>Any quantity</td> <td></td> <td></td> </tr> </table>				NWT:	Any quantity	Ontario:	Any quantity	Alberta:	Any quantity	Québec:	Any quantity	Saskatchewan:	Any quantity	TDG (includes loading / unloading):	Any quantity	Manitoba:	Any quantity		
NWT:	Any quantity	Ontario:	Any quantity																	
Alberta:	Any quantity	Québec:	Any quantity																	
Saskatchewan:	Any quantity	TDG (includes loading / unloading):	Any quantity																	
Manitoba:	Any quantity																			
TDG Information																				
Shipping Name	Class	PIN	Packing Group	Special Provisions																
<i>See TDG Comments Below</i>	-	-	-	-																
Placards:	Dependent on specific waste chemical.																			
Comments:	Dependent on specific waste chemical.																			
Documentation																				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.																			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.																			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Halon
Waste Information Sheet
September 2016



Hydrotest Fluids - Methanol

Waste Information Sheet

General Information				
Original Use:	Methanol is used as a hydrotest fluid for pipelines and for dehydration in gas processing. Also used for hydrate removal.			
Physical State:	Low viscosity clear liquid, alcohol-like odor.			
Components:	Methanol.			
Potential Hazards				
Class (WHMIS): B2, D1B, D2A, D2B.	MSDS: Use MSDS of specific components (e.g.; Methanol, Methyl Hydrate).			
Hazard Symbols: <div style="text-align: center;"></div>	Protective Equipment: <div style="text-align: center;"> </div>			
Environmental:	Potential groundwater contamination if spilled. Very toxic to aquatic life.			
Health:	Vapors may irritate nose, throat, lungs, and cause eye irritation. Methanol is readily absorbed by the skin and may produce nervous system effects.			
Management Methods				
Waste Classification:	<div style="display: flex; justify-content: space-between;"> <div> NWT: Hazardous Waste Alberta: Hazardous Waste/DOW Saskatchewan: Waste Dangerous Good </div> <div> Manitoba: Hazardous Waste Ontario: Hazardous Waste Québec: Residual Hazardous Material </div> </div>			
Storage:	Store in steel drums or tanks at field facility. Keep in a well ventilated area away from heat sources.			
Treatment / Disposal:	<ul style="list-style-type: none"> Reuse fluids for subsequent hydro-testing operations. Send to waste contractor for recovery of product or incineration. Deep well disposal well. 			
Comments:	If large hydrostatic test requires methanol, consideration should be given to renting methanol water mixture from supplier and returning mixture to supplier when test is completed.			
Reportable Release Quantity:	<div style="display: flex; justify-content: space-between;"> <div> NWT: 100 litres Alberta: 200 kg or litres Saskatchewan: 500 litres (100 off-site) Manitoba: 100 litres </div> <div> Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): 200 kg or L </div> </div>			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
METHANOL	3 (6.1)	UN 1230	II	43
FLAMMABLE LIQUIDS, N.O.S. ("Technical Name")	3	UN1993	I, II or III	16
Placards:	Class 3 (in bulk or over 500 kg).			
Comments:	First TDGR classification for pure methanol. If contaminated with inert substances or a mixture of two or more dangerous goods, then the second shipping name may apply.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			


Need further information?
Contact Enbridge Environment Staff in Edmonton.

Hydrotest Fluids – Methanol
Waste Information Sheet
September 2016



Hydrotest Fluids - Water

Waste Information Sheet

General Information				
Original Use:	Surface water or municipal source water used as a hydrotest fluid for pipelines.			
Physical State:	Condition of source water. Impurities from testing may discolour water.			
Components:	Possible components include iron, nickel, lead, suspended solids and oil.			
Potential Hazards				
Class (WHMIS):	Not a controlled product.		MSDS:	Not applicable.
Hazard Symbols:			Protective Equipment:	
Environmental:	Potential erosion and surface water sedimentation when released following hydrotest operation.			
Health:	No significant health issues.			
Management Methods				
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material
Storage:	Surface storage in pits and depressions must be in accordance with construction permit and municipal authority. Consultation may also be required with the provincial environment authority.			
Treatment / Disposal:	<ul style="list-style-type: none"> • Reuse fluids for subsequent hydro-testing operations. • Surface land release following testing and approval from municipality, provincial environment authority or NEB (See comments below). • Deep well disposal. 			
Comments:	Hydrotest water must always be analyzed prior to watershed release. Must not raise or lower receiving body of water by $\pm 2^{\circ}\text{C}$. If saline water was used, do not discharge onto arable land. Tank water should also be analyzed prior to release onto tank farm area. Provincial environment department approval is required for water use and / or disposal. A significant advance notification time may be required. Refer to ENBRIDGE procedures. While used hydrostatic test water is not usually a hazardous waste, water may require pre-treatment prior to release – if water becomes contaminated during testing (from sediments and pipeline impurities). Possible treatment methods include filtering and activated carbon treatment.			
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A
	Alberta:	N/A	Québec:	N/A
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A	
	Manitoba:	N/A		
TDG Information				
Shipping Name		Class	PIN	Packing Group
Not TDG Regulated		N/A	N/A	N/A
Placards:	N/A			
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply. Secure all valves and fittings prior to transport.			
Documentation				
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Hydrotest Fluids – Water
Waste Information Sheet
September 2016



Insulation (Non-Asbestos)

Waste Information Sheet

General Information																	
Original Use:	Fireproofing and thermal insulation in buildings, pipes, and vessels.																
Physical State:	Batts of material or rolls.																
Components:	Fiberglass, calcium silicate, rockwool, foam material.																
Potential Hazards																	
Class (WHMIS): D2A	MSDS: None.																
Hazard Symbols: <div style="text-align: center; margin-top: 10px;"></div>	Protective Equipment: <div style="text-align: center; margin-top: 10px;"></div>																
Environmental:	Low hazard. Wildlife may ingest.																
Health:	May cause severe skin, eye and respiratory irritation. Insulation installation or removal will produce an irritating fibre dust.																
Management Methods																	
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 35%;">Non-Hazardous Waste</td> <td style="width: 25%;">Manitoba:</td> <td style="width: 15%;">Non-Hazardous Waste</td> </tr> <tr> <td>Alberta:</td> <td>Non-Hazardous Waste/Non-DOW</td> <td>Ontario:</td> <td>Non-Hazardous Waste</td> </tr> <tr> <td>Saskatchewan:</td> <td>Non-Hazardous Waste</td> <td>Québec:</td> <td>Residual Material</td> </tr> </table> <p>Not hazardous if not contaminated with another dangerous good.</p>	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material				
NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste														
Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste														
Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material														
Storage:	Contain in plastic bags or other sealable container at field facility.																
Treatment / Disposal:	Send / transfer to an approved landfill.																
Comments:	<ul style="list-style-type: none"> Repair exposed / damaged piping and building insulation. If possible, reuse insulation from demolition projects for new facility construction. 																
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 35%;">N/A</td> <td style="width: 25%;">Ontario:</td> <td style="width: 15%;">N/A</td> </tr> <tr> <td>Alberta:</td> <td>N/A</td> <td>Québec:</td> <td>N/A</td> </tr> <tr> <td>Saskatchewan:</td> <td>N/A</td> <td colspan="2">TDG (includes loading / unloading): N/A</td> </tr> <tr> <td>Manitoba:</td> <td>N/A</td> <td colspan="2"></td> </tr> </table>	NWT:	N/A	Ontario:	N/A	Alberta:	N/A	Québec:	N/A	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		Manitoba:	N/A		
NWT:	N/A	Ontario:	N/A														
Alberta:	N/A	Québec:	N/A														
Saskatchewan:	N/A	TDG (includes loading / unloading): N/A															
Manitoba:	N/A																
TDG Information																	
Shipping Name	Class	PIN	Packing Group	Special Provisions													
<i>Not TDG Regulated</i>	N/A	N/A	N/A	N/A													
Placards:	N/A																
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply. Seal before transporting.																
Documentation																	
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate																
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.																



Need further information?
Contact Enbridge Environment Staff in Edmonton.

Insulation (Non-Asbestos)
Waste Information Sheet
September 2016



Lead Compounds

Waste Information Sheet

General Information				
Original Use:	Lubricants or other products in which the base is a soluble lead.			
Physical State:	Semi-solid			
Components:	Lead chloride, lead fluoborate.			
Potential Hazards				
Class (WHMIS):	MSDS:			
Hazard Symbols:	Protective Equipment:			
				
Environmental:	Lead chloride and lead fluoborate are soluble and can therefore cause potential surface and groundwater contamination.			
Health:	Skin irritant. Toxic in certain concentrations.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste Alberta: Hazardous Waste/DOW Saskatchewan: Waste Dangerous Good If contaminated soil, a leachate test may be required.	Manitoba: Hazardous Waste Ontario: Hazardous Waste Québec: Residual Hazardous Material		
Storage:	Store off ground in impermeable, sealed containers.			
Treatment / Disposal:	<ul style="list-style-type: none"> Hazardous - Hazardous Waste Management Facility Non-hazardous - If leachate test okay, landfill which is licensed to accept this type of waste. 			
Comments:				
Reportable Release Quantity:	NWT: 5 kg or litres Alberta: 5 kg or litres Saskatchewan: 2 kg Manitoba: 5 kg or litres	Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): 5 kg or litres		
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
LEAD COMPOUND, SOLUBLE, N.O.S.	6,1 (9)	UN2291	III	24
Placards:	Class 6.1 (9) (In bulk or over 500 kg)			
Comments:	The above is one example. OTHER TDG Shipping Names MAY APPLY. Dependent on specific waste chemical.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Lead Compounds
Waste Information Sheet
September 2016



**Lubricating Oil -
Hydrocarbon and Synthetic**
Waste Information Sheet

General Information				
Original Use:	Lubrication of oilfield machinery, engines, compressors, and vehicles.			
Physical State:	Hydrocarbon liquids and grease.			
Components:	Chlorinated solvents, naphthalene, benzene, toluene, xylenes, lead, trace metals (i.e. Ba, Cr, V), triphenyl phosphate, butylated triphenyl phosphate, anti-rust and anti-oxidant additives.			
Potential Hazards				
Class (WHMIS):	Not a controlled product.	MSDS:	Lubricating Oil and above chemicals.	
Hazard Symbols:			Protective Equipment:	
Environmental:	Potential groundwater and surface water contamination (hydrocarbons and metals) if applied to roads or other ground surfaces.			
Health:	Not an inhalation hazard if < 38°C. May cause some skin and tissue irritation.			
Management Methods				
Waste Classification:	NWT: Non-Hazardous	Manitoba: Non-Hazardous		
	Alberta: Non-Hazardous Waste/Non-DOW	Ontario: Non-Hazardous (252-L)		
	Saskatchewan: Waste Dangerous Good	Québec: Residual Material		
	Note: Above waste classification applies to new and/or unused lubricating oils unless contaminated with heavy metals such as lead, barium or vanadium. Testing may be required.			
Storage:	Store in sealed drums at field facility. Larger quantities should be stored in storage tanks equipped with spill containment measures. Used lubricating oil <i>must</i> be segregated from other produced / waste liquids.			
Treatment / Disposal:	<ul style="list-style-type: none"> • Send to a lube oil recycling facility. Verify that recycler is licensed to receive and process lube oil. • Return to supplier for recycling. 			
Comments:	Lube oil must be segregated from other waste fluids. Various jurisdictions have specific management requirements for spent lube oil			
Reportable Release Quantity:	NWT: 100 litres	Ontario: Any quantity		
	Alberta: 5 kg or litres	Québec: Any quantity		
	Saskatchewan: 100 litres (50 litres off-site)	TDG (includes loading / unloading): 5 kg or L		
	Manitoba: 100 litres			
TDG Information				
Shipping Name		Class	PIN	Packing Group
See TDG Comments Below		-	-	-
Placards:				
Comments:	Unused (clean) lubricating oils are not regulated under TDG; however, waste lubricating oils, as a result of use in older engines with lead bearings, can contain quantities of metals such as lead, barium or vanadium. Testing may be required. TDG classification and shipping names will depend on specific waste contaminants.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Lubricating Oil - Hydrocarbon / Synthetic
Waste Information Sheet
September 2016



Mercury
Waste Information Sheet

General Information				
Original Use:	Excess mercury from instrument manometers, mercury bulbs in tank level switches, mercoid switches.			
Physical State:	A low viscosity silvery liquid. Odorless. Synonyms: Quicksilver, Hydrargyrum.			
Components:	Mercury.			
Potential Hazards				
Class (WHMIS):	D1A; D2A.	MSDS:	Mercury.	
Hazard Symbols:	 	Protective Equipment:	 	
Environmental:	Spilled mercury will contaminate pond and drainage ditch sludges and accumulate in drains / gutters within process buildings. Leachate may contain soluble mercury salts.			
Health:	Toxic vapors. Eye irritation. If absorbed by skin, may cause dermatitis. Long or repeated exposure may create emotional disorder and damage to the nervous system, kidneys or liver.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste Alberta: Hazardous Waste/DOW Saskatchewan: Waste Dangerous Good		Manitoba: Hazardous Waste Ontario: Hazardous Waste (146-H) Québec: Residual Hazardous Material	
Storage:	Store in closed containers and in a cool, well ventilated place away from incompatible materials.			
Treatment / Disposal:	List on a chemical waste exchange program (if pure). Send to a hazardous waste management facility.			
Comments:	Pure mercury may be listed on a chemical waste exchange program for use by other parties. Replace mercury manometers with electronic instruments. Old level switches (wires are known to corrode) replace with ultrasonic level switches.			
Reportable Release Quantity:	NWT: 5 kgs or litres Alberta: 5 kgs or litres Saskatchewan: 100 g Manitoba: 5 kgs or litres		Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): 5 kgs or litres	
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
MERCURY	8	UN2809	III	
Placards:	Class 8			
Comments:				
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Mercury
Waste Information Sheet
September 2016



Metal - Scrap
Waste Information Sheet




General Information				
Original Use:	Refers to clean material (pipe, pumps, tanks etc.) which is not contaminated with insulation, asbestos, oil or sulphur. See also Waste Information Sheets on Construction and Demolition Material, Insulation (Asbestos) and Insulation (Non-asbestos).			
Physical State:	Solids.			
Components:	Metal (iron, steel, aluminum), traces of organic and inorganic lead, fluorides and other process chemicals.			
Potential Hazards				
Class (WHMIS):	D1A; D2A			
Hazard Symbols:	<div style="display: flex; align-items: center; justify-content: center;"> </div>			
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> MSDS: None. </div> <div style="width: 45%;"> Protective Equipment: <div style="display: flex; align-items: center; justify-content: center;"> </div> </div> </div>				
Environmental:	Not considered a hazard. Possible ground or air contamination if not cleaned of hydrocarbon residue.			
Health:	Trace chemicals may cause skin and throat irritation. Particles may cause eye damage and irritation. Possible toxic fumes generated within enclosed vessels, units, spaces.			
Management Methods				
Waste Classification:	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> NWT: Non-Hazardous Waste Alberta: Non-Hazardous Waste/Non-DOW Saskatchewan: Non-Hazardous Waste </div> <div style="width: 48%;"> Manitoba: Non-Hazardous Waste Ontario: Non-Hazardous Waste Québec: Residual Material </div> </div>			
Storage:	Store in a low traffic area of field facility. Keep storage area orderly and segregate metals by type for recycling.			
Treatment / Disposal:	Send to a scrap metal recycler. Ensure no liquid or oil residue prior to sending off site. Drain all liquids from equipment. Wipe liquid from surface where possible. All attempts to recycle must be made. Landfill is last resort.			
Comments:	Ensure waste is not contaminated with chemicals, oil, asbestos, etc.			
Reportable Release Quantity:	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> NWT: N/A Alberta: N/A Saskatchewan: N/A Manitoba: N/A </div> <div style="width: 48%;"> Ontario: N/A Québec: N/A TDG (includes loading / unloading): N/A </div> </div>			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>	N/A	N/A	N/A	N/A
Placards:	N/A			
Comments:	If the waste is contaminated with dangerous goods (e.g. equipment has not been cleaned or equipment contains sufficient quantity of liquid hydrocarbons to still classify it as a dangerous good), TDG Regulations may apply. If the cavities within the equipment still contain liquid then the equipment should be classified according to the classification of the liquid and transported as a dangerous good. Seal equipment's orifices prior to transport.			
Documentation				
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Metal Scrap
Waste Information Sheet
September 2016



Methanol
Waste Information Sheet

General Information				
Original Use:	Methanol is used for drying pipelines (after hydrotesting) or for winter testing of pipelines to prevent from freezing. See Disposal Comments below for information on Hydrotest Water.			
Physical State:	Low viscosity clear colorless liquid, alcohol-like odour.			
Components:	Methanol – usually < 0.5%.			
Potential Hazards				
Class (WHMIS):	B2, D1B, D2A, D2B.	MSDS:	Use MSDS of specific components (e.g.; Methanol, Methyl Hydrate).	
Hazard Symbols:		Protective Equipment:	 	
Environmental:	Potential groundwater contamination if spilled. Very toxic to aquatic life.			
Health:	Vapours may irritate nose, throat, lungs and cause eye irritation. Methanol is readily absorbed by the skin and may produce nervous system effects.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta: Hazardous Waste/DOW	Ontario:	Hazardous Waste	
	Saskatchewan: Waste Dangerous Good	Québec:	Residual Hazardous Material	
Storage:	Store in steel drums or tanks in a well ventilated area away from heat sources.			
Treatment / Disposal:	<ul style="list-style-type: none"> Return to supplier for recycling/recovery. Hazardous – Hazardous Waste Management Facility 			
Comments:	If large hydrostatic test requires methanol, consideration should be given to renting methanol water mixture from supplier and returning mixture to supplier when test is completed.			
Reportable Release Quantity:	NWT: 100 litres	Ontario:	Any quantity	
	Alberta: 200 kg or litres	Québec:	Any quantity	
	Saskatchewan: 500 litres (100 off-site)	TDG (includes loading / unloading): 200 kg or L		
	Manitoba: 100 litres			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
METHANOL	3 (6.1)	UN1230	II	43
Placards:	Class 3 (in bulk or over 500 kg)			
Comments:	<ul style="list-style-type: none"> Above TDG classification for pure methanol. If contaminated with non-dangerous goods or mixed with other dangerous goods but methanol in the primary constituent, alternate Shipping Name may apply: FLAMMABLE LIQUIDS, N.O.S. (methanol); Class: 3; PIN: UN1993; Packing Group: II. 			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Methanol
Waste Information Sheet
September 2016



Mud - Drilling
Waste Information Sheet

General Information				
Original Use:	Used in drilling operations to stabilize water sensitive formations, improve borehole stability, alleviate mud rings, reduce drill pipe torque and pumping pressure.			
Physical State:	May be oil based or gel chemical viscous liquid.			
Components:	Mixture of hydrocarbons and may contain corrosives.			
Potential Hazards				
Class (WHMIS):		MSDS: Use MSDS of specific drilling mud type.		
Hazard Symbols:		Protective Equipment:		
Environmental:	Dependent on specific drilling mud type. May be toxic to aquatic species.			
Health:	High vapour concentrations may irritate eyes, skin and breathing, and may result in dizziness and headaches.			
Management Methods				
Waste Classification:	NWT:	Testing Required	Manitoba:	Testing Required
	Alberta:	Testing Required	Ontario:	Testing Required
	Saskatchewan:	Testing Required	Québec:	Testing Required
Storage:	Store in a corrosion resistant (plastic or lined) container at field facility. Keep closed. Store in a cool, well ventilated place away from potential sources of ignition or sparks and from high pH materials.			
Treatment / Disposal:	Recycle where possible Approved Hazardous Waste Management Facility			
Comments:				
Reportable Release Quantity:	NWT:	Dependent on mud type.	Ontario:	Dependent on mud type.
	Alberta:	Dependent on mud type.	Québec:	Dependent on mud type.
	Saskatchewan:	Dependent on mud type.	TDG (includes loading / unloading): Dependent on mud type.	
	Manitoba:	Dependent on mud type.		
TDG Information				
Shipping Name		Class	PIN	Packing Group
<i>See TDG Comments Below</i>		-	-	-
Placards:	Dependent on specific drilling mud waste type.			
Comments:	Drilling mud may be water-based, oil-based, gel, or of other non-aqueous based types. Classification and shipping requirements dependent on specific drilling mud waste type. Testing required.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			



Need further information?
Contact Enbridge Environment Staff in Edmonton.

Mud – Drilling
Waste Information Sheet
September 2016



Oily Rags

Waste Information Sheet

General Information				
Original Use:	Maintenance and spill clean-up operations.			
Physical State:	Oily and dirty cloths.			
Components:	High concentrations of hydrocarbons, solvents and heavy metals, glycols.			
Potential Hazards				
Class (WHMIS):	B4	MSDS:	Use MSDS of specific components (e.g. Crude oil).	
Hazard Symbols:		Protective Equipment:		
Environmental:	Flammable - possible ignition of other landfill wastes. Potential groundwater contamination (from hydrocarbons) if disposed to landfill or directly on ground surface. Incineration without flue gas scrubber may produce toxic fumes.			
Health:	Skin irritation.			
Management Methods				
Waste Classification:	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> NWT: Non-Hazardous Waste Alberta: Non-Hazardous Waste/Non-DOW Saskatchewan: Non-Hazardous Waste </div> <div style="width: 48%;"> Manitoba: Non-Hazardous Waste Ontario: Hazardous Waste (251-I). Québec: Residual Hazardous Material </div> </div> <p>NOTE: Above classification unless low flash point, BTEX component or hydrocarbon content.</p>			
Storage:	Store in drums or containers with loose-fitting lids at field facility (may be provided by cleaning service). Keep in a well ventilated area away from heat sources. Do not mix with other rags used for chemicals.			
Treatment / Disposal:	<ul style="list-style-type: none"> Send or scheduled pick-up to oily rag cleaning service. If rags cannot be recycled, deposit in waste filter bins for removal by waste contractor. May be landfilled with knowledge of waste contractor and landfill operator. 			
Comments:	In provinces where oily rags are considered to be non-hazardous, they can be recycled through a cleaning or drycleaning service. However the cleaning effluent may pose a worse environmental contamination. Question the cleaner's operations on how its effluent is being disposed.			
Reportable Release Quantity:	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> NWT: 25 kg Alberta: 25 kg or litres Saskatchewan: 100 kg (50 kg off-site) Manitoba: 1 kg </div> <div style="width: 48%;"> Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): 25 kg </div> </div>			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
SOLIDS CONTAINING FLAMMABLE LIQUID N.O.S. ("Technical Name")	4.1	UN 3175	II	16,56
Placards:	Class 4.1 as appropriate (in bulk or over 500 kg).			
Comments:	If the rags are heavily oiled, they should be considered as a solid containing a flammable liquid. If dripping, they may be a FLAMMABLE LIQUID, N.O.S. Rags which are contaminated with other substances (e.g. chemicals) may also be TDG regulated. Depending on the level and type of contamination, oily rags may be considered spontaneously combustible, Class 4.2. Testing may be required.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e., manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Oily Rags
Waste Information Sheet
September 2016



Paints, Enamels & Stains

Waste Information Sheet

General Information					
Original Use:	Painting, etc.				
Physical State:	Liquids and dried paint, etc. in containers.				
Components:	Oil based paints, enamels, stain, shellac, varnishes and associated thinners are hazardous materials.				
Potential Hazards					
Class (WHMIS):	Dependent on type of paint.		MSDS:	Dependent on type of paint.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Surface water and groundwater contaminated. Vegetation damage. Fire hazard.				
Health:	High vapour concentrations may cause respiratory problems. Read container labels. Skin and eye irritants.				
Management Methods					
Waste Classification:	NWT:	Hazardous Waste	Manitoba:	Hazardous Waste	
	Alberta:	Hazardous Waste/DOW	Ontario:	Hazardous Waste (145-B)	
	Saskatchewan:	Waste Dangerous Good	Québec:	Residual Hazardous Material	
Storage:	Group common-based paints together. Keep in original containers. Liquid, grouped paints and associated materials should be stored in sealed lined drums or similar containers.				
Treatment / Disposal:	Coordinate paint projects to reduce excess leftover supplies. Use all paint in containers. Non-hazardous paint materials should be recycled. Possible some off-site recycling of some oil and metallic based paints.				
Comments:	See also "Containers - Paint, Stain, Enamel" Waste Information Sheet.				
Reportable Release Quantity: (if Class 3)	NWT:	100 litres	Ontario:	Any quantity	
	Alberta:	200 litres	Québec:	Any quantity	
	Saskatchewan:	25 litres (5 litres off-site)	TDG (includes loading / unloading):	200 litres	
	Manitoba:	100 litres			
Reportable Release Quantity: (if Class 8)	NWT:	5 kg or litres	Ontario:	Any quantity	
	Alberta:	5 kgs or litres	Québec:	Any quantity	
	Saskatchewan:	50 kgs (50 kgs off-site)	TDG (includes loading / unloading):	5 kgs or litres	
	Manitoba:	5 kgs or litres			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
PAINT (if flammable)		3	UN1263	I, II or III	59, 83
PAINT (if corrosive)		8	UN3066	II or III	59
Placards:	Dependent on TDG class.				
Comments:	TDGR classification subject to flash point testing. In addition, possible alternate classification may be - Shipping Name: PAINT or PAINT RELATED MATERIAL (used to describe paint, lacquer, stain, shellac, varnish, polish, liquid filler, liquid lacquer base, and paint thinning/reducing compounds).				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Paints, Enamels & Stains
Waste Information Sheet
September 2016



Pesticides / Herbicides

Waste Information Sheet

General Information				
Original Use:	Chemical solutions used to control unwanted plant growth on leases and right-of-ways.			
Physical State:	Poisonous liquid.			
Components:	Dependent upon type of pesticide.			
Potential Hazards				
Class (WHMIS):	WHMIS testing required to verify. B4; D1B, D2A	MSDS:	Specific to type of pesticide. See container or supplier's information.	
Hazard Symbols:	 	Protective Equipment:	 	
Environmental:	Container effluent may cause severe environmental damage (surface and groundwater contamination, vegetation damage, and subsequent soil erosion).			
Health:	Various effects. Inhalation of some herbicides/pesticides can cause death. Herbicides/pesticides can be absorbed through the eyes and skin.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste		
	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste		
	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material		
Storage:	Collect in seal drums or leave in existing containers. Do not allow rain water to enter containers.			
Treatment / Disposal:	Apply herbicides/pesticide to target vegetation areas - but only for non-residual herbicides. Disposal only to a Hazardous Waste Management Facility.			
Comments:	Use certified contractors for herbicide/pesticide applications for all chemical vegetation control, and ensure they properly dispose of all containers and associated wastes to designated facilities.			
Reportable Release Quantity:	NWT: Any quantity (free liquids)	Ontario: Any quantity (free liquids)		
	Alberta: Any quantity (free liquids)	Québec: Any quantity (free liquids)		
	Saskatchewan: Any quantity (free liquids)	TDG (includes loading / unloading): Any quantity (free liquids)		
	Manitoba: Any quantity (free liquids)			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>	-	-	-	-
Placards:	Dependent on specific contaminant.			
Comments:	Classifications for this waste may vary depending on the specific contaminant. There are a large number of TDG categories for herbicides/pesticides. Consult the supplier and TDG Regulations for specific TDG classification. See also "Containers – Herbicides/Pesticides" Waste Information Sheet.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Pesticides / Herbicides
Waste Information Sheet
September 2016



Pigging Waste - Liquid / Wax

Waste Information Sheet




General Information									
Original Use:	Crude oil production, pipeline transmission, and heavy oil production. Generated from pipeline cleaning operations that have pig receiving facilities and from cleaning and emptying pipeline strainer baskets								
Physical State:	Liquid or wax.								
Components:	Hydrocarbon paraffin, demulsifiers.								
Potential Hazards									
Class (WHMIS):	B2; B3; or B4								
Hazard Symbols:	<div style="text-align: center;"> </div>								
MSDS:	Hydrocarbon related MSDSs.								
Protective Equipment:	<div style="text-align: center;"> </div>								
Environmental:	Potential groundwater contamination if liquids are improperly contained in unlined ponds and pits. Hazardous air emissions if non-approved burn disposal. Potential groundwater and/or surface water contamination, vegetation damage if wax residuals applied to ground or roads.								
Health:	Not an inhalation hazard if < 38°C. High vapor concentration may irritate nose. Slight skin irritations.								
Management Methods									
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: Hazardous Waste</td> <td style="width: 50%;">Manitoba: Hazardous Waste</td> </tr> <tr> <td>Alberta: Hazardous Waste/DOW</td> <td>Ontario: Hazardous Waste (251-I)</td> </tr> <tr> <td>Saskatchewan: Waste Dangerous Good</td> <td>Québec: Residual Hazardous Material</td> </tr> </table>	NWT: Hazardous Waste	Manitoba: Hazardous Waste	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (251-I)	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material		
NWT: Hazardous Waste	Manitoba: Hazardous Waste								
Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (251-I)								
Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material								
Storage:	Contain in drums or other steel containers at field facility. Keep away from ignition and heat sources.								
Treatment / Disposal:	<ul style="list-style-type: none"> Send to a licensed oilfield reclaimer for product recovery. Recycle: Liquids - 100% of waste from crude oil pipelines may be recycled to crude oil slop tanks. Oil reclamation, with recycle to pipeline, followed by disposal of solids. Waxes - 100% of waste from crude oil pipelines may be recycled to refinery cooker units, diluted with hot oils and mixed with crude stream. 								
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: 100 litres</td> <td style="width: 50%;">Ontario: Any quantity</td> </tr> <tr> <td>Alberta: 200 litres</td> <td>Québec: Any quantity</td> </tr> <tr> <td>Saskatchewan: 100 litres</td> <td>TDG (includes loading / unloading): 200 litres</td> </tr> <tr> <td>Manitoba: 100 litres</td> <td></td> </tr> </table>	NWT: 100 litres	Ontario: Any quantity	Alberta: 200 litres	Québec: Any quantity	Saskatchewan: 100 litres	TDG (includes loading / unloading): 200 litres	Manitoba: 100 litres	
NWT: 100 litres	Ontario: Any quantity								
Alberta: 200 litres	Québec: Any quantity								
Saskatchewan: 100 litres	TDG (includes loading / unloading): 200 litres								
Manitoba: 100 litres									
TDG Information									
Shipping Name	Class	PIN	Packing Group	Special Provisions					
See TDG Comments below.	-	-	-	-					
Placards:									
Comments:	<p>If wax only with flash point >60°C, then not regulated if leachate test is OK.</p> <p>If ≤ 60°C, use FLAMMABLE LIQUIDS, N.O.S. (petroleum crude oil), Class 3, UN 1993, Packing Group II or III (establish packing group from flash point and boiling point tests).</p> <p>A representative wax sample should have tests performed to determine the possible leachates it may generate or its flammability. If wax test results meet TDG criteria, the wax could be classed as flammable or leachate toxic.</p>								
Documentation									
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.								
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.								

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Pigging Waste Liquids / Wax
Waste Information Sheet
September 2016



**Pipe Coating
(Coal Tar Wraps)**
Waste Information Sheet

General Information					
Original Use:	Coating applied to underground pipes, pipe joints, fittings, couplings, etc. to protect the metal surfaces from corrosion.				
Physical State:	Pliable, coated fabric or other pliable material in a wound roll, resembling a roll of tape. May also be in the form of a viscous liquid or sludge.				
Components:	Various substances; may include epoxies, phenols, polyaromatic hydrocarbons, asbestos and/or PCBs.				
Potential Hazards					
Class (WHMIS):	Dependent on specific coating type.	MSDS:	Use MSDS of specific coal tar wrap type.		
Hazard Symbols:		Protective Equipment:	 		
Environmental:	Coal tar is a known carcinogen to human and animal life.				
Health:	Various exposure limits dependent on the type of coal tar coating. May cause minor skin and eye irritation. Under fire conditions, may emit irritating/toxic fumes.				
Management Methods					
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste			
	Alberta: Dangerous Oilfield Waste	Ontario: Hazardous Waste			
	Saskatchewan: Hazardous Waste	Québec: Residual Hazardous Material			
	Testing required. Dependent on specific waste chemical.				
Storage:	Store in a dry environment, away from continuous direct sunlight. Keep in original manufacturers packaging until ready to use.				
Treatment / Disposal:	<ul style="list-style-type: none"> Send to an appropriate waste management facility. Following appropriate disposal procedures if asbestos containing. 				
Comments:	Avoid over supply.				
Reportable Release Quantity:	NWT: N/A	Ontario: N/A			
	Alberta: N/A	Québec: N/A			
	Saskatchewan: N/A	TDG (includes loading / unloading): N/A			
	Manitoba: N/A				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>		-	-	-	-
Placards:	Dependent on specific waste chemical.				
Comments:	Dependent on specific waste chemical. If product was originally supplied as a dangerous good, then waste chemical is also a dangerous good. Use Shipping Name, Class, PIN, etc. of original shipment, unless original chemical properties have changed or contaminated with another dangerous good. If a mixture or solution of two or more dangerous goods, verify TDG Information with the Enbridge Environment Staff.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Pipe Coating (Coal Tar Wraps)
Waste Information Sheet
September 2016



Produced Sand
Waste Information Sheet

General Information					
Original Use:	Produced from heavy oil operations and some reservoirs that allow sand fines into the wellbore. Includes the sand, oil and water mixture contained in the bottom of field separator tanks and ecology pits. Also mixtures produced desanding processes (hydrocyclones).				
Physical State:	Sand, water and hydrocarbon mixture.				
Components:	Chlorides, carbonates, oil, aromatics (BTEX), trace heavy metals, arsenic.				
Potential Hazards					
Class (WHMIS):	B4; D2A	MSDS:	Use MSDS of specific components.		
Hazard Symbols:	 		Protective Equipment:	 	
Environmental:	The wastes high salt content may impact vegetation growth if a surface disposal method is used. Possible oil / phenol and salt migration into surface water and groundwater.				
Health:	Not an inhalation hazard if < 38°C. High vapor concentrations may irritate nose. Slight skin irritations.				
Management Methods					
Waste Classification:	NWT: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste			
	Alberta: Non-Dangerous Oilfield Waste	Ontario: Verify with Ontario MOECC			
	Saskatchewan: Non-Hazardous Waste	Québec: Verify with Québec MDDELCC			
Storage:	Secure in impermeable tanks or ecology pits at field facility. Provide bird deterrent measures.				
Treatment / Disposal:	<ul style="list-style-type: none"> Waste may be road-spread (depending on hydrocarbon content). Send to a licensed oilfield reclaimer for hydrocarbon recovery (if sufficient hydrocarbon content). Send to a salt cavern disposal facility (Newalta Hughenden, AB). Send to cement plant. 				
Comments:					
Reportable Release Quantity:	NWT: 25 kg	Ontario: Any quantity			
	Alberta: 2 m ³ (any amount off-site)	Québec: Any quantity			
	Saskatchewan: 1.6 m ³ (any amount off-site)	TDG (includes loading / unloading): 25 kg			
	Manitoba: 1 kg				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. ("Technical Name")		4.1	UN 3175	II	16, 56
Placards:	Class 4.1 or Class 3 (in bulk or over 500 kg)				
Comments:	If there is free liquid oil, use – Shipping Name PETROLEUM DISTILLATES, N.O.S, or PETROLEUM PRODUCTS, N.O.S., Class 3, UN 1268, Packing Group I, II, or III (establish packing group from flash point and boiling point tests).				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Produced Sand
Waste Information Sheet
September 2016



Sewage

Waste Information Sheet

General Information					
Original Use:	Human and waste water sewage generated at camp and office facilities. Synonyms: Biological wastes, black water.				
Physical State:	Liquid to sludge.				
Components:	Biological wastes, chlorine, sodium, and heavy metals.				
Potential Hazards					
Class (WHMIS):	Not Available	MSDS:	Not Available		
Hazard Symbols:	Protective Equipment: 				
Environmental:	Heavy metals can severely contaminate soils, surface water and groundwater. Generated gases can be flammable.				
Health:	Untreated sewage effluent can provide a medium for epidemic causing bacteria.				
Management Methods					
Waste Classification:	NWT: Non-Hazardous Waste Alberta: Non-Hazardous Waste/Non-DOW Saskatchewan: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste Ontario: Non-Hazardous Waste Québec: Residual Material			
Storage:	Contain in tanks or separate lined ponds.				
Treatment / Disposal:	<ul style="list-style-type: none"> Water conservation (usage and leak surveys). Effluent irrigation is viable but requires capital investment and engineering design (and applicable approvals/permits). Primary, secondary and tertiary treatment for water recovery, however larger capital investment required. Septic tanks and transport (if required) to local sewage treatment facility, if available, by commercial carrier. Sewage is usually regulated by the provincial public health act and/or clean water legislation. 				
Reportable Release Quantity:	The following release quantities apply if there was not an approval in place to discharge sewage. NWT: Any quantity Alberta: Any quantity Saskatchewan: Any quantity Manitoba: Any quantity Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): Any quantity				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>		N/A	N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply. Be aware of specific legislation applying in each province/territory to the disposal of sewage. Sewage is usually regulated by the provincial public health act and/or clean water legislation.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Sewage
Waste Information Sheet
September 2016



Sludge - Chemical

Waste Information Sheet

General Information				
Original Use:	Laboratory sump. Has various synonyms.			
Physical State:	Liquid sludge			
Components:	Various - dependent on specific analysis.			
Potential Hazards				
Class (WHMIS):	B2; B3; B4; C; D; or E - dependent on specific analysis	MSDS:	Various - dependent on specific analysis.	
Hazard Symbols:			Protective Equipment:	
Environmental:	Potential soil, surface water and groundwater contamination.			
Health:	Treat as a possible severe health hazard. May cause skin, eye and respiratory irritation.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste Alberta: Hazardous Waste/DOW Saskatchewan: Waste Dangerous Good		Manitoba: Hazardous Waste Ontario: Hazardous Waste Québec: Residual Hazardous Material	
Storage:	Leave in-situ or store in lined ponds or in tanks/barrels. Segregate from other waste sludges.			
Treatment / Disposal:	Hazardous - Hazardous Waste Management Facility. Possible contaminated soil treatment facility.			
Comments:	Treatment and disposal depends on specific analysis. Avoid long term collection of sludge - non-hazardous			
Reportable Release Quantity:	NWT: 5 kg or litres Alberta: 5 kg or litres Saskatchewan: 5 kg or litres Manitoba: 5 kg or litres		Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): 5 kg or litres	
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>	-	-	-	-
Placards:	Dependent on TDG Classification			
Comments:	Dependent on specific sludge analysis. Contact Enbridge Environment Staff.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			







Need further information?
Contact Enbridge Environment Staff in Edmonton.

Sludge – Chemical
Waste Information Sheet
September 2016



Sludge - Hydrocarbon

Waste Information Sheet

General Information				
Original Use:	Oil production, transportation and storage operations. Waste sludge from the bottom of crude oil storage tanks, separators, inlet separators, slop tanks, flare knockouts, etc.			
Physical State:	Black viscous liquid sludge (semi-solid). Strong hydrocarbon odor.			
Components:	Hydrocarbons, asphaltenes, corrosion inhibitors, iron oxides, iron sulphides, sand, silt.			
Potential Hazards				
Class (WHMIS):	B4	MSDS:	Use MSDS of specific components (e.g.; Crude oil, Iron sulphide).	
Hazard Symbols:		Protective Equipment:	    	
Environmental:	Waste characterization required to identify pollution concerns. Potential surface, groundwater, and soil contamination. Toxic leachate from possible high lead levels.			
Health:	Not an inhalation hazard if < 38°C. May cause skin, eye, and respiratory irritation.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste		
	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste (251-I)		
	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material		
Storage:	<ul style="list-style-type: none"> Large volumes may be temporarily stored in lined pits. For lesser volumes store in tanks or barrels. 			
Treatment / Disposal:	<ul style="list-style-type: none"> Send to a licensed reclaimer for product recovery and disposal. Send to a waste contractor for potential treatment and disposal. Spread and treat waste on-site. Contact Enbridge Environment Staff. 			
Comments:				
Reportable Release Quantity:	NWT: 100 litres (liquid); 25 kg (solid)	Ontario: Any quantity		
	Alberta: 2 m ³ (or any amount off-site)	Québec: Any quantity		
	Saskatchewan: 1.6 m ³ (or any amount off-site)	TDG (includes loading / unloading): 25 kg		
	Manitoba: 100 litres (liquid); 1 kg (solid)			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
See TDG Comments Below	-	-	-	-
Placards:	Dependent on specific contaminant.			
Comments:	Classifications for this waste may vary depending on the specific contaminant. This waste is subject to a wide variability in its flammability, corrosiveness and specific chemical components. This waste has to be tested to determine if it meets any of the TDG classification criteria and, if required, a leachate test. Potential classes are 3, 4.1, 4.2.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Sludge – Hydrocarbon
Waste Information Sheet
September 2016



**Spent Abrasives -
Containing Paint Coating
(Lead or Chromium)**
Waste Information Sheet

General Information																	
Original Use:	Paint coating on tanks and equipment.																
Physical State:	Solids																
Components:	Silica sand or metal shot containing abraded paint coating. Coating may contain lead or chromium. When used on pipes covered with coal tar and/or asbestos, refer to the corresponding WIS Pipe Coating (Coal Tar Wraps) and/or Asbestos.																
Potential Hazards																	
Class (WHMIS):	MSDS:																
Hazard Symbols: <div style="text-align: center;"> </div>	Protective Equipment: <div style="text-align: center;"> </div>																
Environmental:	May contaminate soil, surface water and groundwater.																
Health:	Breathing of particulate may cause respiratory complications. Skin and eye irritants.																
Management Methods																	
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 25%;">Testing Required</td> <td style="width: 25%;">Manitoba:</td> <td style="width: 25%;">Testing Required</td> </tr> <tr> <td>Alberta:</td> <td>Testing Required</td> <td>Ontario:</td> <td>Testing Required</td> </tr> <tr> <td>Saskatchewan:</td> <td>Testing Required</td> <td>Québec:</td> <td>Testing Required</td> </tr> </table>	NWT:	Testing Required	Manitoba:	Testing Required	Alberta:	Testing Required	Ontario:	Testing Required	Saskatchewan:	Testing Required	Québec:	Testing Required				
NWT:	Testing Required	Manitoba:	Testing Required														
Alberta:	Testing Required	Ontario:	Testing Required														
Saskatchewan:	Testing Required	Québec:	Testing Required														
Storage:	Store abrasive in original container prior to use. Store spent abrasive in container or tank lot prior to disposal.																
Treatment / Disposal:	Hazardous Waste Management Facility - possible landfill that will receive hazardous wastes - confirm with waste contractor and landfill operator.																
Comments:	Spent abrasive should be analyzed for leachate (TCLP) content prior to disposal (lead, chromium, total hydrocarbon). Leachate criteria varies in different provinces. If required, consult Enbridge Environment Staff for appropriate leachate criteria.																
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">NWT:</td> <td style="width: 25%;">5 kg or litres</td> <td style="width: 25%;">Ontario:</td> <td style="width: 25%;">Any quantity</td> </tr> <tr> <td>Alberta:</td> <td>5 kg or litres</td> <td>Québec:</td> <td>Any quantity</td> </tr> <tr> <td>Saskatchewan:</td> <td>2 kg</td> <td colspan="2">TDG (includes loading / unloading): 5 kg or litres</td> </tr> <tr> <td>Manitoba:</td> <td>5 kg or litres</td> <td colspan="2"></td> </tr> </table>	NWT:	5 kg or litres	Ontario:	Any quantity	Alberta:	5 kg or litres	Québec:	Any quantity	Saskatchewan:	2 kg	TDG (includes loading / unloading): 5 kg or litres		Manitoba:	5 kg or litres		
NWT:	5 kg or litres	Ontario:	Any quantity														
Alberta:	5 kg or litres	Québec:	Any quantity														
Saskatchewan:	2 kg	TDG (includes loading / unloading): 5 kg or litres															
Manitoba:	5 kg or litres																
TDG Information																	
Shipping Name	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Class</th> <th style="width: 15%;">PIN</th> <th style="width: 20%;">Packing Group</th> <th style="width: 50%;">Special Provisions</th> </tr> <tr> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> </table>	Class	PIN	Packing Group	Special Provisions	-	-	-	-								
Class	PIN	Packing Group	Special Provisions														
-	-	-	-														
Placards: Dependent on specific contaminant. Comments: Testing required. Classifications for this waste may vary depending on the specific contaminant.																	
Documentation																	
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.																
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.																

Need further information?
Contact Enbridge Environment Staff in Edmonton.

**Spent Abrasives -
Containing Paint Coating (Lead or Chromium)**
Waste Information Sheet
September 2016



**Sulfatreat - Hydrogen Sulfide
Treatment**
Waste Information Sheet

General Information				
Original Use:	Removes hydrogen sulfide from gases.			
Physical State:	Granular solid.			
Components:	Montmorillonite, water, iron oxides, silica			
Potential Hazards				
Class (WHMIS):	D2A, D2B	MSDS:	SULFATREAT 410 HP	
Hazard Symbols:		Protective Equipment:		
Environmental:	Non-toxic.			
Health:	Dust may cause eye, skin and respiratory tract irritation. Long term inhalation of particulates may cause lung damage.			
Management Methods				
Waste Classification:	NWT: Non-Hazardous Alberta: Non-Hazardous/DOW Saskatchewan: Non-Hazardous	Manitoba: Non-Hazardous Ontario: Non-Hazardous Québec: Residual Material		
Storage:	Keep away from heat, sparks and flame. Keep segregated from strong acids and strong oxidizers.			
Treatment / Disposal:	Recover and reclaim or recycle, where possible. Send/transfer to an approved landfill, unless believed to have changed properties and/or become contaminated with a dangerous good that would render it a hazardous waste.			
Comments:				
Reportable Release Quantity:	NWT: N/A Alberta: N/A Saskatchewan: N/A Manitoba: N/A	Ontario: N/A Québec: N/A TDG (includes loading / unloading): N/A		
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>	N/A	N/A	N/A	N/A
Placards:	N/A			
Comments:	If the waste is contaminated or has changed properties from its original state, TDG Regulations may apply.			
Documentation				
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			
Need further information? Contact Enbridge Environment Staff in Edmonton.			Sulfatreat – Hydrogen Sulfide Treatment Waste Information Sheet September 2016	



Tank Seals

Waste Information Sheet


General Information				
Original Use:	Storage tank roof seals. "Foam logs" and fabric seals which are stained or soaked with crude oil. Synonyms: Neoprene, rubber or canvas seals.			
Physical State:	Solids (metal, neoprene) contaminated with crude oil.			
Components:	Liquid hydrocarbons, asphalt, possible heavy metals. Waste should be analyzed.			
Potential Hazards				
Class (WHMIS): B4	MSDS: Crude Oil			
Hazard Symbols: <div style="text-align: center;"></div>	Protective Equipment: <div style="text-align: center;"> </div>			
Environmental:	Potential for soil and groundwater contamination if improperly stored or landfilled.			
Health:	High vapour concentrations may irritate inhalation. Slight skin irritations.			
Management Methods				
Waste Classification:	<div style="display: flex; justify-content: space-between;"> <div> NWT: Hazardous Waste Alberta: Hazardous Waste/DOW Saskatchewan: Waste Dangerous Good </div> <div> Manitoba: Hazardous Waste Ontario: Hazardous Waste (251-I) Québec: Residual Hazardous Material </div> </div> <p>Note: Above classification if significant hydrocarbon content.</p>			
Storage:	Temporary storage on-site; if potential exists for liquid contaminants (oil) then store in lined area, tanks or barrels. Prevent additional soil contamination by protecting from rain and snow melt.			
Treatment / Disposal:	<ul style="list-style-type: none"> • Pretreatment: Seals and steel must be cleaned by scraping, wiping, draining, or steam cleaning. • Hazardous – Hazardous Waste Management Facility • Non-hazardous – Landfill: contact landfill operator for specific instructions before shipment. 			
Comments:	<ul style="list-style-type: none"> • See also Waste Information Sheets on Metal - Scrap and Water - Oily. Reduce quantity of oily water that results from steam cleaning by storing steel until sufficient quantities (storage restrictions may apply). Ensure that metal recyclers only take "cleaned" metal. Seals may require sampling prior to disposal. Contact Enbridge Environment Staff for assistance. 			
Reportable Release Quantity:	<div style="display: flex; justify-content: space-between;"> <div> NWT: 25 kg Alberta: 25 kg or litres Saskatchewan: 100 kg (50 kg off-site) Manitoba: 1 kg </div> <div> Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): 25 kg </div> </div>			
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
FLAMMABLE SOLID, ORGANIC N.O.S. ("Technical Name")	4.1	UN 1325 **ERAP**	II or III	16
Placards:	4.1 Flammable Solid			
Comments:	If there is little or no oil content, waste tank seals could be non-hazardous and not TDG regulated. **ERAP** Cannot offer for transport dangerous goods having PIN UN2846 when the quantity of that good exceeds 1,000 kg or litres for the dangerous goods without an Emergency Response Assistance Plan approved by Transport Canada. Verify with the Enbridge Environment Staff.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Tank Seals
Waste Information Sheet
September 2016



Tape - Denso
Waste Information Sheet

General Information					
Original Use:	Tape: Pipeline water-proofing and protection against corrosion. Paste: Priming metal prior to the application of anti-corrosion (Denso) tape. Synonyms: Denso Paste.				
Physical State:	Brown paste or brown paste impregnated tape.				
Components:	Tape: Hydrocarbon was (petrolatum), china clay and polyester fibre fabric. Paste: China clay and petrolatum (petroleum jelly).				
Potential Hazards					
Class (WHMIS):	Not a controlled product.		MSDS:	Denso paste and Denso tape.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Combustion will produce carbon monoxide and carbon dioxide.				
Health:	Prolonged and repeated contact may irritate skin.				
Management Methods					
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material	
Storage:	Store in original supplier packaging/containers. Store in cool conditions. Avoid heat and flame.				
Treatment / Disposal:	Non-hazardous: Landfill - for large waste quantities contact landfill operator in advance.				
Comments:					
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>Not TDG Regulated</i>		N/A	N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				


Need further information?
Contact Enbridge Environment Staff in Edmonton.

Tape – Denso
Waste Information Sheet
September 2016



Tires

Waste Information Sheet

General Information					
Original Use:	Automobile and truck tires. Used tires for pipe supports in pipeline construction. Synonyms: Rubber.				
Physical State:	Solid				
Components:	Rubber, Steel belt, additives.				
Potential Hazards					
Class (WHMIS):	Not a controlled product.		MSDS:	Not applicable.	
Hazard Symbols:			Protective Equipment:		
Environmental:	Non-biodegradable or crushable.				
Health:	No hazards.				
Management Methods					
Waste Classification:	NWT:	Non-Hazardous Waste	Manitoba:	Non-Hazardous Waste	
	Alberta:	Non-Hazardous Waste/Non-DOW	Ontario:	Non-Hazardous Waste	
	Saskatchewan:	Non-Hazardous Waste	Québec:	Residual Material	
Storage:	Store in neat short stacks with space between rows - not in a haphazard pile. Do not store for extensive time periods. Avoid rainwater collection.				
Treatment / Disposal:	Most provinces have a tire recycling program in place. Perform vehicle maintenance at service stations with a tire recycling program in place.				
Comments:	Ensure that tires are segregated at landfill. Possible spontaneous combustion in landfills due to air cavities - non-biodegradable or crushable.				
Reportable Release Quantity:	NWT:	N/A	Ontario:	N/A	
	Alberta:	N/A	Québec:	N/A	
	Saskatchewan:	N/A	TDG (includes loading / unloading): N/A		
	Manitoba:	N/A			
TDG Information					
Shipping Name			Class	PIN	Packing Group
<i>Not TDG Regulated</i>			N/A	N/A	N/A
Placards:	N/A				
Comments:	If the waste is contaminated with dangerous goods, TDG Regulations may apply.				
Documentation					
Transportation Documents:	Truck Ticket or Waybill or Provincial Manifest as appropriate				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Tires
Waste Information Sheet
September 2016



Wash Fluids - Solvents

Waste Information Sheet

General Information				
Original Use:	Waste includes solvents from equipment cleaning operations.			
Physical State:	Clear / cloudy liquid. Hydrocarbon odor.			
Components:	Tetra and trichloroethylene, xylene, acetone, ethyl acetate, methyl isobutyl ketone, n-butyl alcohol, cyclohexane, methanol, creosols, cresylic acid, toluene, carbon disulphide, isobutane, pyridine, ammonia based substances and hydrocarbon bases (kerosene).			
Potential Hazards				
Class (WHMIS):	D2A, B2	MSDS:	Use MSDS of specific wash components.	
Hazard Symbols:			Protective Equipment:	
Environmental:	A highly mobile waste stream. Potential for groundwater and soil contamination. Possible toxic vapors and fire hazard with on-site recycling operations.			
Health:	May cause skin, eye and respiratory irritation. Most solvents are toxic.			
Management Methods				
Waste Classification:	NWT: Hazardous Waste	Manitoba: Hazardous Waste		
	Alberta: Hazardous Waste/DOW	Ontario: Hazardous Waste		
	Saskatchewan: Waste Dangerous Good	Québec: Residual Hazardous Material		
Storage:	Store in closed tanks or sealed drums at field facility. Keep containers closed and away from sources of heat and ignition. Store unused fluids in original containers inside of sealed drums with sorbents.			
Treatment / Disposal:	<ul style="list-style-type: none"> Hydrocarbon / solvent / crude oil mixtures may be recycled. Send to a licensed solvent recycler. Send to a Hazardous Waste Management Facility 			
Comments:	<ul style="list-style-type: none"> Use non-hydrocarbon based wash fluids when possible. Do not use chlorinated hydrocarbons (e.g. methylene) as cleaning solvents. Halogenated organic solvents must be segregated from all other waste streams. 			
Reportable Release Quantity: (if Class 3)	NWT: 100 litres	Ontario: Any quantity		
	Alberta: 200 litres	Québec: Any quantity		
	Saskatchewan: 25 litres (5 litres off-site)	TDG (includes loading / unloading): 200 litres		
	Manitoba: 100 litres			
Reportable Release Quantity: (if Class 6)	NWT: 5 kg or litres	Ontario: Any quantity		
	Alberta: 5 kgs or litres	Québec: Any quantity		
	Saskatchewan: 25 litres (5 litres off-site)	TDG (includes loading / unloading): 5 kgs or litres		
	Manitoba: 50 litres (10 litres off-site)			
TDG Information				
Shipping Name		Class	PIN	Packing Group
See TDG Comments below.		-	-	-
Placards:	Class 3, 6, 8 or 9 as appropriate (in bulk or over 500 kg.).			
Comments:	Solvents can be classified as Flammable Liquids (Class 3), Poisonous (Class 6), and Corrosive (Class 8). Refer to supplier information for TDG classification.			
Documentation				
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.			
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Wash Fluids – Solvents
Waste Information Sheet
September 2016



Wash Fluids - Water

Waste Information Sheet

General Information									
Original Use:	Waste includes water used for equipment, buildings and process area water / steam cleaning and maintenance, drains, and runoff water.								
Physical State:	Liquid.								
Components:	Water, iron oxides, calcium carbonate, sand / silt, trace hydrocarbons, crude oil, lube oil, salts, metals (lead, chromium, thallium).								
Potential Hazards									
Class (WHMIS): D2A	MSDS: Use MSDS of specific wash components.								
Hazard Symbols: <div style="text-align: center; font-size: 2em;">⚠</div>	Protective Equipment: <div style="text-align: center;"> </div>								
Environmental:	Potential groundwater contamination (from hydrocarbon and metal leaching) if improperly stored in an unlined pond. Potential surface water and soil contamination.								
Health:	Not an inhalation hazard if < 38°C. High vapor concentrate may irritate nose and throat. Slight skin irritations.								
Management Methods									
Waste Classification:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: Testing Required</td> <td style="width: 50%;">Manitoba: Testing Required</td> </tr> <tr> <td>Alberta: Testing Required</td> <td>Ontario: Testing Required</td> </tr> <tr> <td>Saskatchewan: Testing Required</td> <td>Québec: Testing Required</td> </tr> </table>	NWT: Testing Required	Manitoba: Testing Required	Alberta: Testing Required	Ontario: Testing Required	Saskatchewan: Testing Required	Québec: Testing Required		
NWT: Testing Required	Manitoba: Testing Required								
Alberta: Testing Required	Ontario: Testing Required								
Saskatchewan: Testing Required	Québec: Testing Required								
Storage:	Process wash waters are usually handled in a closed system (sumps). For open systems contain in drums or, if necessary, in lined ponds (if no possibility of mixing with other water).								
Treatment / Disposal:	<ul style="list-style-type: none"> Dispose to slop system. If significant quantities, send to third party disposal well. Contact Enbridge Environment Staff for assistance 								
Comments:	Recover hydrocarbons before disposal. Minimize the generation of mists or vapours. Waste waters with more than 3% oils may allow for the recovery of hydrocarbons at approved reclaimers or via on-site separation equipment.								
Reportable Release Quantity:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">NWT: 5 kgs or litres</td> <td style="width: 50%;">Ontario: Any quantity</td> </tr> <tr> <td>Alberta: 5 kgs or litres</td> <td>Québec: Any quantity</td> </tr> <tr> <td>Saskatchewan: 5 kgs or litres</td> <td>TDG (includes loading / unloading): 5 kgs or litres</td> </tr> <tr> <td>Manitoba: 5 kgs or litres</td> <td></td> </tr> </table>	NWT: 5 kgs or litres	Ontario: Any quantity	Alberta: 5 kgs or litres	Québec: Any quantity	Saskatchewan: 5 kgs or litres	TDG (includes loading / unloading): 5 kgs or litres	Manitoba: 5 kgs or litres	
NWT: 5 kgs or litres	Ontario: Any quantity								
Alberta: 5 kgs or litres	Québec: Any quantity								
Saskatchewan: 5 kgs or litres	TDG (includes loading / unloading): 5 kgs or litres								
Manitoba: 5 kgs or litres									
TDG Information									
Shipping Name	Class	PIN	Packing Group	Special Provisions					
<i>See TDG Comments Below</i>	-	-	-	-					
Placards:	Dependent on specific contaminant.								
Comments:	Classifications for this waste may vary depending on the specific contaminant and is dependent on the nature of cleaners and surfaces cleaned. If waste is commingled with other produced waters then use the classification for produced water. If separated (not commingled), the TDG classification is dependent on the nature of the cleaners used and other contaminants (hydrocarbons).								
Documentation									
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.								
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.								

Need further information?
Contact Enbridge Environment Staff in Edmonton.

Wash Fluids – Water
Waste Information Sheet
September 2016



Water - Oily

Waste Information Sheet

General Information					
Original Use:	Wash waters, cooling waters, buildings, drains, steam cleaning operations and may include run-off water. Collected in sumps. Synonyms: Waste water, waste water pond water, run-off holding pond water, roof run-off water, steam cleaning water.				
Physical State:	Liquid				
Components:	Water, iron oxides, calcium carbonate, sand/silt, oil and grease, trace metals (lead, chromium, thallium), BTEX.				
Potential Hazards					
Class (WHMIS):	B4	MSDS:	Crude Oil.		
Hazard Symbols:			Protective Equipment:		
Environmental:	Waste may contain polyaromatic hydrocarbons and volatile which will generate toxic fumes during decomposition of the waste. May also contain trace metals and sulfides. Potential groundwater contamination (metals, hydrocarbons) if stored in an unlined pond				
Health:	Not an inhalation hazard below 38°C. High vapour concentrate may irritate nose. Slight skin irritations.				
Management Methods					
Waste Classification:	<div style="display: flex; justify-content: space-between;"> <div> NWT: Non-Hazardous Waste Alberta: Non-Hazardous Waste/Non-DOW Saskatchewan: Non-Hazardous Waste </div> <div> Manitoba: Non-Hazardous Waste Ontario: Non-Hazardous Waste (251-L) Québec: Residual Material </div> </div> <p>NOTE: Above classification unless low flash point, BTEX or hydrocarbon content.</p>				
Storage:	Oil water should usually be handled in a closed system. Store in tanks. If necessary, impervious earthen/lined ponds if there is no possibility of mixing with other waters.				
Treatment / Disposal:	<ul style="list-style-type: none"> Waste waters containing more than 3% oils may allow for the recovery of hydrocarbons at approved reclaimers. Deep Well Disposal. Possible watershed release after treatment and approval from government environment department. Contact Enbridge Environment Staff for assistance. 				
Comments:	The construction and operation of any facilities designed for the treatment of waste waters will require approval by the provincial environmental agency.				
Reportable Release Quantity:	<div style="display: flex; justify-content: space-between;"> <div> NWT: 100 litres Alberta: 200 litres Saskatchewan: Any quantity Manitoba: 100 litres </div> <div> Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): 200 litres </div> </div>				
TDG Information					
Shipping Name		Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>		-	-	-	-
Placards:	Dependent on specific contaminant.				
Comments:	Generally not TDG regulated. However, the TDG classification is dependent on the hydrocarbon content (flammable) and leachate test. If hydrocarbon contents are high the waste may be Classed as; FLAMMABLE LIQUIDS, N.O.S. ("Technical Name"), Class 3, UN 1993.				
Documentation					
Transportation Documents:	TDG Shipping Document or provincial Manifest / Movement Document, as appropriate.				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.				





Need further information?
Contact Enbridge Environment Staff in Edmonton.

Water – Oily
Waste Information Sheet
September 2016



Water - Produced

Waste Information Sheet

General Information				
Original Use:	Includes all water separated from hydrocarbon streams during all phases of oil and gas production and transportation.			
Physical State:	Liquid. Synonyms - salt water, tank drawdown water.			
Components:	Chlorides, benzene, toluene, ethylbenzene, naphthalene, phenols, water, dissolved solids and organic carbon.			
Potential Hazards				
Class (WHMIS):	B2, B3, D1B, D2A	MSDS:		
Hazard Symbols:		Protective Equipment:	  	
Environmental:	Potential groundwater contamination. Potential surface water and soil contamination (salt) from spillage. Possible contamination of disposal formation (if deep well disposed). Extremely persistent compound which is toxic to the environment in high concentrations.			
Health:	Not hazard below 38°C. High vapor concentrate may irritate nose. Slight skin irritations.			
Management Methods				
Waste Classification:	NWT: Non-Hazardous Waste Alberta: Non-Hazardous Waste/Non-DOW Saskatchewan: Non-Hazardous Waste	Manitoba: Non-Hazardous Waste Ontario: Non-Hazardous Waste Québec: Residual Material		
Storage:	Minimize the generation of mists or vapors. Store in tanks.			
Treatment / Disposal:	Produced formation waters should be segregated from all other waste waters. Should only be handled in a closed system. Deep well disposal.			
Comments:	Drainage onto tank lots can increase lease restoration costs.			
Reportable Release Quantity:	NWT: 100 litres Alberta: 200 litres Saskatchewan: Any quantity Manitoba: 100 litres	Ontario: Any quantity Québec: Any quantity TDG (includes loading / unloading): 200 litres		
TDG Information				
Shipping Name	Class	PIN	Packing Group	Special Provisions
<i>See TDG Comments Below</i>	-	-	-	-
Placards:				
Comments:	Generally not TDG regulated, but may be classified as a flammable product dependent on hydrocarbon content. May also be tested for possibility of leachates. Contact Enbridge Environment Staff.			
Documentation				
Transportation Documents:				
Company Records:	Maintain a copy of all waste information (i.e. manifests, shipping documents, disposal agreements) at the ENBRIDGE Field or Region office.			
Need further information? Contact Enbridge Environment Staff in Edmonton.			Water – Produced Waste Information Sheet September 2016	

Appendix C

NWT Reportable Spill Volume Guidelines

NWT Reportable Spill Volume Guidelines

Substance	Reportable Quantity
Explosives	Any amount
Compressed gas (toxic/corrosive)	
Infectious substances	
Sewage and Wastewater (unless otherwise authorized)	
Radioactive materials	
Unknown substance	
Compressed gas (Flammable)	Any amount of gas from containers with a capacity greater than 100 L
Compressed gas (Non-corrosive, non-flammable)	
Flammable liquid	≥ 100 L
Flammable solid	≥ 25 kg
Substances liable to spontaneous combustion	
Water reactant substances	
Oxidizing substances	≥ 50 L or 50 kg
Organic peroxides	≥ 1 L or 1 kg
Environmentally hazardous substances intended for disposal	
Toxic substances	≥ 5 L or 5 kg
Corrosive substances	≥ 5 L or 5 kg
Miscellaneous products, substances, or organisms	
PCB mixtures of 5 or more ppm	≥ 0.5 L or 0.5 kg
Other contaminants (e.g., crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, wastewater)	≥ 100 L or 100 kg
Sour natural gas (i.e., contains H ₂ S)	Uncontrolled release or sustained flow of 10 minutes or more
Sweet natural gas	

Substance	Reportable Quantity
Flammable liquid Vehicle fluid	≥ 20 L When released on a frozen water body that is being used as a working surface
Reported releases or potential releases of any size that: <ul style="list-style-type: none"> – are near or in an open water body – are near or in a designated sensitive environment or habitat – pose an imminent threat to human health or safety – pose an imminent threat to a listed species at risk or its critical habitat 	Any amount

Note: L = litre(s); kg = kilogram(s); PCB = polychlorinated biphenyls; ppm = parts per million

Source: <https://www.enr.gov.nt.ca/en/services/report-spill>

Appendix D

NT-NU Spill Report Form

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND
OTHER HAZARDOUS MATERIALS



NT-NU 24-HOUR SPILL REPORT LINE

Tel: (867) 920-8130 • Fax: (867) 873-6924 • Email: spills@gov.nt.ca

REPORT LINE USE ONLY

A	Report Date: MM DD YY	Report Time:	<input type="checkbox"/> Original Spill Report OR <input type="checkbox"/> Update # _____ to the Original Spill Report		Report Number:
	Occurrence Date: MM DD YY	Occurrence Time:			
C	Land Use Permit Number (if applicable):		Water Licence Number (if applicable):		
D	Geographic Place Name or Distance and Direction from the Named Location:			Region: <input type="checkbox"/> NT <input type="checkbox"/> Nunavut <input type="checkbox"/> Adjacent Jurisdiction or Ocean	
E	Latitude: _____ Degrees _____ Minutes _____ Seconds		Longitude: _____ Degrees _____ Minutes _____ Seconds		
F	Responsible Party or Vessel Name:		Responsible Party Address or Office Location:		
G	Any Contractor Involved:		Contractor Address or Office Location:		
H	Product Spilled: <input type="checkbox"/> Potential Spill	Quantity in Litres, Kilograms or Cubic Metres:	U.N. Number:		
I	Spill Source:	Spill Cause:	Area of Contamination in Square Metres:		
J	Factors Affecting Spill or Recovery:	Describe Any Assistance Required:	Hazards to Persons, Property or Environment:		
K	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials:				
L	Reported to Spill Line by:	Position:	Employer:	Location Calling From:	Telephone:
M	Any Alternate Contact:	Position:	Employer:	Alternate Contact Location:	Alternate Telephone:

REPORT LINE USE ONLY

N	Received at Spill Line by:	Position:	Employer:	Location Called:	Report Line Number:
Lead Agency: <input type="checkbox"/> EC <input type="checkbox"/> CCG/TCMSS <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> AANDC <input type="checkbox"/> NEB <input type="checkbox"/> Other: _____			Significance: <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Unknown		File Status: <input type="checkbox"/> Open <input type="checkbox"/> Closed
Agency:		Contact Name:	Contact Time:	Remarks:	
Lead Agency:					
First Support Agency:					
Second Support Agency:					
Third Support Agency:					

Appendix C

Closure and Reclamation Plan



ENBRIDGE PIPELINES (NW) INC.

Closure and Reclamation Plan

Line 21 Planned Maintenance at KP 158 near Little Smith Creek

August 2020, Rev. 1 – 18-8582

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ENBRIDGE PIPELINES (NW) INC.

Closure and Reclamation Plan - Line 21 Planned Maintenance at KP 158 near Little Smith Creek

August 2020, Rev. 1 – 18-8582



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Appendices

A Glossary of Terms and Definitions

B List of Acronyms, Abbreviations, Units, and Symbols



1.0 Plain Language Summary

Enbridge Pipelines (NW) Inc. (Enbridge) is proposing to replace a segment of the Line 21 pipeline southeast of kilometre post (KP) 158 near Little Smith Creek in the Northwest Territories (NWT) (the Project).

This Closure and Reclamation Plan (the Plan) forms part of an application package prepared to satisfy the requirements of the Sahtú Land and Water Board (SLWB) for a Type A Land Use Permit (LUP) and Type B Water License. In conjunction with this Plan, Enbridge has prepared a Spill Contingency Plan, Waste Management Plan, and Environmental and Socio-Economic Assessment for the Project. A Project-specific Environmental Protection Plan (EPP) will be prepared prior to construction.

This Plan applies to the scope of activities considered in Enbridge's LUP and Water License applications (as described in **Section 3.4.5.1**) and has been prepared in accordance with the *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* (Mackenzie Valley Land and Water Board [MVLWB] and Aboriginal Affairs and Northern Development Canada [AANDC] 2013). It describes the planned closure and reclamation of the Project including reclamation measures to be implemented following construction; closure objectives and criteria; and ongoing post-construction monitoring to ensure the successful reclamation of the Project footprint to meet the Plan goal.

This Plan is preliminary and will be updated, as required, to reflect changes in construction planning, Project execution, and site-specific conditions.

2.0 Introduction and Background

Enbridge retained Dillon Consulting Limited to prepare this Plan in support of applications for a Type A LUP and Type B Water License to the SLWB.

Constructed in 1982, Line 21 (the Norman Wells Pipeline) carries crude oil from Norman Wells, NWT to Zama, Alberta over a distance of approximately 870 kilometres (km). At KP 158, the pipeline parallels a meander bend of Little Smith Creek, a tributary of the Mackenzie River. Enbridge has been actively monitoring slope instability in the area of the meander bend, which, over the years, has been encroaching onto the pipeline right-of-way (ROW). To protect the pipeline from the potential impacts of further slope movement and to support continued safe operation of the pipeline, Enbridge is proposing to replace a segment of the existing nominal pipe size (NPS) 12 pipeline at this location.

The Project involves the removal of an approximately 510-metre (m) segment of the existing NPS 12 pipeline and replacing it with a new, approximately 520-m NPS 12 pipeline segment at a greater depth of cover below the landslide impact zone. Enbridge is planning to install the new pipeline segment via horizontal directional drill (HDD) within the existing Enbridge ROW, and no new land rights are required for operation; however, some temporary workspace, located on privately-held Sahtú lands administered by the Tulita District Land Corporation, will be required to accommodate construction activities.

The Project will require upgrades to existing access roads, as well as the following temporary infrastructure.

- Construction camps (up to three small camps);
- Laydown yard (fuel and equipment storage);
- Potential barge landing (upgrades to an existing site on the Mackenzie River); and,
- Temporary workspace:
 - HDD work sites (entry and exit points, and false ROW for trenchless pipe drag section); and,
 - Pipeline stopple/tie-in locations.

The Project is located in the Sahtú Region of the NWT (**NTS Map Sheet No. 096C**), approximately 80 km southeast of the hamlet of Tulita and approximately 140 km southeast of the Town of Norman Wells. The Project components are described in further detail in **Section 4.0** and **Section 5.2**.

The following sub-sections outline the purpose, scope and goal of this Plan and provide details on the closure and reclamation planning team, a summary of engagement efforts, and a summary of regulatory instruments (permits, authorizations, and agreements).

2.0 Introduction and Background 3

2.1 Purpose and Scope of the Plan

The purpose of this Plan is to:

- Meet the intent of the *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* (MVLWB and AANDC 2013);
- Provide a description of the current baseline conditions of areas that will be disturbed as part of the Project and require a LUP and Water License;
- Establish closure objectives and criteria in alignment with the four core closure principles of (1) physical stability, (2) chemical stability, (3) no long-term active care requirements, and (4) future use; and,
- Provide a schedule of reclamation activities and post-construction monitoring activities.

This Plan applies to the Project activities/components subject to SLWB permitting, as described in **Section 4.0**. This version of the Plan is preliminary and will be updated, as required, to reflect changes in construction planning, Project execution, and site-specific conditions.

2.2 Goal of the Plan

In accordance with the *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* (MVLWB and AANDC 2013), the goal of the Plan is to describe how the areas disturbed by the Project will be returned to a natural and self-sustaining ecosystem that is compatible with a healthy environment and human activities.

2.3 Closure and Reclamation Planning Team

The organization of the Closure and Reclamation Planning (CRP) Team is presented in **Figure 1**. The CRP Team is led by the Enbridge Project Manager, who has the ultimate responsibility for the Project and the reclamation of the Project areas, manages the Project budget, and approves remedial action plans, as required.

The Construction Manager reports directly to the Project Manager and oversees the Construction Contractor when construction activities are occurring on site. The Construction Manager is responsible for managing the execution of remedial action plans, as required.

The Environmental Inspector works directly with the Construction Manager and reports to the Enbridge Senior Environmental Advisor on the status of the Project. The Environmental Inspector works with the Construction Manager to ensure all Project personnel are aware of all environmental conditions, commitments and guidelines for the Project and that the Project is executed in compliance with the EPP and all applicable regulatory permits and approvals.

The Enbridge Senior Environmental Advisor is responsible for overseeing the Post-Construction Environmental Monitoring (PCEM) Program, which includes the implementation of this Plan and the

2.0 Introduction and Background 4

development of remedial action plans to address any outstanding environmental issues. The Enbridge Senior Environmental Advisor is responsible for overseeing the Environmental Consultant, who is contracted to complete the PCEM Program.

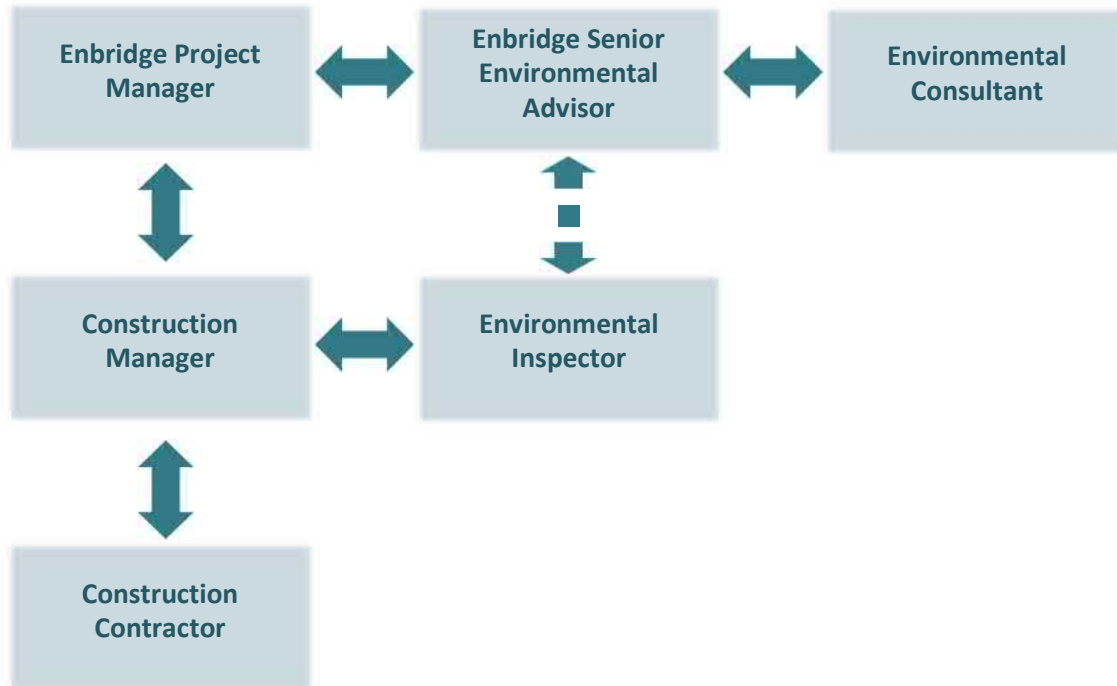


Figure 1: CRP Team Organization

2.4 Engagement

Enbridge continues to adhere to regulatory, corporate, and stakeholder engagement and consultation guidelines; and continues to assess best practices related to engagement and consultation. Enbridge is familiar with the engagement and consultation requirements outlined by both the MVLWB and the Canada Energy Regulator, as a result of recent segment replacement work in the Deh Cho Region of the NWT.

2.0 Introduction and Background 5

2.5 Regulatory Instruments for Closure and Reclamation

A summary of permits, authorizations, and agreements required for closure and reclamation of the Project is provided in **Table 1**.

Table 1: Permits, Authorizations, and Agreements for Project Closure and Reclamation

Permit, Authorization, or Agreement	Date of Expiry	Contact Information	Requirement(s)	Section(s) of Plan
Type A Land Use Permit (Permit # TBD) from SLWB	TBD	TBD	Financial Security	10.0
			Restoration of Disturbed Lands	5.0
Type B Water License (Permit # TBD) from SLWB	TBD	TBD	Project Description	4.0
			Closure Goals, Objectives and Criteria	5.0
			Community Engagement	2.4
			Sites Affected by Spills/Discharges	N/A
			Sites Affected by Permafrost Degradation	3.2
			Requirements for Closure and Reclamation	5.0
			Implementation Schedule	8.0
			Project Maps	Figure 2

3.0 Project Environment

The Project environment is described in terms of Atmospheric Environment, Physical (Terrestrial) Environment, Chemical Environment, and Biological Environment in accordance with the *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* (MVLWB and AANDC 2013).

Further detail on the environmental setting of the Project can be found in the Environmental and Socio-Economic Assessment submitted to the SLWB as part of the LUP and Water License applications for the Project.

3.1 Atmospheric Environment

The Project is located in the Taiga Cordillera Low Subarctic Ecoregion where the climate is characterized by short, cool summers (June-August) and long, very cold winters (Ecosystem Classification Group 2010).

Table 2 provides data from the nearest meteorological station to the Project area, the Environment and Climate Change Canada (ECCC) Norman Wells station, located approximately 135 km northwest of the Project footprint. The values in **Table 2** represent averages of data collected over a 30-year period from 1981 to 2010.

Table 2: Summary of Meteorological Data for Project Area

Meteorological Parameter	Value (Annual Average)
Daily Average Temperature (°C)	-5.1
Daily Maximum Temperature (°C)	-0.4
Daily Minimum Temperature (°C)	-9.9
Rainfall (mm)	171.7
Snowfall (cm)	161.5
Average Snow Depth (cm)	12
Wind Speed (km/h) and Most Frequent Direction	10.1, SE
Average Date of Last Spring Frost	May 23
Average Date of First Fall Frost	September 7

Source: ECCC 2019a

The GNWT operates four ambient air quality monitoring stations located in Fort Smith, Inuvik, Norman Wells, and Yellowknife (GNWT 2019a). The Norman Wells station is the closest to the Project footprint. **Table 3** provides a summary of NWT Air Quality Standards and typical readings.

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Table 3: NWT Air Quality Standards and Typical Readings

Pollutant	Typical NWT Reading	Air Quality Standard		
		1-Hour	8-Hour	24-Hour
Sulphur dioxide (SO ₂)	0-5 ppb	172 ppb	--	57 ppb
Hydrogen sulphide (H ₂ S)	0-2 ppb	10 ppb	--	3 ppb
Ozone (O ₃)	10-40 ppb	--	63 ppb	--
Nitrogen dioxide (NO ₂)	0-10 ppb	213 ppb	--	106 ppb
Carbon monoxide (CO)	0-0.2 ppm	13 ppm	5 ppm	--
Fine particulate matter (PM _{2.5})	0-10 µg/m ³	--	--	28 µg/m ³
Particulate matter (PM ₁₀)	0-15 µg/m ³	--	--	50 µg/m ³

Source: GNWT 2019a

Notes: ppb = parts per billion; ppm = parts per million; µg/m³ = micrograms per cubic metre

Table 4 provides the average 24-hour air quality readings from the Norman Wells station measured over a recent 1-year period (December 2018 to December 2019).

Table 4: Average 24-Hour Air Quality Readings from the NWT Norman Wells Air Quality Monitoring Station (December 2018-December 2019)

Pollutant	Average 24-Hour Reading	24-Hour Air Quality Standard
Sulphur dioxide (SO ₂)	2.2 ppb	57 ppb
Hydrogen sulphide (H ₂ S) ¹	--	3 ppb
Ozone (O ₃)	26.3 ppb	--
Nitrogen dioxide (NO ₂)	1.5 ppb	106 ppb
Carbon monoxide (CO) ¹	--	--
Fine particulate matter (PM _{2.5})	5.1 µg/m ³	28 µg/m ³
Particulate matter (PM ₁₀)	16.8 µg/m ³	50 µg/m ³

Source: GNWT 2019a

Note: 1 H₂S and CO are not monitored at the Norman Wells station.

The annual average 24-hour readings from the Norman Wells station are generally within the typical readings for the NWT and well within the 24-hour air quality standards. The Project will have a negligible contribution to air pollutants and is not anticipated to result in a noticeable reduction in local air quality (refer to the Project Environmental and Socio-Economic assessment).

3.2 Physical (Terrestrial) Environment

The Project is located in the Taiga Cordillera Low Subarctic Ecoregion of the NWT and, specifically, within the Central Mackenzie Plain Low Subarctic Boreal Ecoregion, which occurs between the Mackenzie Foothills and the Franklin Mountains (Ecosystem Classification Group 2010).

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The Project footprint is underlain by Cretaceous-aged shales and sandstones. Fine-textured lacustrine and till deposits occur along the Mackenzie River, with Continental till deposits common on higher terrain (Ecological Classification Group 2010). The terrain in the Central Mackenzie Plain Low Subarctic Boreal Ecoregion is mainly level to gently sloping and slopes are marked by regularly spaced erosion gullies (Ecosystem Classification Group 2010).

The Project footprint encounters Brunisolic soils associated with glaciofluvial and older alluvial and till deposits and Regosols associated with newly deposited alluvium (Ecosystem Classification Group 2010).

The Line 21 pipeline ROW at the Project site (near KP 158) is on a terrace above ox-bows formed by a meandering of Little Smith Creek (Wood Environment and Infrastructure Solutions [Wood] 2018). The existing pipe segment that will be removed via open cut trenching is situated approximately 12 m from the edge of the slope failure at the meander bend of Little Smith Creek. The elevation along the proposed HDD alignment ranges from approximately 85 m above sea level (asl) to 100 m asl. The topography along the existing ROW and at the temporary infrastructure sites is generally level.

The Project is an area generally characterized as having extensive and discontinuous permafrost with low to moderate ice content and sparse ice wedges (Natural Resources Canada 1995, 2009). There is permafrost present within the existing Line 21 pipeline ROW around KP 158, which will be encountered by the HDD during pipeline construction (Wood 2018). There is evidence that the permafrost in the ROW around KP 158 is thawing; the permafrost thaw depth has increased by 2 m over the past 8 years (Wood 2018).

The Project is in an area classified as having a moderate to high seismic hazard (Natural Resources Canada 2015). The nearest earthquake to occur over the last year occurred approximately 80 km southwest of the Project footprint on October 12, 2019 and was magnitude 3.9 (Natural Resources Canada 2019).

3.3 Chemical Environment

Chemical environment information is not provided here, as the requirements in the *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* (MVLWB and AANDC 2013) are specific to mining sites.

3.4 Biological Environment

The following subsections provide an overview of the biological environment in the Project area including vegetation, wetlands, fish and fish habitat, wildlife and wildlife habitat, and species at risk or species of special status. The information is based on desktop reviews and field investigations conducted for the Project.

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More information on the biological environment, including detailed results of field investigations, is provided in the Environmental and Socio-Economic Assessment and associated appendices.

3.4.1 Vegetation

Large wildfires have burned over most of the Central Mackenzie Plain Low Subarctic Boreal Ecoregion over the last two decades and large tracts of forest are regenerating to shrubby and deciduous communities (Ecosystem Classification Group 2010).

Vegetation field surveys were conducted along the Project footprint in October 2018 and July 2019. A total of 163 vascular plant species and 21 nonvascular plant species (i.e., mosses and lichens) were identified within 30 m of the Project footprint. Several alien species and three invasive species (i.e., Smooth Brome, White Sweet-clover, and Yellow Sweet-clover) were observed, primarily along the existing ROW, the winter road, and in the clearing around the Enbridge operations base.

Several vegetation community types were observed and classified during the October 2018 site visit: treed fen, riparian, floodplain, upland coniferous forest, and young mixed-wood forest. A summary of ecological communities and dominant vegetation observed during the October 2018 and July 2019 field surveys is provided in Appendix B (Supplemental Environmental Studies Report) of the Environmental and Socio-Economic Assessment.

3.4.2 Wetlands

There are no naturally-occurring wetlands located within 30 m of the Project footprint, therefore, baseline information on wetlands is not warranted.

3.4.3 Fish and Fish Habitat

The HDD alignment for the new pipeline is located adjacent to Little Smith Creek (approx. 75 m set-back) and the potential barge landing site that may be constructed is approximately 250 m upstream of the mouth of Little Smith Creek, on the east bank of the Mackenzie River.

Little Smith Creek or the Mackenzie River may be utilized for water withdrawal for hydrovac and HDD activities, which would occur in the winter within the restricted activity timing window (August 15 to July 15) for the protection of fish and fish habitat (DFO 2013).

No historical records for fish species presence within Little Smith Creek were found during the desktop assessment; however, fish communities within the Mackenzie River are well-documented. The desktop review and site assessments conducted in 2018 and 2019 did not identify barriers to fish passage between the Mackenzie River and the area of slope instability along Little Smith Creek.

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Fish species with recorded occurrences in the Mackenzie River include the following (Sahtú Renewable Resources Board 2019, COSEWIC 2012):

- Bull Trout (*Salvelinus confluentus*)
- Northern Pike (*Esox lucius*);
- Arctic Grayling (*Thymallus arcticus*);
- Burbot (*Lota lota*);
- Whitefish species (*Coregonus* sp.);
- Longnose Sucker (*Catostomus catostomus*);
- Lake Chub (*Couesius plumbeus*);
- Sucker species (*Catostomus* sp.);
- Walleye (*Sander vitreus*);
- Inconnu (*Stenodus nelma*);
- Cisco species (*Coregonus* sp.);
- Goldeye (*Hiodon alosoides*); and,
- Whitefish species (*Prosopium* sp.).

A preliminary fish habitat assessment was conducted October 15-18, 2018 and a supplemental assessment was conducted September 5-6, 2019. The assessments were conducted within a 900 m reach of Little Smith Creek near the area of slope instability and the supplemental assessment included the mouth of Little Smith Creek at the Mackenzie River.

A total of seven fish species were captured in Little Smith Creek (including the mouth of Little Smith Creek at the Mackenzie River) during the field investigations conducted for the Project, including Bull Trout, Slimy Sculpin (*Cottus cognatus*), Longnose Sucker, Arctic Grayling, Burbot, Spoonhead Sculpin (*Cottus ricei*), and Northern Pike.

The areas assessed during the site visits (i.e., 900 m reach of Little Smith Creek and the mouth of Little Smith Creek) provide moderate spawning and rearing potential, as well as overwintering habitat for a number of fish species.

3.4.4 Wildlife and Wildlife Habitat

The Project is in the Central Mackenzie Plain Low Subarctic Boreal Ecoregion, which provides favourable habitat for a large number of wildlife species, particularly along the flood-enriched shorelines of the Mackenzie River (Ecosystem Classification Group 2010). Mammals characteristic of the Ecoregion include the Woodland Caribou (*Rangifer tarandus caribou*), Muskoxen (*Ovibos moschatus*), Moose (*Alces alces*), Grizzly Bear (*Ursus arctos horribilis*), Black Bear (*Ursus americanus*), Canadian Lynx (*Lynx canadensis*), and Red Fox (*Vulpes vulpes*). Characteristic birds of the Ecoregion include, but are not limited to, the Gyrfalcon (*Falco rusticolus*), Willow Ptarmigan (*Lagopus lagopus*), Common Raven (*Corvus corax*), and many species of waterfowl (Kershwa 2005).

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The Project is located within the boundaries of the Middle Mackenzie River Islands Important Bird Area (IBA). The IBA is considered Globally Significant for Congregatory Species and Waterfowl Concentrations. It serves as a stopover for a wide variety of waterfowl during spring migration including, but not limited to, Snow Goose, Greater White-fronted Goose, Canada Goose, and Tundra Swans, as well as many duck species (Bird Studies Canada 2019).

The Project is not located within any Territorial conservation areas or established/candidate protected areas (GNWT 2019b), National Wildlife Areas (Government of Canada 2019a), Migratory Bird Sanctuaries (Government of Canada 2017), Western Hemisphere Shorebird Reserves (Western Hemisphere Shorebird Reserve Network 2019), or Ramsar wetlands (The Ramsar Convention Secretariat 2014).

Wildlife and wildlife habitat field assessments were conducted October 14-17, 2018 and July 23-24, 2019 along the Project footprint. The field assessments included: bird surveys (auditory and visual); incidental wildlife observations, including animal occurrences (bird, mammal, amphibian, insects, etc.), tracks, scat, wildlife use, dens, and bird nesting structures; and, identification of sensitive species and habitat (i.e., listed under federal or territorial legislation as endangered, threatened, or of special concern), including snag and cavity tree habitat, landforms, forest structure, and diversity of habitat.

Based on observations made during the field assessments, the habitat within and around the Project footprint is typical of the boreal forest, providing moderately dense stands of small black spruce with abundant understory. There are many small wetlands (more than 100 m from the Project footprint) that provide adequate breeding grounds for insects and wetland birds, and the riparian zone around Little Smith Creek provides larger trees, which may house raptor nests and a different vegetation community from the surrounding spruce forests. A few wildlife trees with woodpecker sign were observed in the study area, including some cavities created by nesting woodpeckers. The access road from the potential barge landing site and the pipeline ROW provide distinct edge habitat. The area around the proposed camp site/laydown area is disturbed and generally degraded with few trees and limited ground cover.

A total of 9 mammal species and/or signs thereof were observed during the field assessments: Black Bear, Moose, Beaver (*Castor canadensis*), Red Squirrel (*Tamiasciurus hudsonicus*), Snowshoe Hare (*Lepus americanus*), Gray Wolf (*Canis lupus*), Red Fox, North American Porcupine (*Erethizon dorsatum*), and Weasel species (*Mustela* sp.). Wood Frog (*Lithobates sylvaticus*) was the only amphibian species observed. Signs of Ptarmigan species (*Lagopus* sp.) and Pileated Woodpecker (*Dryocopus pileatus*) were also observed. The species observed are considered common within boreal forests and disturbed habitats in the Ecoregion. Most of the wildlife sign was observed along the ROW, access roads, and Little Smith Creek stream bed, which are likely important movement corridors for mammals.

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There were 23 species of birds observed during the bird surveys and incidentally during the field assessments. In addition, the tracks of 3 bird species (Spotted Sandpiper [*Actitis macularius*], an unidentified Gull, and one unidentified bird species) were observed within gravel bars in Little Smith Creek. The majority of the incidental bird observations occurred along Little Smith Creek. There were 4 raptor pellets found on and near the winter road bridge over Little Smith Creek, indicating that this is a common perch and may be a popular hunting location for birds of prey.

The Project is located in migratory bird nesting zone B8, where nesting has the potential to occur from May 4 to August 22, with the highest percentage (61%-100%) of species to be actively nesting between May 29 and July 26 (ECCC 2018).

3.4.5 Species at Risk or Species of Special Status

Table 5 provides the results of a desktop screening to identify species at risk or species of special status with the potential to occur within the Project area on a seasonal or year-round basis.

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Table 5: Species at Risk or Species of Special Status with Potential to Occur in Project Area

Common Name	Scientific Name	NWT Status ^{1,2}	SARA Status ^{1,3}	Potential to Occur	Rationale ⁴
Mammals					
Woodland Caribou	<i>Rangifer tarandus</i>	THR	THR	High	The species' habitat is present throughout the Project study area, as indicated by the presence of terrestrial and arboreal lichens, and old-growth forest habitat in proximity to rivers and creeks. Woodland Caribou are reported to likely overwinter throughout the Sahtú Region.
Grizzly Bear	<i>Ursus arctos</i>	UC	UC	Medium	Likely seasonal use in low densities; no denning habitat observed.
Wolverine	<i>Gulo gulo</i>	N/A	UC	High	The species' range and habitat requirements are found throughout the Project study area, as indicated by forest habitat, and adequate year-round food supply. No denning sites observed.
Birds					
Bank Swallow	<i>Riparia riparia</i>	N/A	THR	Low	The Project study area is within the species' range and potential nesting habitat can be found along the Little Smith Creek riparian corridor where there are steeper, exposed banks. No old nesting sites observed.
Barn Swallow	<i>Hirundo rustica</i>	N/A	THR	Low	The Project study area is within the species' range and potential nesting habitat can be found at the Enbridge operations facility near KP 160, as barn swallows are known to nest in man-made features such as buildings. Potential nesting habitat is also present along the Little Smith Creek riparian corridor in vegetation and natural features.
Common Nighthawk	<i>Chordeiles minor</i>	N/A	THR	High	The species' range and nesting habitat requirements are found throughout the Project study area, including forest clearings, sandy areas, and creek banks.
Harris' Sparrow	<i>Zonotrichia querula</i>	N/A	UC	Low	The species' range overlaps with the Project study area; however, use is likely seasonal as nesting typically occurs in tundra habitat.

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Common Name	Scientific Name	NWT Status ^{1,2}	SARA Status ^{1,3}	Potential to Occur	Rationale ⁴
Horned Grebe	<i>Podiceps auritus</i>	N/A	SPC	Low	The species' range and nesting habitat requirements are typical throughout the Taiga Cordillera Ecoregion (i.e., shallow freshwater ponds and marshes); however, specific microsite requirements (i.e., emergent vegetation and wetland areas critical for cover during nesting) is lacking in the Project study area.
Olive-Sided Flycatcher	<i>Contopus cooperi</i>	N/A	THR	High	Likely seasonal use during the breeding season only; nesting habitat found in trees/snags along the ROW and open areas.
Rusty Blackbird	<i>Euphagus carolinus</i>	N/A	SPC	Low	Likely seasonal use during the breeding season only; nesting habitat in wetlands, typically.
Short-Eared Owl	<i>Asio flammeus</i>	N/A	SPC	Low	The species is typically found in open grasslands, prairies, and tundra, and may opportunistically use or occupy the Project study area for hunting or summer roost; however, the likelihood of breeding in the Project study area is low.
Fish					
Bull Trout	<i>Salvelinus confluentus</i>	N/A	SPC	Medium	Found throughout the Sahtú Region, typically in tributaries west of the Mackenzie River; however, suitable habitat for resident populations, and fluvial habitat (overwintering, rearing, and spawning) is present within the Project study area.

Notes:

- ¹ THR = Threatened; SPC = Special Concern; UC = Under Consideration; N/A = Not Applicable
- ² Refers to legal status under the Species at Risk (NWT) Act (SNWT 2009, c. 16).
- ³ Refers to legal status under Schedule 1 of SARA (SC 2002, c. 29).
- ⁴ Rationale is based on the GNWT Guide to Species at Risk in the NWT (2018).

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3.4.5.1 Vegetation Species

No rare plants or plant species listed on Schedule 1 of the *Species at Risk Act (SARA)* (SC 2002, c. 29) or the *Species at Risk (NWT) Act* (SNWT 2009, c. 16) were observed during the vegetation field surveys conducted for the Project.

There is a moderate potential for rare plant habitat to exist in the riparian areas of Little Smith Creek, and among groundwater and meltwater seepages on the Little Smith Creek valley slope. These areas are outside the Project footprint and no Project interaction is anticipated.

3.4.5.2 Fish Species

The Project is not located within critical habitat for aquatic species at risk (DFO 2019).

Bull Trout, listed as Special Concern on Schedule 1 of *SARA* (SC 2002, c. 29), were captured at the mouth of Little Smith Creek during the supplemental field assessment. No spawning Bull Trout or Bull Trout spawning redds were observed; however, suitable spawning and rearing habitat was observed in the lower reaches of Little Smith Creek (approximately 100 m upstream of the mouth of Little Smith Creek).

No other aquatic species at risk or species of special status are known to occur in Little Smith Creek or the Mackenzie River in the Project area.

3.4.5.3 Wildlife Species

No wildlife species listed on Schedule 1 of *SARA* (SC 2002, c. 29) or the *Species at Risk (NWT) Act* (SNWT 2009, c. 16) were observed during the wildlife field assessments conducted for the Project. However, many birds observed within the Project area are protected under the *Migratory Birds Convention Act, 1994* (SC 1994, c. 22) such as the Alder Flycatcher (*Empidonax alnorum*), Hermit Thrush (*Catharus guttatus*), Pine Siskin (*Spinus pinus*), and Spotted Sandpiper.

The Project is located within Boreal Woodland Caribou Range (NWT Range, NT1; ECCC 2019b). The Boreal population of Woodland Caribou is listed as Threatened on Schedule 1 of *SARA* (SC 2002, c. 29) and on the NWT List of Species at Risk (Government of Canada 2019b, GNWT 2019c). Boreal Woodland Caribou habitat is present throughout the Project area, as indicated by the presence of terrestrial and arboreal lichens, and old-growth forest habitat in proximity to rivers and creeks. Woodland Caribou are reported to likely overwinter throughout the Sahtú Region. The integrated risk assessment for the Boreal population of Woodland Caribou in NWT (NT1) determined that local populations of Woodland Caribou are likely self-sustaining (ECCC 2019b).

4.0 Project Description

4.1 Location and Access

The Project is located in the Sahtú Region of the NWT, approximately 80 km southeast of the hamlet of Tulita and approximately 140 km southeast of the Town of Norman Wells (see **Figure 2**).

The Project is located in a remote area that is currently only accessible over land by a winter road that is typically in service from December to early April. The Project area can be accessed in the summer months by barging on the Mackenzie River.

4.2 Site History

Construction of the Line 21 pipeline occurred from 1982 to 1985. The Project uses Enbridge's existing permanent easement and previous workspace to the extent possible. In particular, the camp and laydown yard are situated in a disturbed area that was previously used as a construction camp and is adjacent to existing disturbances including the winter road, an inactive airstrip, gravel pit, and Enbridge operations facility. Minimal new clearing is required for Project activities.

4.3 Site Geology

Site geology information is not provided here, as the requirements in the *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* (MVLWB and AANDC 2013) are specific to mining sites.

Wood (2018) prepared a report on hydrotechnical and geotechnical conditions and potential remedial options for the Line 21 pipeline at the slope failure location along the meander bend of Little Smith Creek near KP 158. Geotechnical investigations were completed for detailed engineering to determine the feasibility and optimal design of the HDD installation.

4.4 Project Summary

The Project will require upgrades to existing access roads, as well as the following temporary infrastructure:

- Construction camps (up to three small camps);
- Laydown yard (fuel and equipment storage);
- Potential barge landing (upgrades to an existing site on the Mackenzie River); and,
- Temporary workspace:
 - HDD work sites (entry and exit points, and false ROW for trenchless pipe drag section); and
 - Pipeline stopple/tie-in locations.

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Further details on the Project components are provided in **Section 5.2**.

The general activities associated with construction of the Project are described in **Table 6**.

Table 6: Project Construction Activities

Construction Stage	Associated Activities
Engineering	The new pipeline segment will be designed and constructed in accordance with all applicable industry standards (e.g., Canadian Standards Association [CSA] Z662) and the <i>NEB Onshore Pipeline Regulations</i> (SOR/99-294), as well as federal, territorial, and regional requirements, and conditions of permits or authorizations.
Surveying	The boundaries of the proposed construction workspaces (e.g., temporary workspace, bell holes, etc.) will be flagged and staked, as required. Areas to be avoided will also be flagged.
Clearing and vegetation removal	Vegetation (i.e., trees, stumps, brush, and other vegetation) and/or snow will be cleared from the temporary workspaces, camp site, laydown area, and access roads, as needed, to facilitate construction activities. Any salvaged trees will be stockpiled and given to the local community. Non-salvageable vegetative material will be disposed of through burning, to be conducted at the existing gravel pit adjacent to the camp site location. A burn permit will be acquired from the Sahtú Regional Office of the Department of Environment and Natural Resources if burning is conducted during the closed season (May 1 to September 30).
Strippings salvage	The surface organics layer of the soil (strippings) will be salvaged where excavation is required (e.g., HDD drill entry and exit, stopple, and tie-in locations, trench for pipeline removal).
Grading/site preparation	Grading will be conducted on slopes and irregular ground surfaces and may be required for preparation of the potential barge landing site, temporary workspaces, and access roads in order to provide a safe work surface. The camp site and laydown area are already level and do not require grading.
Excavating	Bell holes will be excavated at the HDD drill entry and exit sites and stopple/pipeline tie-in locations to facilitate the construction of the new pipeline segment, as well as to plug the existing pipeline segment prior to removal and tie the new pipeline segment into the existing pipeline. The trench line will also be excavated over the existing pipe segment to facilitate pipe removal.
New pipeline installation and existing pipeline removal	The new pipeline segment will be transported by truck to the HDD entry site and will be lined up, welded, joint-coated, and inspected prior to being installed. The existing pipe segment will be drained to onsite tankage prior to installation of the new pipe segment. Once the new pipe is installed and commissioned, oil will be reinjected into the new pipe. The existing pipe will be removed via open cut trenching. The trench may be backfilled with HDD/hydrovac slurry and additional HDD/hydrovac slurry material will be mixed and buried in a previously disturbed area like the gravel pit area, if both options are permitted. The removed pipe segment will be disposed of at an approved facility in Alberta.
Backfilling	Excavations/bell holes will be backfilled using native spoil material.

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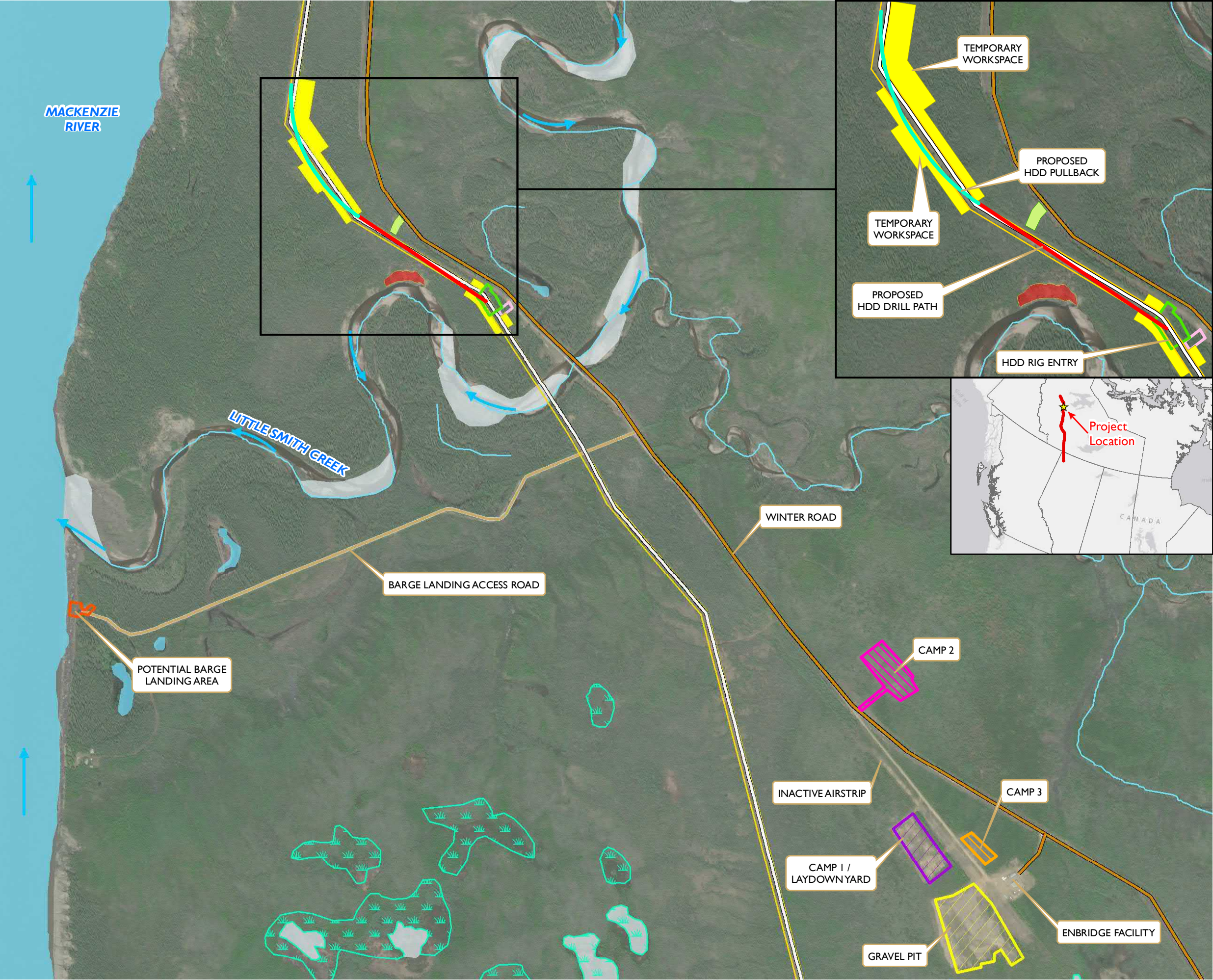
Closure and Reclamation Plan - Line 21 Planned Maintenance at KP 158 near Little Smith Creek

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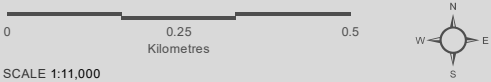
Construction Stage	Associated Activities
Testing	The new pipeline segment will be hydrostatically pressure-tested using a rental fluid comprised of a 50/50 mix of water and glycol. Testing will adhere to relevant territorial and federal regulations. The test fluid will be trucked in and out of the construction site and will not be discharged to the environment.
Waste disposal	Waste disposal will occur throughout construction as part of general maintenance activities. Construction wastes typically include scrap materials, welding rods, used lubricants, and domestic garbage. The Contractor will dispose of all waste materials in accordance with the Project's Waste Management Plan.
Clean-up and reclamation	During clean-up, preconstruction contours will be re-established and salvaged strippings will be replaced. Matting will be removed from access roads and temporary workspaces and these areas will be de-compacted, where necessary. Disturbed areas will be left to naturally revegetate.



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LINE 21 PLANNED MAINTENANCE AT KP 158 NEAR LITTLE SMITH CREEK

PROJECT OVERVIEW
FIGURE 2

- Existing Line 21 Pipeline
- Winter Road
- Barge Landing Access Road
- Watercourse
- Flow Direction
- Wetland
- Permanent Waterbody
- Intermittent Waterbody
- Slope Failure
- Proposed HDD Drill Path
- Proposed HDD Pullback
- HDD Rig Entry
- Temporary Workspace
- North Entrance
- Gravel Pit
- Stopples Entry
- Camp 1 / Laydown Yard
- Camp 2
- Camp 3
- Existing Line 21 ROW



MAP DRAWING INFORMATION:
DATA PROVIDED BY ESRI, ENBRIDGE, CANVEC

MAP CREATED BY: LK
MAP CHECKED BY: AL
MAP PROJECTION: NAD 1983 UTM Zone 10N



PROJECT: 18-8582
STATUS: FINAL
DATE: 2020-07-16

5.0 Permanent Closure and Reclamation

This section details Enbridge's plans for the permanent closure and reclamation of the Project.

5.1 Definition of Permanent Closure and Reclamation

In the *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* (MVLWB and AANDC 2013), permanent closure and reclamation is defined as follows:

Permanent closure is the final closure of a mine site with no foreseeable intent by the existing proponent to return to either active exploration or mining.

In the context of the Project, it can be interpreted that permanent closure of the Project means that Enbridge has no intentions of conducting further activities at the site, aside from routine operations and maintenance monitoring and potential remedial actions (when and where required).

5.2 Permanent Closure and Reclamation Requirements

Permanent closure and reclamation requirements are described in the following subsections for the Project components listed in **Section 4.4**, including:

- Construction camp and laydown yard;
- Potential barge landing;
- Existing access roads; and,
- Temporary workspace.

5.2.1 Project Component Descriptions

5.2.1.1 Camp Sites(s) and Laydown Yard

There are three planned camp site areas. The first camp site area (Camp 1 on **Figure 2**) includes the proposed laydown yard and is located on a previously cleared area that has been used in the past for similar purposes. Together, Camp 1 and the laydown yard measure approximately 1.56 ha. Camp 1 and the laydown yard are adjacent to an inactive airstrip, as well as an existing Enbridge operations base and gravel pit. A portion of the inactive airstrip will be used for access from the winter road to the camp sites and laydown yard. The second camp site area (Camp 2 on **Figure 2**) is located at the intersection of the winter road and inactive airstrip in a previously cleared area measuring approximately 1.53 ha. The third camp site area (Camp 3 on **Figure 2**) is located directly across from Camp 1 and the laydown yard in a previously cleared area measuring approximately 0.38 ha. Site preparation of the camp sites and laydown yard will include minor grubbing and clearing and will be conducted in the summer, following the construction of the potential barge landing.

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The existing gravel pit (3.81 ha) may be used for mix bury-cover sumps for hydrovac slurry and HDD drilling waste. The plan, pending approval, is to use the hydrovac slurry and HDD drilling waste as backfill for the existing pipeline trench after removal of the existing pipeline segment. Any remaining slurry may be disposed via mix-bury-cover at the gravel pit, if permitted by the SLWB, and pending the results of substrate testing, which will occur during camp set-up. The gravel pit may also be used as a location for burning of non-salvageable vegetative material from clearing.

5.2.1.2 Potential Barge Landing

An existing barge landing site on the Mackenzie River, located approximately 250 m upstream of the mouth of Little Smith Creek (see **Figure 2**), may be upgraded/repared so that it can be used to mobilize equipment to the work sites in the summer, prior to the winter construction season. In order to utilize the barge landing site, some slope modifications will be required on the bank of the Mackenzie River. It is possible that the barge landing site may require instream works, including installation of a dead man and placement of fill; however, Enbridge is planning to avoid work below the high-water mark. All slope modifications will be temporary and the bank of the river will be returned to its pre-construction condition when construction and final clean-up are complete. Should in-stream work be required at the potential barge landing, Enbridge will attempt to conduct the work outside of the restricted activity timing window (August 15 to July 15) for the protection of fish and fish habitat (DFO 2013). If required, Enbridge will obtain all necessary permits/authorizations from DFO and Transport Canada prior to conducting work at the potential barge landing site.

5.2.1.3 Existing Access Roads

An existing access road, approximately 3.5 km in length, will be used to transport equipment/materials from the potential barge landing site to the proposed camp site and laydown area. The margins of the road will require minor clearing/brushing (approximately 2 m on each side).

An existing winter road will be used to access the ROW from the camp site/laydown area and is in good condition from the camp area up to the existing bridge over Little Smith Creek. The bridge is in good condition and requires no improvements. The winter road to the ROW, after the bridge crossing, is in poor condition and should only be used in the winter due to springs and soft ground conditions.

All access routes for the Project will be frozen-in except for a few low-lying areas where matting may be used.

5.2.1.4 Temporary Workspace

Some temporary workspace, outside of the existing Enbridge ROW, will be required at the HDD work sites (drill entry and exit, and pull-back area for pipeline drag section) and the stopple/tie-in locations (see **Figure 2**). Workspace off the ROW will require clearing/grubbing, however, no merchantable timber is expected to be salvaged. The HDD entry site will require approximately 0.34 ha of land, of which,

5.0 Permanent Closure and Reclamation 22

0.16 ha is outside of the existing ROW. The pipe pull-back area will require an area of approximately 0.5 ha, with 0.05 ha required for corner pull-back. Two temporary access trails will also be cleared from the winter road to the HDD work sites and stopple/tie-in locations (north and south) on the ROW. Access to the north stopple/tie-in location will require approximately 0.12 ha of land and access to the south stopple/tie-in location will require approximately 0.09 ha.

5.2.2 Pre-Disturbance, Existing, and Final Site Conditions

A description of the pre-disturbance, existing, and final site conditions for the Project components described in **Section 5.2.1** is provided in **Table 7**, below. Representative photo plates are provided following the table.

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Table 7: Description of Pre-Disturbance, Existing, and Final Site Conditions

Project Component	Site Condition		
	Pre-Disturbance	Existing	Final
Camp 1 and Laydown Yard	It is assumed that the pre-disturbance condition of the camp site and laydown yard would have been similar to the current setting of the surrounding area. The vegetation surrounding the camp site and laydown yard is comprised of young mixedwood forest dominated by Balsam Poplar, Jack Pine, White Birch, White Spruce, Buffalo Berry, Green Alder, Prickly Rose, Common Bearberry, and Twinflower (see Photo 1).	The existing condition of the camp site and laydown yard is disturbed poorly vegetated land surrounded by young mixedwood forest (see Photo 2). There is bare land with some small regenerating trees and shrubs on the site and several alien species and three invasive species (i.e., Smooth Brome, White Sweet-clover, and Yellow Sweet-clover) are present around the site.	Final site condition (i.e., after post-construction reclamation and the completion of the PCEM Program) is planned to be the equivalent of the existing site condition, with woody vegetation being allowed to fully develop.
Potential Barge Landing	It is assumed that the pre-disturbance condition of the potential barge landing site would have been similar to the surrounding undisturbed portions of the east bank of the Mackenzie River near the Project location.	The existing condition of the potential barge landing site is a consolidated sediment riverbank with some sparse vegetation and driftwood present. Further up the bank, the vegetative ground cover becomes denser approaching the forest and existing access road (see Photo 3 and Photo 4).	Final site condition (i.e., after post-construction reclamation and the completion of the PCEM Program) is planned to be the equivalent of the existing site condition.

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Project Component	Site Condition		
	Pre-Disturbance	Existing	Final
Existing Access Roads	It is assumed that the pre-disturbance condition of the existing access roads would have been similar to the current setting of the surrounding area near Little Smith Creek. The vegetation surrounding Little Smith Creek is comprised of mature upland coniferous forest with some young deciduous undergrowth. Dominant species include Black Spruce, White Spruce, Green Alder, Buffalo Berry, and various forbs, and Feather Moss species.	The existing condition of the access to the potential barge landing is disturbed, with some overgrowth along the margins of the road. The winter road is disturbed and is maintained by the GNWT as a regional access road (see Photo 5). Several alien species and three invasive species (i.e., Smooth Brome, White Sweet-clover, and Yellow Sweet-clover) are present around the winter road and existing Line 21 ROW.	Final site condition (i.e., after post-construction reclamation and the completion of the PCEM Program) is planned to be the equivalent of the existing site condition.
Temporary Workspace	It is assumed that the pre-disturbance condition of the temporary workspace sites would have been similar to the current setting of the surrounding area near Little Smith Creek. The vegetation surrounding Little Smith Creek is comprised of mature upland coniferous forest with some young deciduous undergrowth. Dominant species include Black Spruce, White Spruce, Green Alder, Buffalo Berry, and various Forbs, and Feather Moss species.	The existing condition of the temporary workspace sites off the Line 21 ROW is historically disturbed with regenerating coniferous forest and deciduous undergrowth (see Photo 6). Many of the trees present in the off-ROW Project footprint are small diameter and non-salvageable.	Final site condition (i.e., after post-construction reclamation and the completion of the PCEM Program) is planned to be the equivalent of the existing site condition, with woody vegetation being allowed to fully develop.

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Photo 1: Young mixedwood forest in area surrounding proposed camp site 1 and laydown yard (October 2018).



Photo 2: Aerial view of proposed camp site 1 and laydown yard (July 2019).

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Photo 3: Bank of the Mackenzie River at the potential barge landing site, looking north towards Little Smith Creek (July 2019).



Photo 4: Bank of the Mackenzie River at the potential barge landing site, looking east towards the existing access road (September 2019).

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Photo 5: ROW near winter road bridge (July 2019).



Photo 6: Aerial view of ROW at slope failure location (July 2019).

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5.2.3 Closure Objectives and Criteria

The closure objectives for the Project have been guided by the four closure principles outlined in the *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* (MVLWB and AANDC 2013): (1) physical stability, (2) chemical stability, (3) no long-term active care, and (4) future use. Closure objectives and criteria are provided in **Table 8**.

In general, successful reclamation will be defined as achieving a final site condition that is similar to a representative area off the Project construction footprint (i.e., the existing re-vegetated ROW). Representative areas will be identified by Enbridge in consultation with an Environmental Consultant and GNWT Inspectors.

Table 8: Project Closure Objectives and Criteria

Closure Objective	Closure Criteria
Remove all garbage and construction material from the Project footprint	All materials brought to the Project footprint are removed following final site clean-up and reclamation (e.g., garbage, matting, fencing, gravel, etc.)
Return the landscape to pre-construction condition	Surface contours are comparable to the surrounding representative area
	Pre-construction surface drainage is restored
	Surface stoniness is consistent with the representative area
	No ponding, subsidence, or slumping is observed
Achieve soil stability	Erosion is not observed (beyond typical natural erosion in the Project area)
	Erosion controls are functional or removed if no longer required
	Slopes are stable and no soil movement is observed
	No severe compaction or soil mixing is observed (i.e., vegetation regrowth is not noticeably stunted)
Revegetate the Project footprint	No large bare areas are observed
	Species composition is consistent with the surrounding representative area, as defined above
	Average desirable vegetation density is comparable to the surrounding representative area
	Overall vegetation health is similar to the surrounding representative area
No increased presence of weeds and/or invasive vegetation	Weeds and/or invasive species represent the species composition observed in the surrounding representative area, as defined above
Sumps (if used)	Pre-construction surface drainage is restored
	No ponding, subsidence, or slumping is observed
	Erosion is not observed (beyond typical natural erosion in the Project area)
	Slopes are stable and no soil movement is observed
	No large bare areas are observed

5.0 Permanent Closure and Reclamation 29

Closure Objective	Closure Criteria
Sumps (if used) cont'd	Species composition is consistent with the surrounding representative area
	Average desirable vegetation density is comparable to the surrounding representative area
	Overall vegetation health is similar to the surrounding representative area
	Weeds and/or invasive species represent the species composition observed in the surrounding representative area, as defined above
	No severe compaction or soil mixing is observed (i.e., vegetation regrowth is not noticeably stunted)

5.2.4 Consideration of Closure Options and Selection of Closure Activities

Closure and reclamation of the Project area will be conducted using Enbridge's standard clean-up, reclamation, and monitoring procedures. These methods have been used to reclaim thousands of kilometres of pipeline in western Canada for both federal and provincial/territorial regulators. As such, multiple closure options are not being considered for the Project.

5.2.5 Engineering Work Associated with Selected Closure Activity

Engineering work associated with Project closure is completed as part of the Project design, and no additional work is required to complete the permanent closure and reclamation of the Project.

5.2.6 Predicted Residual Effects

The Environmental and Socio-Economic Assessment completed as part of the LUP and Water License applications to the SLWB indicated that no significant residual effects are anticipated following the implementation of mitigation measures.

Following the completion of site reclamation activities, Enbridge will implement a PCEM Program to determine if remedial measures are warranted to meet the goal of this Plan. It is anticipated that not all closure criteria outlined in **Section 5.2.3** will be met during the first full growing season following construction, and that some residual effects may be present in the short-term (e.g., revegetation).

5.2.7 Uncertainties

Given the scope and size of the Project, and the fact that standard, industry-accepted mitigation measures will be implemented, there are few uncertainties associated with the permanent closure and reclamation of the Project.

The primary uncertainty is the planned natural revegetation of the Project area. If natural revegetation is determined to not be successful during the PCEM Program (i.e., vegetation is not observed to be on a positive growth trajectory or to have met the revegetation criteria as outlined in **Section 5.2.3**),

5.0 Permanent Closure and Reclamation 30

additional measures may need to be implemented in consultation with Indigenous communities, stakeholders, and regulatory agencies.

5.2.8 Post-Closure Monitoring, Maintenance, and Reporting

Enbridge will implement a PCEM Program to determine if remedial measures are warranted. Monitoring will occur in spring following break-up and in the summer/fall during the growing season for the first two years. Following year two, monitoring will only be conducted in summer during the growing season. Following the completion of the PCEM Program in 2023, Enbridge will continue monitoring the site as part of ongoing operations and maintenance of the Line 21 pipeline.

A report will be completed each year of the PCEM Program to summarize the results of the PCEM fieldwork and will be submitted to the SLWB as part of the Annual Water License Report.

5.2.9 Contingencies

In the event that an unforeseen issue arises that is not resolved by standard mitigation measures, Enbridge will develop appropriate contingency measures in consultation with the Construction Manager and, when appropriate, Indigenous communities, stakeholders, and regulatory agencies.

6.0 Progressive Reclamation

The definition of progressive reclamation is provided in the *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* (MVLWB and AANDC 2013) and is quoted in **Section 6.1**, below. It should be noted that progressive reclamation applies to longer-term projects (e.g., mines), where reclamation of some project components can occur prior to the closure stage. Given the relatively short timeline for the Project, which includes a construction period of no more than 8 consecutive weeks in any one season, progressive reclamation is not applicable.

Notwithstanding, Enbridge typically employs a phased approach to reclamation that is in line with the principles of progressive reclamation. This includes completing clean-up and restoration of Project sites immediately following the completion of construction, including restoring surface grades and drainages; backfilling excavations; rolling back brush and peat over disturbed areas; and installing erosion and sediment controls, where required. Following site restoration, ongoing monitoring of the site is completed every year by Enbridge's Environmental Consultant as part of the PCEM Program to determine if remedial measures are warranted to meet the goal of this Plan (**Section 2.2**).

6.1 Definition of Progressive Reclamation

In the *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* (MVLWB and AANDC 2013), progressive reclamation is defined as follows:

Progressive reclamation takes place prior to permanent closure to reclaim components and/or decommission facilities that no longer serve a purpose. These activities can be completed during operations with the available resources to reduce future reclamation costs, minimize the duration of environmental exposure, and enhance environmental protection. Progressive reclamation may shorten the time for achieving closure objectives and may provide valuable experience on the effectiveness of certain measures that might be implemented during permanent closure.

6.2 Opportunities for Progressive Reclamation

While progressive reclamation is not planned for the Project due to the short duration of construction activities, Enbridge will implement a PCEM Program to determine if remedial measures are warranted. See **Section 5.2.8**.

6.3 Completed Progressive Reclamation

No progressive reclamation has occurred, or will occur, for the Project, as discussed above.

7.0 Temporary Closure

Temporary closure of the Project work sites is possible in the event that full demobilization of equipment is not possible following construction due to early spring break-up or in the event that construction is not completed in the winter 2021 season (January 1 – March, 31 2021). If construction is completed in winter 2021, but equipment is trapped due to early spring break-up, Enbridge will stage equipment at the camp site/laydown yard until it can safely be removed via barge in summer 2021 or the following winter of 2022. If construction is not completed in winter 2021, equipment required to complete construction will be staged at the camp site/laydown yard until the following winter and final clean-up and demobilization will occur in winter 2022.

7.1 Temporary Closure Goal and Closure Objectives

The primary goal for temporary closure is to adequately secure and stabilize the Project work sites to minimize environmental impacts until final clean-up and reclamation can be completed.

7.2 Temporary Closure Activities

In the event of a temporary closure, measures will be implemented to secure and stabilize the Project work sites. Temporary closure activities may include:

- Securing and restricting access to the inactive work sites;
- Implementing erosion and sediment control measures in accordance with the Erosion and Sediment Control Plan (to be developed prior to construction); and,
- Inspecting the site regularly via aerial patrol and completing necessary remedial work, as needed (e.g., silt fence repair).

7.3 Temporary Closure, Monitoring, Maintenance, and Reporting

Aerial patrols of the existing Line 21 ROW are conducted on a routine basis and will include the Project area during temporary closure to monitor the inactive work sites and ensure the temporary closure goal and all applicable regulatory/permit conditions are being met. Reporting required as part of regulatory/permit conditions will be completed during the temporary closure; no additional reporting is anticipated to be required.

7.4 Temporary Closure Contingency Program

Enbridge's response to unforeseen events or conditions during the temporary closure will be consistent with routine operations and maintenance procedures for the Line 21 pipeline. If remedial actions are identified based on aerial patrols, Enbridge will respond in a timely manner in accordance to the severity of the condition and in consideration of seasonal feasibility for completing the work.

7.5 Temporary Closure Schedule

Temporary closure may occur between March 31, 2021 and June 30, 2021 if construction is completed in winter 2021, but equipment is trapped by early spring-break-up. In this case, final clean-up and demobilization of equipment would occur in summer 2021. If construction is not completed in winter 2021, temporary closure may occur between March 31, 2021 and January 1, 2022, when remaining construction would be completed and final clean-up and demobilization would occur by March 31, 2022.

8.0 Integrated Schedule of Activities

Pending regulatory approval, Project construction is planned to generally follow the schedule outlined in **Table 9**. Construction is not anticipated to last more than 8 consecutive weeks during any one season.

Table 9: Anticipated Project Schedule

Dates	Project Activities
Summer 2020	Construction of potential barge landing, clearing along access road, and installation of matting required for access to camp site. Construction/preparation of camp site.
January 1, 2021 – March 31, 2021	Clearing, HDD construction, tie-ins, removal of existing pipeline, demobilization of equipment, haul-off drilling waste (if mix-bury-cover is not permitted).
Summer 2021	Demobilization by barge of any equipment trapped by early spring break-up (back-up plan; only required if all equipment cannot be demobilized in winter).
January 1, 2022 – March 31, 2022	If pipe removal is not completed in winter 2021, pipe removal will occur in winter 2022, followed by final clean-up and demobilization of any remaining equipment left on site.
Spring 2022 or Spring 2023	On-the-ground monitoring following spring break-up.
Summer/Fall 2022 or Summer/Fall 2023	On-the-ground monitoring during the first growing season.
Spring 2023 or Spring 2024	On-the-ground monitoring following spring break-up.
Summer/Fall 2024 or Summer/Fall 2024	On-the-ground monitoring during the second growing season.

9.0 Post-Closure Site Assessment

As outlined in **Section 5.2.8**, Enbridge will implement a PCEM Program to determine if remedial measures are warranted following construction. Monitoring will occur in spring following break-up and in the summer/fall during the growing season for the first two years. Following year two, monitoring will only be conducted in summer during the growing season. Following the completion of the PCEM Program in 2023, Enbridge will continue monitoring the site as part of ongoing operations and maintenance of the Line 21 pipeline.

The PCEM report will address the Project closure objectives and criteria outlined in **Table 8** of **Section 5.2.3**. Typical PCEM reporting involves the use of an Environmental Issues List, which is a comprehensive listing of observed issues and recommendations for remediation noted during on-the-ground fieldwork. The list is carried forward to each subsequent year of PCEM and issues that have been successfully addressed are noted as resolved. When all the issues have been resolved, the goal of this Plan will be met and no residual effects will remain.

10.0 Financial Security

Enbridge will post financial security with the GNWT as required in accordance with the Project LUP and Water License (to be acquired).

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Appendix A

Glossary of Terms and Definitions

Glossary of Terms and Definitions

Closure Criteria	Standards that measure the success of selected closure activities in meeting closure objectives (MVLWB and AANDC 2013).
Closure Goal	The guiding statement that provides the vision and purpose of reclamation. Attainment of the closure goal happens when the proponent has satisfied all closure objectives. By its nature, the closure goal is a broad, high-level statement and not directly measurable (MVLWB and AANDC 2013).
Closure Objectives	Statements that describe what the selected closure activities are aiming to achieve; they are guided by the closure principles. Closure objectives are typically specific to project components, are measurable and achievable, and allow for the development of closure criteria (MVLWB and AANDC 2013).
Closure Principles	The four core closure principles are (1) physical stability, (2) chemical stability, (3) no long-term active care requirements, and (4) future use (including aesthetics and values). The principles guide the selection of closure objectives (MVLWB and AANDC 2013).
Land Use Permit	A land use permit required for an activity set out in sections 4 and 5 of the <i>Mackenzie Valley Land Use Regulations</i> (SOR/98-429), for an activity set out in the <i>NWT Land Use Regulations</i> (R-012-2014).
Permanent Closure	Permanent closure is the final closure of a mine site with no foreseeable intent by the existing proponent to return to either active exploration or mining (MVLWB and AANDC 2013). In the context of the Project, this definition does not directly apply. However, it can be interpreted that permanent closure of the Project means that Enbridge has no intentions of conducting further activities at the site, aside from routine operations and maintenance monitoring and potential remedial actions (when and where required).

Glossary of Terms and Definitions A-3

Progressive Reclamation	Progressive reclamation takes place prior to permanent closure to reclaim components and/or decommission facilities that no longer serve a purpose. These activities can be completed during operations with the available resources to reduce future reclamation costs, minimize the duration of environmental exposure, and enhance environmental protection. Progressive reclamation may shorten the time for achieving closure objectives and may provide valuable experience on the effectiveness of certain measures that might be implemented during permanent closure (MVLWB and AANDC 2013).
Reclamation	The process of returning a disturbed site to its natural state or which prepares it for other productive uses that prevents or minimizes any adverse effects on the environment or threats to human health and safety (MVLWB and AANDC 2013).
Remediation	The removal, reduction, or neutralization of substances, wastes, or hazardous material from a site in order to prevent or minimize any adverse effects on the environment and public safety now or in the future (MVLWB and AANDC 2013).
Type B Water License	A water license required as per Column III of Schedules IV to VIII of the NWT <i>Waters Regulations</i> (R-019-2014).

Appendix B

List of Acronyms, Abbreviations, Units, and Symbols

List of Acronyms, Abbreviations, Units and Symbols

°	<i>Degrees</i>
'	<i>Minutes</i>
"	<i>Seconds</i>
µg	<i>Microgram(s)</i>
AANDC	<i>Aboriginal Affairs and Northern Development Canada</i>
asl	<i>Above Sea Level</i>
CO	<i>Carbon Monoxide</i>
CRP	<i>Closure and Reclamation Planning</i>
CSA	<i>Canadian Standards Association</i>
DFO	<i>Fisheries and Oceans Canada</i>
ECCC	<i>Environment and Climate Change Canada</i>
Enbridge	<i>Enbridge Pipelines (NW) Inc.</i>
EPP	<i>Environmental Protection Plan</i>
GNWT	<i>Government of Northwest Territories</i>
H ₂ S	<i>Hydrogen Sulphide</i>
HDD	<i>Horizontal Directional Drill</i>
IBA	<i>Important Bird Area</i>
km	<i>Kilometre(s)</i>
KP	<i>Kilometre Post</i>
LUP	<i>Land Use Permit</i>
m	<i>Metre(s)</i>
m ³	<i>Cubic Metre(s)</i>
MVLWB	<i>Mackenzie Valley Land and Water Board</i>
N/A	<i>Not Applicable</i>
NO ₂	<i>Nitrogen Dioxide</i>
NPS	<i>Nominal Pipe Size</i>
NWT	<i>Northwest Territories</i>
O ₃	<i>Ozone</i>
PCEM	<i>Post-Construction Environmental Monitoring</i>
PM _{2.5}	<i>Fine Particulate Matter (≤ 2.5 micrometres in diameter)</i>
PM ₁₀	<i>Particulate Matter (≤ 10 micrometres in diameter)</i>

List of Acronyms, Abbreviations, Units and Symbols B-3

<i>ppb</i>	<i>Parts Per Billion</i>
<i>ppm</i>	<i>Parts Per Million</i>
<i>ROW</i>	<i>Right-of-Way</i>
<i>SARA</i>	<i>Species at Risk Act</i>
<i>SC</i>	<i>Statutes of Canada</i>
<i>SLWB</i>	<i>Sahtú Land and Water Board</i>
<i>SNWT</i>	<i>Statutes of the Northwest Territories</i>
<i>SO₂</i>	<i>Sulphur Dioxide</i>
<i>SOR</i>	<i>Statutory Orders and Regulations</i>
<i>SPC</i>	<i>Special Concern</i>
<i>the Project</i>	<i>Replacement of a segment of the Line 21 pipeline southeast of KP 158 near Little Smith Creek in the Northwest Territories</i>
<i>the Plan</i>	<i>Closure and Reclamation Plan</i>
<i>THR</i>	<i>Threatened</i>
<i>UC</i>	<i>Under Consideration</i>
<i>Wood</i>	<i>Wood Environment and Infrastructure Solutions</i>

Appendix D

Type A Land Use Permit (S20P-003)



SAHTU Land & Water Board Land Use Permit

Permit Class Type A	Permit No. S20P-003	Amendment No.
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Subject to the Mackenzie Valley Land Use Regulations and the terms and conditions in this permit, authority is hereby granted to:

Enbridge Pipelines (NW) Inc.
10175 – 101 Street N.W. Edmonton, Alberta. T5J 0H3

(Permittee and Mailing Address)

hereinafter called the Permittee, to proceed with the land use operation described in the Application of :

Signature Sarah McKenzie	Date July 17, 2020
Type of Land Use Operation Off Right-of-Way activities for the Line 21 pipeline replacement project	
Location southeast of kilometre post 158 on the Mackenzie Valley winter road, at Little Smith Creek	

This permit may be assigned, extended, discontinued, suspended or cancelled pursuant to the Mackenzie Valley Land Use Regulations.

Dated at: Fort Good Hope

This 17 Day of September Year: 2020

Witness 


(Chair)
SAHTU Land & Water Board

First Day of the Term: September 17, 2020 Expiry Date: September 16, 2025

ATTENTION

IT IS A CONDITION OF THIS PERMIT THAT THE PERMITTEE COMPLY WITH THE PROVISIONS OF THE MACKENZIE VALLEY RESOURCE MANAGEMENT ACT AND REGULATIONS AND THE TERMS AND CONDITIONS SET OUT HEREIN. A FAILURE TO COMPLY MAY RESULT IN SUSPENSION OR CANCELLATION OF THIS PERMIT.

If you have any questions please call the SAHTU Land & Water Board at (867) 598-2413

Conditions Annexed to and Forming Part of Land Use Permit # S20P-003

Part A: Scope of Permit

1. This Permit entitles the Permittee to conduct the following land-use operation for off Right-of-Way activities associated with the replacement of a segment of the Line 21 pipeline within the existing Enbridge ROW, southeast of kilometre post (KP) 158 near Little Smith Creek in the Northwest Territories, including:
 - a) Upgrade existing access roads and construct temporary infrastructure for drill sites, camps, laydown and fuel storage areas, barge landing site, Sumps, and related facilities;
 - b) Use of horizontal direction drilling (HDD);
 - c) Excavate material for HDD access and trench for pipe removal;
 - d) Use of heavy equipment, vehicles, and machines;
 - e) Fuels and hazardous materials storage;
 - f) Other related activities, including site reclamation.
2. This Permit is issued subject to the conditions contained herein with respect to the use of land for the activities and area identified in Part A, item 1 of this Permit.
3. Compliance with the terms and conditions of this Permit does not excuse the Permittee from its obligation to comply with the requirements of any applicable Federal, Territorial, Tłıchǫ, or Municipal laws.

Part B: Definitions (defined terms are capitalized throughout the Permit)

Act - the *Mackenzie Valley Resource Management Act*.

Board - the Sahtu Land and Water Board established under Part 3 of the Act.

Closure and Reclamation - the process and activities that facilitate the return of areas affected by the Project to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment, human activities, and the surrounding environment.

Drilling Fluid - any liquid mixture of water, sediment, drilling muds, chemical additives or other wastes that are pumped down hole while drilling and are specifically related to drilling activity.

Drilling Waste - all materials or chemicals, solid or liquid, associated with drilling, including drill cuttings and Drilling Fluids.

Engagement Plan - a document, developed in accordance with the Board's *Engagement and Consultation Policy* and the *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits*, that clearly describes how, when, and which engagement activities will occur with an affected party during the life of the project.

Environmental Protection Plan (EPP) - a site-specific inventory and plan intended to be used by Environmental Monitors and other Project personnel, that is prepared in advance of construction to identify biophysical elements at risk of potential impacts from Project activities and recommend new mitigation measures or changes to mitigation measures based on site conditions.

Fuel Storage Container - a container for the storage of petroleum or allied petroleum products with a capacity of less than 230 litres.

Fuel Storage Tank - a closed container for the storage of petroleum or allied petroleum products with a capacity of more than 230 litres.

Greywater - all liquid wastes from showers, baths, sinks, kitchens, and domestic washing facilities but not including toilet wastes.

Habitat - the area or type of site where a species or an individual of a species of wildlife naturally occurs or on which it depends, directly or indirectly, to carry out its life processes.

Inspector - an Inspector designated by the Minister under the Act.

Minister - the Minister of Indian Affairs and Northern Development Canada or the Minister of the Government of the Northwest Territories – Department of Lands, as the case may be.

Ordinary High-Water Mark - the usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the “active channel/bank-full level” which is often the 1:2 year flood flow return level. In inland lakes, wetlands, or marine environments, it refers to those parts of the Watercourse bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs, this refers to normal high operating levels (full supply level).

Permittee - the holder of this permit.

Permafrost - ground (soil or rock) that remains at or below 0°C for at least two consecutive years.

Progressive Reclamation - Closure and Reclamation activities conducted during the operating phase of the project.

Right-of-Way – that portion of the Line 21 Right-of-Way that falls within the area where the permitted land use operation will be conducted.

Secondary Containment - containment that prevents liquids that leak from Fuel Storage Tanks or containers from reaching outside the containment area and includes double-walled Tanks, piping, liners, and impermeable barriers.

Sewage - all toilet wastes and Greywater.

Sewage Disposal Facilities – Sewage collection tank(s) and/or storage containers designed to hold Sewage until off-site disposal.

Spill Contingency Plan - a document, developed in accordance with Aboriginal Affairs and Northern Development Canada's *Guidelines for Spill Contingency Planning* that describes the set of procedures to be implemented to minimize the effects of a spill.

Safety Data Sheet - a technical document, typically written by the manufacturer or supplier of a chemical, that provides information about the hazards associated with the product, advice about safe handling and storage, and emergency response procedures.

Sump - a human-made pit or natural depression in the earth's surface used for the purpose of depositing Waste that does not contain Toxic Material, such as non-toxic Drilling Waste or Sewage, therein.

Waste - any garbage, debris, chemical, or Toxic Material to be used, stored, disposed of, or handled on land, and also as defined in section 51 of the Act.

Waste Management Plan - a document, developed in accordance with the Board's Guidelines for Developing a Waste Management Plan, that describes the methods of Waste management from Waste generation to final disposal.

Watercourse - a natural body of flowing or standing water or an area occupied by water during part of the year, and includes streams, springs, swamps and gulches but does not include groundwater.

Part C: Conditions Applying to All Activities (headings correspond to subsection 26(1) of the Mackenzie Valley Land Use Regulations)

26(1)(a) Location and Area

- | | |
|--|---------------------------------|
| 1. The Permittee shall only conduct this land-use operation on lands designated in the application. | LOCATION OF ACTIVITIES |
| 2. The Permittee shall not conduct any part of the land-use operation within 400 metres of any privately owned or leased land or structures, including cabins used for traditional activities, unless otherwise approved by the Board. | PRIVATE PROPERTY SETBACK |
| 3. The Permittee shall use an existing campsite, as described in the complete application. | USE EXISTING CAMP |
| 4. Prior to the commencement of drilling, the Permittee shall submit the target areas and final drill hole locations on a 1:50,000-scale map with coordinates and map datum to the Board and an Inspector. | DRILL LOCATIONS |
| 5. The Permittee shall not locate any Sump within 100 metres of the Ordinary High Water Mark of any Watercourse, unless otherwise authorized in writing by an Inspector. | SUMP SETBACK |

26(1)(b) Time

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|---|---|
| 6. At least 48 hours prior to the initial commencement of the land-use operation, the Permittee's Field Supervisor shall notify the Board and contact an Inspector at (867) 587-7205. | INITIAL NOTIFICATION – CONTACT INSPECTOR |
| 7. At least 48 hours prior to commencement of the land-use operation, the Permittee shall provide the following information, in writing, to the Board and an Inspector: <ul style="list-style-type: none"> a) the name(s) of the person(s) in charge of the field operation; b) alternates; and c) all methods for contacting the above person(s). | IDENTIFY AGENT |
| 8. At least ten days prior to the completion of the land-use operation, the Permittee shall advise an Inspector of: <ul style="list-style-type: none"> a) the plan for removal or storage of equipment and materials; b) when final cleanup and reclamation of the land used will be completed; and c) when the Final Plan will be submitted. | REPORTS BEFORE FINAL REMOVAL |

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| 9. The Board, for the purposes of this operation, designates March 31 st as spring break-up. | SPRING
BREAK-UP |
|
26(1)(c) Type and Size of Equipment | |
| 10. The Permittee shall only use equipment of a similar type, size, and number to that listed in the complete application. | USE APPROVED
EQUIPMENT |
| 11. The Permittee shall use portable ramps during loading or unloading of ships or barges. | PORTABLE RAMPs |
| 12. The Permittee shall maintain fire-fighting equipment at the site in accordance with the <i>Government of the Northwest Territories' Forest Fire Prevention and Suppression Guidelines for Industrial Activities</i> . | FIRE-FIGHTING
EQUIPMENT |
|
26(1)(d) Methods and Techniques | |
| 13. The Permittee shall Dogleg lines, trails and right-of-ways that approach Watercourses or public roads. | DOGLEg
APPROACHES |
| 14. The Permittee shall meander any new cut lines to a maximum sight line of 200 metres. | MEANDER LINES |
| 15. The Permittee shall construct and maintain the overland portion of winter roads with a minimum of 10 cm of packed snow and/or ice at all times during this land-use operation. | WINTER ROADS |
| 16. Prior to the expiry end of the land-use operation, the Permittee shall backfill the shallow trench created from removal of the pipeline segment, with excavated materials mixed with wood chips sourced from vegetation and brush removal, and locally sourced substrate of similar type, as required, unless otherwise authorized in writing by an Inspector. | EXCAVATED
MATERIAL
- BACKFILL |
|
26(1)(e) Type, Location, Capacity, and Operation of All Facilities | |
| 17. The Permittee shall ensure that the land use area is kept clean at all times. | CLEAN WORK
AREA |
|
26(1)(f) Control or Prevention of Ponding of Water, Flooding, Erosion, Slides, and Subsidence of Land | |

- | | |
|---|--------------------------------------|
| 18. The Permittee shall insulate the ground surface beneath all structures and equipment associated with this land-use operation to prevent: | PERMAFROST PROTECTION |
| a) any vegetation present from being removed; | |
| b) the melting of Permafrost; and | |
| c) the ground settling and/or eroding. | |
| 19. The land-use operation shall not cause obstruction to any natural drainage. | NATURAL DRAINAGE |
| 20. The Permittee shall install and maintain suitable erosion control structures as the land-use operation progresses. | PROGRESSIVE EROSION CONTROL |
| 21. The Permittee shall apply appropriate mitigation at the first sign of erosion. | REPAIR EROSION |
| 22. The Permittee shall prepare the site in such a manner as to prevent rutting or gouging of the ground surface. | PREVENTION OF RUTTING |
| 23. The Permittee shall suspend overland travel of equipment or vehicles at the first sign of rutting or gouging. | SUSPEND OVERLAND TRAVEL |
| 24. The Permittee shall not move any equipment or vehicles unless the ground surface is in a state capable of fully supporting the equipment or vehicles without rutting or gouging. | VEHICLE MOVEMENT FREEZE-UP |
| 25. The Permittee shall not remove vegetation or operate heavy equipment within 100 metres of the Ordinary High Water Mark of the Mackenzie River except at the barge landing. | EQUIPMENT: WATERCOURSE BUFFER |
| 26(1)(g) Use, Storage, Handling, and Ultimate Disposal of Any Chemical or Toxic Material | |
| 26. When drilling within 100 metres of the Ordinary High Water Mark of any Watercourse, and when drilling on ice, the Permittee shall contain all drill water and Drilling Waste in a closed circuit system for reuse, off-site disposal, or deposit into a land-based Sump or natural depression. | DRILLING NEAR WATER OR ON ICE |
| 27. The Permittee may deposit hydrovac slurry Waste that does not contain Toxic Material in a Sump. Any Sumps or natural depressions used to deposit Drilling Waste must be located at least 100 metres from the Ordinary High Water Mark of any Watercourse, unless otherwise authorized in writing by an Inspector. | DRILLING WASTE |
| 28. The Permittee shall report the location of any Sump(s) to the Inspector. | REPORT SUMP LOCATION |

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|--|---|
| 29. The Permittee shall remove all Drilling Waste to an approved disposal facility. | DRILLING WASTE
DISPOSAL |
| 30. The Permittee shall not allow any Drilling Waste to spread to the surrounding lands or Watercourses. | DRILLING WASTE
CONTAINMENT |
| 31. Prior to the expiry date of this Permit or the end of the land-use operation whichever comes first, the Permittee shall backfill and restore all Sumps, unless otherwise authorized in writing by an Inspector. | RECLAIM
NON-OIL AND GAS
SUMPS |
| 32. The Permittee shall dispose of all combustible Waste petroleum products by removal to an approved disposal facility. | WASTE
PETROLEUM
DISPOSAL |
| 33. The Permittee shall provide written notification to the Board and Inspector a minimum of 10 days prior to the initial deposit of Waste, demonstrating that the licenced disposal facility has agreed to accept the Waste and has the capacity to receive the volumes of Waste requested. | NOTIFICATION OF
SOLID WASTE
DISPOSAL |

26(1)(h) Wildlife and Fish Habitat

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|---|-----------------------|
| 34. The Permittee shall take all reasonable measures to prevent damage to wildlife and fish Habitat during this land-use operation. | HABITAT DAMAGE |
|---|-----------------------|

26(1)(i) Storage, Handling, and Disposal of Refuse or Sewage

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|--|-----------------------------------|
| 35. The Permittee shall dispose of all Waste as described in the Waste Management Plan , once approved, and shall annually review the plan and make any necessary revisions to reflect changes in operations, technology, chemicals, or fuels, or as directed by the Board. Revisions to the plan shall be submitted to the Board for approval. | WASTE
MANAGEMENT |
| 36. The Permittee shall keep all garbage and debris in a secure container until disposal. | GARBAGE
CONTAINER |
| 37. The Permittee shall dispose of all garbage, Waste, and debris as described in the approved Waste Management Plan, unless otherwise authorized in writing by an Inspector. | REMOVE GARBAGE |
| 38. The Permittee shall dispose of all Sewage and Greywater as described in the approved Waste Management Plan. | SEWAGE DISPOSAL
- PLAN |

26(1)(j) Protection of Historical, Archaeological, and Burial Sites

- | | |
|--|--|
| 39. The Permittee shall not operate any vehicle or equipment within 150 metres of a known or suspected historical or archaeological site or burial ground. | ARCHAEOLOGICAL
BUFFER |
| 40. The Permittee shall not knowingly remove, disturb, or displace any archaeological specimen or site. | SITE DISTURBANCE |
| 41. The Permittee shall, where a suspected archaeological or historical site, or burial ground is discovered: | SITE DISCOVERY
AND
NOTIFICATION |
| <ul style="list-style-type: none"> a) immediately suspend operations on the site; and b) notify the Board at (867) 598-2413, or an Inspector at (867) 587-7205, and the Prince of Wales Northern Heritage Centre at 767-9347 ext. 71251 or ext. 71255. | |

26(1)(k) Objects and Places of Recreational, Scenic, and Ecological Value

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26(1)(l) Security Deposit

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| 42. Prior to the commencement of the land-use operation, the Permittee shall deposit with the Minister a security deposit in the amount of \$69,000.00 . | SECURITY DEPOSIT |
| 43. All costs to remediate the area under this Permit are the responsibility of the Permittee. | RESPONSIBILITY
FOR REMEDIATION
COSTS |

26(1)(m) Fuel Storage

- | | |
|--|--|
| 44. The Permittee shall: | REPAIR LEAKS |
| <ul style="list-style-type: none"> a) examine all Fuel Storage Containers and Tank for leaks; and b) repair all leaks immediately. | |
| 45. The Permittee shall place Fuel Storage Containers and or Tanks a minimum of 100 metres from the Ordinary High Water Mark of any Watercourse, unless otherwise authorized in writing by an Inspector. | FUEL STORAGE
SETBACK |
| 46. The Permittee shall ensure that all fuel caches have adequate Secondary Containment. | FUEL CACHE
SECONDARY
CONTAINMENT |
| 47. The Permittee shall set up all refueling points with Secondary Containment. | SECONDARY
CONTAINMENT -
REFUELING |
| 48. The Permittee shall not allow petroleum products to spread to surrounding lands or Watercourses. | FUEL
CONTAINMENT |

- | | |
|---|--|
| 49. The Permittee shall mark all Fuel Storage Containers and Tanks with the Permittee's name. | MARK
CONTAINERS AND
TANKS |
| 50. The Permittee shall mark all stationary fuel caches and fuel storage facilities with flags, posts, or similar devices so that they are at all times plainly visible to local vehicle travel. | MARK FUEL
LOCATION |
| 51. The Permittee shall have a maximum of 132,000 litres of fuel stored on the land use site at any time, unless otherwise approved by the Board. | MAXIMUM FUEL
ON SITE |
| 52. Within ten days of the establishment of any fuel cache, the Permittee shall report the location and quantity of the cache in writing to the Board and an Inspector. | REPORT FUEL
LOCATION |
| 53. The Permittee shall seal all outlets of Fuel Storage Containers and store the containers on their sides with the outlets located at 3 and 9 o'clock, except for containers currently in use. | SEAL OUTLET |
| 54. The Permittee shall comply with the Spill Contingency Plan , once approved, and shall annually review the plan and make any necessary revisions to reflect changes in operations, technology, chemicals, or fuels, or as directed by the Board. Revisions to the plan shall be submitted to the Board for approval. | SPILL
CONTINGENCY
PLAN |
| 55. Prior to commencement of the land-use operation the Permittee shall ensure that spill-response equipment is in place to respond to any potential spills. | SPILL RESPONSE |
| 56. All equipment that may be parked for two hours or more, shall have a haz-mat/drip tray under it or be sufficiently diapered. Leaky equipment shall be repaired immediately. | DRIP TRAYS |
| 57. The Permittee shall clean up all leaks, spills, and contaminated material immediately | CLEAN UP SPILLS |
| 58. During the period of this Permit, if a spill occurs or is foreseeable, the Permittee shall: <ul style="list-style-type: none"> a) implement the approved Spill Contingency Plan; b) report it-immediately using the NU-NT Spill Report Form by one of the following methods: <ul style="list-style-type: none"> • Telephone: (867) 920-8130 • Fax: (867) 873-6924 • E-mail: spills@gov.nt.ca • <u>Online: Spill Reporting and Tracking Database</u> c) within 24 hours, notify the Board and an Inspector; and d) within 30 days of initially reporting the incident, submit a detailed report to the Board and an Inspector, including descriptions of causes, response actions, and any changes to procedures to | REPORT SPILLS |

prevent similar occurrences in the future. Any updates to this report shall be provided to the Board and an Inspector in writing as changes occur.

26(1)(n) Methods and Techniques for Debris and Brush Disposal

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|---|------------------------------------|
| 59. The Permittee shall progressively dispose of all brush and trees; all disposal shall be completed prior to the end of this land use operation | BRUSH DISPOSAL/
TIME |
| 60. The Permittee shall not clear areas larger than identified in the complete application. | MINIMIZE AREA
CLEARED |
| 61. The Permittee shall clear by hand all trees and brush a minimum distance of 50 metres from the top edge of all stream banks and top edge of slopes. | CLEARING
SENSITIVE AREA |

26(1)(o) Restoration of the Lands

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|--|---|
| 62. All areas affected by construction or removal activities shall be stabilized and landscaped to their pre-construction profiles, unless otherwise authorized in writing by an Inspector. | PRE-
CONSTRUCTION
PROFILES |
| 63. The Permittee shall save the organic soil stripped from the land use area and shall use the organic soil for reclamation as approved by the Board, or otherwise authorized in writing by an Inspector. | SAVE AND PLACE
ORGANIC SOIL |
| 64. Prior to the end of the land-use operation, the Permittee shall complete all cleanup and restoration of the lands used. | FINAL CLEANUP
AND RESTORATION |
| 65. Prior to the end of the land-use operation, the Permittee shall prepare the site in such a manner as to facilitate natural revegetation. | NATURAL
VEGETATION |
| 66. The Permittee shall carry out Progressive Reclamation of disturbed areas as soon as it is practical to do so. | PROGRESSIVE
RECLAMATION |

26(1)(p) Display of Permits and Permit Numbers

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| 67. The Permittee shall display a copy of this Permit in each campsite established to carry out this land-use operation. | DISPLAY PERMIT |
|--|-----------------------|

26(1)(q) Biological and Physical Protection of the Land

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|--|--|
| 68. If nesting areas are encountered during the course of operations, the Permittee shall minimize all activity so as to not disturb them. | MIGRATORY BIRD
NEST
DISTURBANCE |
| 69. The Permittee shall prepare and submit for Board approval, an Environmental Protection Plan (EPP) . The Plan shall include but not be | ENVIRONMENTAL
PROTECTION PLAN |

limited to consideration of the information set out below, and the Permittee shall not commence activities in the Plan prior to Board approval of the Plan:

- a) Schedule and conduct activities to adhere to applicable timing windows and avoid restricted activity periods, where practical;
- b) Develop a plan for construction to minimize potential impacts to watercourse, riparian areas, and general fish habitat;
- c) Provide instructions on how to install and maintain erosion and sediment control measures;
- d) Identify methods to isolate the work site and construction activities from adjacent natural features;
- e) Confirming equipment re-fueling procedures with contractors and including the spill response plan from the approved Spill Contingency Plan;
- f) Develop a reclamation and re-vegetation plan in the event of significant vegetation loss; and
- g) Development of permafrost contingency measures that outline additional mitigation measures that could be implemented to remediate the shallow trench or other excavations in the event that permafrost is encountered.

70. If any plan is not approved by the Board, the Permittee shall revise the plan according to the Board's direction and re-submit it to the Board for approval.

RESUBMIT PLAN

71. The Permittee shall comply with the **Engagement Plan**, once approved, and shall annually review the plan and make any necessary revisions to reflect changes in operations or as directed by the Board. Revisions to the plan shall be submitted to the Board for approval.

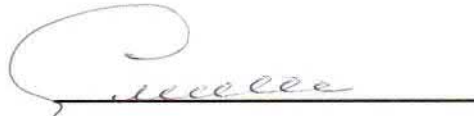
**ENGAGEMENT
PLAN**

72. All revised plans submitted to the Board shall include a brief summary of the changes made to the plan.

**SUMMARY OF
CHANGES**



Witness



Larry Wallace – Chair

SAHTU LAND AND WATER BOARD

Appendix E

Type B Water License (S20L1-001)



SAHTU Land and Water Board Water Licence

Pursuant to the *Mackenzie Valley Resource Management Act and Regulations*, the SAHTU Land and Water Board, hereinafter referred to as the Board, hereby grants to

Enbridge Pipeline (NW) Inc.
(licensee)

of 10175 – 101 Street N.W. Edmonton, Alberta T5J 0H3

(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use water and deposit waste subject to the restrictions and conditions contained in the *Waters Act* and Regulations made thereunder and subject to and in accordance with the conditions specified in this Licence.

Licence Number	S20L1-001
Licence Type	"B"
Location	kilometre post (KP) 158 on the Mackenzie Valley Winter Road - Minimum Extent 64°25'09.8"N Latitude 124°42'58.2"W Longitude - Maximum Extent 64°26'32.6"N Latitude 124°45'36.7"W Longitude
Water Management Area	Mackenzie River
Purpose	To use Water and deposit Waste and associated uses for an Industrial undertaking to replace a segment of pipeline within the Line 21 Right-of-Way and supported by Off-ROW activities
Quantity of Water <u>not to be exceeded</u>	299 m ³ / day 5,000 m ³ / year
Effective Date of Licence	September 17, 2020
Expiry Date of Licence	September 16, 2025

This Licence issued and recorded at Fort Good Hope includes and is subject to the annexed conditions.

SAHTU Land and Water Board

Witness

Chair Larry Wallace

Type B Water Licence S20L1-001
Enbridge Pipelines (NW) Inc.
– Line 21 Pipeline Replacement Project –
KP158 – Little Smith Creek

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[Part H](#): Spill Contingency Planning
[Part I](#): Closure and Reclamation

Schedules

[Schedule 1](#): Annual Water Licence Report (Part B)

Part A: Scope and Defined Terms

Scope:

1. This Licence entitles the Licensee to use Water and deposit Waste for the purpose of Industrial undertaking for the off Right-of-Way (ROW) activities associated with the replacement of a segment of the Line 21 Pipeline within the existing Enbridge Pipeline ROW, southeast of kilometre post (KP) 158 near Little Smith Creek in the Northwest Territories.

SCOPE

The scope of this Licence includes the following:

- a) Construction, maintenance, and reclamation of temporary off ROW workspaces for drill sites, camps, laydown and fuel storage areas, barge landing site, Sumps, and related facilities;
- b) Fuel and hazardous materials use and storage;
- c) Withdrawal of Water for hydrovac and horizontal directional drilling, and related activities;
- d) Deposit of Waste to a licenced facility;
- e) On-site deposit of hydrovac slurry Waste to a Sump;
- f) Progressive Reclamation and associated Closure and Reclamation activities.

2. The scope of this Licence is as described in the Preliminary Screening for S20L1-001, dated August 28, 2020.

**SCOPE – PRELIMINARY
SCREENING**

3. This Licence is issued subject to the conditions contained herein with respect to the use of Water and the deposit of Waste in any Waters or in any place under any conditions where such Waste or any other Waste that results from the deposits of such Waste may enter any Waters. Any change made to the *Waters Act* and/or the Waters Regulations that affects licence conditions and defined terms will be deemed to have amended this Licence.

**LEGISLATION SUBJECT
TO CHANGE**

4. Compliance with this Licence does not relieve the Licensee from responsibility for compliance with the requirements of any applicable federal, territorial, or municipal legislation.

**LEGISLATIVE
COMPLIANCE**

Defined Terms:

Analyst – an Analyst designated by the Minister under subsection 65(1) of the *Waters Act*.

Board – the Sahtu Land and Water Board established under Part 3 of the *Mackenzie Valley Resource Management Act*.

Closure Cost Estimate - an estimate of the cost to close and reclaim the Project.

Closure and Reclamation – the process and activities that facilitate the return of areas affected by the Project to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment and human activities.

Closure and Reclamation Plan (CRP) – a document, developed in accordance with this Licence, that clearly describes the Closure and Reclamation for the Project.

Discharge – a direct or indirect deposit or release of any Water or Waste to the Receiving Environment.

Drilling Fluid – any liquid or liquid mixture, including, but not limited to clay, Water, sediment, hydrocarbons, or additives, that is pumped down-hole while drilling.

Drilling Waste – Waste material specifically produced from drilling activity.

Effluent – a Wastewater Discharge.

Engagement Plan – a document, developed in accordance with the MVLWB *Engagement and Consultation Policy* and the *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits*, that clearly describes how, when, and which engagement activities will occur with an affected party during the life of the Project.

Greywater – all liquid Waste from showers, baths, sinks, kitchens, and domestic washing facilities, but does not include Toilet Waste.

Groundwater – as defined in section 1 of the Waters Regulations: all water in a zone of saturation below the land surface, regardless of its origin.

Hazardous Waste - a Waste which, because of its quantity, concentration, or characteristics, may be harmful to human health or the environment when improperly treated, stored, transported, or discharged.

Horizontal Directional Drilling (HDD) – the drilling method used by the Project that requires the use of water mixed with bentonite clay as the Drilling Fluid which produces a slurry (Drilling Waste) for disposal.

Inspector – an Inspector designated by the Minister under subsection 65(1) of the *Waters Act*.

Licensee – the holder of this Licence.

Minister – the Minister of the Government of the Northwest Territories (GNWT) – Environment and Natural Resources.

Ordinary High-Water Mark – the usual or average level to which a Watercourse rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing Watercourses (rivers, streams), this refers to an active channel/bank-full level, which is often the 1:2-year flood flow return level. In inland lakes, wetlands or marine environments, it refers to those parts of the Watercourse bed and banks that are frequently flooded by Water so as to leave a mark on the land and where the natural vegetation changes from predominantly aquatic vegetation to terrestrial vegetation (excepting Water tolerant species). For reservoirs, this refers to normal high operating levels (full supply level).

Professional Engineer – a person registered with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists to practice as a Professional Engineer in the Northwest Territories as per the territorial *Engineering and Geoscience Professions Act* and whose professional field of specialization is appropriate to address the components of the Project at hand.

Progressive Reclamation – Closure and Reclamation activities conducted during the operating phase of the Project.

Project – the undertaking described in Part A, Conditions 1 and 2.

Receiving Environment – the natural environment that, directly or indirectly, receives any deposit of Waste from the Project.

Sewage – all Toilet Wastes and Greywater.

Spill Contingency Plan (SCP) – a document developed for the Project in accordance with INAC's *Guidelines for Spill Contingency Planning*.

Sump – a human-made excavation or a natural depression designated for depositing Water and/or Waste.

Toilet Wastes – all human excreta and associated products, not including Greywater.

Traditional Knowledge – the cumulative, collective body of knowledge, experience and values built up by a group of people through generations of living in close contact with nature. It builds upon the historic experiences of a people and adapts to social, economic, environmental, spiritual, and political change.

Unauthorized Discharge – a Discharge of any Water or Waste not authorized under this Licence.

Waste – as defined in section 1 of the *Waters Act*:

- a) a substance that, if added to water, would degrade or alter or form part of a process of degradation or alteration of the quality of the water to an extent that is detrimental to its use by people or by an animal, fish or plant, or
- b) water that contains a substance in such a quantity or concentration, or that has been so treated, processed or changed, by heat or other means, that it would, if added to other water, degrade or alter or form part of a process of degradation or alteration of the quality of that water to the extent described in paragraph (a),
and includes
- c) a substance or water that, for the purposes of the *Canada Water Act*, is deemed to be waste,
- d) a substance or class of substances prescribed by regulations made under subparagraph 63(1)(b)(i),
- e) water that contains a substance or class of substances in a quantity or concentration that is equal to or greater than a quantity or concentration prescribed in respect of that substance or class of substances by regulations made under subparagraph 63(1)(b)(ii), and
- f) water that has been subjected to a treatment, process or change prescribed by regulations made under subparagraph 63(1)(b)(iii).

Waste Management Plan (WMP) – a document, developed in accordance with the MVLWB *Guidelines for Developing a Waste Management Plan*, that describes the methods of Waste management for the Project from Waste generation to final disposal.

Wastewater – any Water that is generated by Project activities or originates on-site, and which contains Waste, and may include, but is not limited to, Runoff, Seepage, Sewage, Minewater, and Effluent.

Water – as defined in section 1 of the *Waters Act*: water under the administration and control of the Commissioner, whether in a liquid or frozen state, on or below the surface of land.

Watercourse – as defined in section 1 of the *Waters Regulations*: a natural watercourse, body of Water or Water supply, whether usually containing Water or not, and includes Groundwater, springs, swamps, and gulches.

Water Management Area – a geographical area of the Northwest Territories established by section 2 and Schedule A of the *Waters Regulations*.

Waters Regulations – the regulations proclaimed pursuant to section 63 of the *Waters Act*.

Water Use – as defined in section 1 of the *Waters Act*: a direct or indirect use of any kind, including, but not limited to,

- a) a diversion or obstruction of waters,
- b) an alteration of the flow of waters, and
- c) an alteration of the bed or banks of a river, stream, lake or other body of water, whether or not the body of water is seasonal, but does not include a use connected with shipping activities that are governed by the *Canada Shipping Act, 2001*.

Water Use Fee – the fee for use of Water as per the *Waters Regulations* pursuant to section 63 of the *Waters Act* and the MVLWB *Water Use Fee Policy*.

Part B: General Conditions

- | | | |
|----|--|--|
| 1. | The Licensee shall ensure a copy of this Licence is maintained on site at all times. | COPY OF LICENCE |
| 2. | The Licensee shall take every reasonable precaution to protect the environment. | PRECAUTION TO
PROTECT
ENVIRONMENT |
| 3. | In conducting its activities under this Licence, the Licensee shall make every reasonable effort to consider and incorporate any scientific information and Traditional Knowledge that is made available to the Licensee. | INCORPORATE
SCIENTIFIC
INFORMATION AND
TRADITIONAL
KNOWLEDGE |
| 4. | In each submission required by this Licence or by any directive from the Board, the Licensee shall identify all recommendations based on Traditional Knowledge received, describe how the recommendations were incorporated into the submission, and provide justification for any recommendation not adopted. | IDENTIFY TRADITIONAL
KNOWLEDGE |
| 5. | All references to policies, guidelines, codes of practice, statutes, regulations, or other authorities shall be read as a reference to the most recent versions, unless otherwise noted. | REFERENCES |
| 6. | The Licensee shall ensure all submissions to the Board: <ul style="list-style-type: none"> a) Are in accordance with the MVLWB <i>Document Submission Standards</i>; b) Include a conformity statement or table which identifies where the requirements of this Licence, or other directives from the Board, are addressed; and c) Include any additional information requested by the Board. | SUBMISSION FORMAT
AND CONFORMITY |
| 7. | The Licensee shall ensure management plans are submitted to the Board in a format consistent with the MVLWB <i>Standard Outline for Management Plans</i> , unless otherwise specified. | MANAGEMENT PLAN
FORMAT |
| 8. | The Licensee shall comply with all Plans and studies including revisions, approved pursuant to the conditions of this Licence. | COMPLY WITH
SUBMISSIONS AND
REVISIONS |
| 9. | The Licensee shall conduct an annual review of all Plans and make any revisions necessary to reflect changes in operations, contact information, or other details. No later than March 31 each year, the Licensee shall send a notification letter to the Board, listing the documents that have been reviewed and do not require revisions. | ANNUAL REVIEW |

10.	The Licensee may propose changes at any time by submitting revised Plans or studies that require Board approval to the Board, for approval, a minimum of 90 days prior to the proposed implementation date for the changes. The Licensee shall not implement the changes until approved by the Board.	REVISIONS
11.	The Licensee shall revise any submission and submit it as per the Board's directive.	REVISE AND SUBMIT
12.	If any date for any submission falls on a weekend or holiday, the Licensee may submit the item on the following business day.	SUBMISSION DATE
13.	The Licensee shall comply with the Schedules , which are annexed to and form part of this Licence, and any updates to the Schedules as may be made by the Board.	COMPLY WITH SCHEDULE(S)
14.	The Licensee shall comply with all directives issued by the Board in respect of the implementation of the conditions of this Licence.	COMPLY WITH BOARD DIRECTIVES
15.	The Licensee shall install, operate, and maintain meters, devices, or other such methods for measuring the volumes of Water used and Waste discharged to the satisfaction of an Inspector.	MEASURE WATER USE AND WASTE DISCHARGED
16.	Beginning March 31, 2021 and no later than every year thereafter, the Licensee shall submit an Annual Water Licence Report to the Board and an Inspector. The Report shall be in accordance with the requirements of Schedule 1, Condition 1.	ANNUAL WATER LICENCE REPORT
17.	The Licensee shall comply with the Engagement Plan , once approved.	ENGAGEMENT PLAN
18.	A minimum of ten days prior to the initial commencement of Project activities, the Licensee shall provide written notification to the Board and an Inspector. Notification shall include the commencement date, and the name and contact information for the individual responsible for overseeing the Project. Written notification shall be provided to the Board and an Inspector if any changes occur.	NOTIFICATION – COMMENCEMENT
19.	The Licensee shall immediately provide written notification to the Board and an Inspector of any non-compliance with the conditions of this Licence.	NOTIFICATION – NON-COMPLIANCE WITH CONDITIONS
20.	The Licensee shall immediately provide written notification to the Board of any non-compliance with a Board directive issued in respect of the implementation of the conditions of this Licence.	NOTIFICATION – NON-COMPLIANCE WITH DIRECTIVES

- | | | |
|-----|---|------------------------------------|
| 21. | The Licensee shall ensure that a copy of any written authorization issued to the Licensee by an Inspector is provided to the Board. | COPY – WRITTEN
AUTHORIZATION |
| 22. | The Licensee shall submit a current Project schedule to the Board and an Inspector upon request. | SUBMIT CURRENT
PROJECT SCHEDULE |

Part C: Security

- | | | |
|----|--|-----------------------|
| 1. | The Licensee shall post and maintain a security deposit of \$10,000.00 with the Minister. The Licensee shall not commence Project activities until the security deposit has been accepted by the Minister. | POST SECURITY DEPOSIT |
|----|--|-----------------------|

Part D: Water Use

- | | | |
|----|--|---|
| 1. | The Licensee shall only obtain Water for the Project from the Mackenzie River or Little Smith Creek, unless otherwise approved by an Inspector. The Licensee may withdraw up to 299 m ³ /day of Water from these sources. | WATER SOURCE AND
MAXIMUM VOLUME |
| 2. | Prior to locating a Water intake in a fish-bearing Watercourse, the Licensee shall obtain written authorization for the location from an Inspector | WATER INTAKE
LOCATION –
AUTHORIZATION |
| 3. | Prior to withdrawing Water from an approved Water source, the Licensee shall post sign(s) to identify the intake location. | POST WATER INTAKE
SIGN(S) |
| 4. | The Licensee shall construct and maintain the Water intake(s) with a screen designed to prevent impingement or entrapment of fish. | WATER INTAKE SCREEN |
| 5. | Each year, prior to the 17 September and in advance of any Water use, the Licensee shall pay the Water Use Fee in accordance with the MVLWB <i>Water Use Fee Policy</i> . | WATER USE FEE |

Part E: Construction

- | | | |
|----|---|-----------------------------|
| 1. | The Licensee shall ensure that all structures intended to contain, withhold, divert, or retain Water or Waste are designed, constructed, and maintained to minimize the escape of Waste to the Receiving Environment in accordance with the MVLWB <i>Water and Effluent Quality Management Policy</i> . | OBJECTIVE –
CONSTRUCTION |
|----|---|-----------------------------|

2. The Licensee shall only use material that is clean and free of contaminants and is from a source that has been authorized in writing by an Inspector.

**CONSTRUCTION
MATERIAL – SOURCE(S)**

Part F: Waste and Water Management

1. The Licensee shall manage Waste and Water with the objective of minimizing the impacts of the Project on the quantity and quality of Water in the Receiving Environment through the use of appropriate mitigation measures, monitoring, and follow-up actions.
2. The Licensee shall minimize erosion by implementing suitable erosion control measures that shall be located and maintained to the satisfaction of an Inspector.

**OBJECTIVE – WASTE
AND WATER
MANAGEMENT**

EROSION CONTROL

Management and Monitoring Plans

3. The Licensee shall comply with the **Waste Management Plan**, once approved.

**WASTE MANAGEMENT
PLAN**

Operation of Structures and Facilities

4. The Licensee shall construct, operate, and maintain the barge landing to the design specifications and engineering standards, such that:
 - a) Any constructed structures/facilities are maintained and operated so as to prevent structural failure;
 - b) Any deterioration or erosion of constructed structures/facilities shall be reported immediately to an Inspector;
 - c) Any deterioration or erosion of constructed structures/facilities that requires repair shall be reported to an Inspector and the Board, and repaired immediately;

**BARGE LANDING -
MACKENZIE RIVER**

Discharge and Disposal Locations and Rates

5. The Licensee shall deposit all Waste as described in the approved **Waste Management Plan**.
6. The Licensee shall discharge all Effluent :
 - a) from the HDD activity, to a storage tank with secondary containment until it can be shipped for off-site disposal at an approved facility.; and
 - b) from the the slurry produced from hydrovac activity, to a temporary sump located in the on-site quarry, where it can be mixed with native soil and wood chips and used to backfill the trench in a modified mix-bury-cover approach, as described in the approved **Waste Management Plan**.

PROJECT WASTE

**EFFLUENT DISCHARGE –
MIX-BURY-COVER**

- | | | |
|----|--|---|
| 7. | A minimum of ten days prior to depositing any Waste into a licenced municipal facility, the Licensee shall provide written notification to the Board and an Inspector. | NOTIFICATION – WASTE
DEPOSIT |
| 8. | The Licensee shall not discharge Waste, including Wastewater, to any Watercourse, or to the ground surface within 100 metres of the Ordinary High-Water Mark of any Watercourse. | DISCHARGE LOCATION –
ORDINARY HIGH-
WATER MARK |

Part G: Aquatic Effects Monitoring *(intentionally left blank)*

Part H: Spill Contingency Planning

- | | | |
|----|--|--|
| 1. | The Licensee shall ensure that Unauthorized Discharges associated with the Project do not enter any Waters. | OBJECTIVE – PREVENT
WASTE INTO WATER |
| 2. | The Licensee shall comply with the Spill Contingency Plan , once approved. | SPILL CONTINGENCY
PLAN |
| 3. | If a spill or an Unauthorized Discharge occurs or is foreseeable, the Licensee shall:
a) Implement the approved Spill Contingency Plan referred to in Part H, Condition x;
b) Report it immediately using the NU-NT Spill Report Form by one of the following methods: <ul style="list-style-type: none">• Telephone: (867) 920-8130• Fax: (867) 873-6924• E-mail: spills@gov.nt.ca• Online: Spill Reporting and Tracking Database c) Notify the Board and an Inspector immediately; and
d) Within 30 days of initially reporting the incident, or within a timeframe authorized by an Inspector, submit a detailed report to the Board and an Inspector, including descriptions of causes, response actions, and any changes to procedures to prevent similar occurrences in the future. Written notification shall be provided to the Board and an Inspector if any changes occur. | REPORT SPILLS |
| 4. | The Licensee shall ensure that spill prevention infrastructure and spill response equipment is in place prior to commencement of the Project. | SPILL PREVENTION AND
RESPONSE EQUIPMENT |
| 5. | The Licensee shall restore all areas affected by spills and Unauthorized Discharges to the satisfaction of an Inspector. | CLEAN UP SPILLS |

6. The Licensee shall not establish any fuel storage facilities or refueling stations, or store chemicals or Wastes within 100 metres of the Ordinary High-Water Mark of any Watercourse.

**MATERIAL STORAGE –
ORDINARY HIGH-WATER
MARK**

Part I: Closure and Reclamation

1. The Licensee shall comply with the **Closure and Reclamation Plan**, once approved.
2. The Licensee shall endeavor to carry out approved Progressive Reclamation as soon as is reasonably practicable.
3. Within 90 days of completing Closure and Reclamation of the Project, or as otherwise directed by the Board, the Licensee shall submit to the Board a **Post-Closure and Reclamation Monitoring and Maintenance Plan**.


**CLOSURE AND
RECLAMATION PLAN**

**PROGRESSIVE
RECLAMATION**

**POST-CLOSURE AND
RECLAMATION
MONITORING AND
MAINTENANCE PLAN**

Signed on behalf of the SAHTU LAND AND WATER BOARD


LARRY WALLACE, Chair


BONNIE BERGSMA, Witness

Schedule 1: Annual Water Licence Report

	Condition	Rationale
1.	The Annual Water Licence Report referred to in Part B, Condition 16 of this Licence shall include, but not be limited to, the following information about activities conducted during the previous calendar year:	This condition sets out the information requirements for the Annual Water Licence Report. The list of information requirements will be customized to reflect the Licence conditions; it may not include all of these items, and/or may include additional, project-specific items that are not in this list.
	a) A brief summary of Project activities;	
	b) An updated Project schedule;	
	c) The monthly and annual quantities in cubic metres of fresh Water obtained from all sources, as required in Part B, Condition 15 of this Licence;	
	d) A summary of the calibration and status of the meters and devices referred to in Part B, Condition 15 of this Licence;	
	e) A summary of engagement activities conducted in accordance with the approved Engagement Plan , referred to in Part B, Condition 17 of this Licence;	
	f) A summary of how Traditional Knowledge was incorporated into decision making;	
	g) A summary of major maintenance activities conducted in accordance with this Licence;	
	h) A summary of activities conducted in accordance with the approved Waste Management Plan, referred to in Part F, Condition 3 of this Licence, including: <ul style="list-style-type: none"> i. A summary of approved updates or changes to the process or facilities required for the management of Waste; ii. A map depicting the location of the Sump; iii. Results of drilling waste tests and action taken; iv. Monthly and annual quantities, in cubic metres, of Drilling Wastes discharged to Sump or removed offsite; v. Monthly and annual quantities, in cubic metres, of Sewage and Greywater removed off-site and disposed of at an approved facility identified by disposal location; vi. 	For the purpose of clarity and continuity of the public record for a project, annual reporting is still required for seasonal or temporary shut-down periods. The Licensee should explain that no work was done during specific time periods or for the full year. If volume reporting is required (e.g., monthly or annual water use or waste deposit volumes) the Licensee should enter zero where appropriate.
	i) A summary of activities conducted in accordance with the approved Spill Contingency Plan , referred to in Part H, Condition 2 of this Licence, including: <ul style="list-style-type: none"> i. A list and description for all Unauthorized Discharges, including the date, NWT spill number, volume, location, summary of the circumstances and follow-up actions taken, and status (i.e. open or closed), in accordance with the reporting requirements in Part H, Condition 3 of this Licence; and ii. An outline of any spill training carried out. 	

j)	A summary of Progressive Reclamation activities conducted in accordance with the Closure and Reclamation Plan , referred to in Part I, Condition 1 of this Licence.	
k)	A list of any non-compliance(s) with the conditions of this Licence or any directive from the Board pursuant to the conditions of this Licence;	
l)	A summary of actions taken to address concerns, non-conformances, or deficiencies in any reports filed by an Inspector;	
m)	Any other details requested by the Board by December 31 of the year being reported.	

Appendix F

Project Contact List

Project Contact List

Contact Name (Agency/Person)	Contact Information
AGENCIES	
GNWT Department of Environment and Natural Resources 24-Hour Spill Reporting Line	(867) 920-8130
GNWT Department of Lands – Sahtú Regional Office	(867) 587-7200
Sahtú Land and Water Board	(867) 598-2413
ENBRIDGE	
Project Manager – Robert Gagnon	Office: (780) 392-4878 Cell: (587) 336-9819 Robert.Gagnon@enbridge.com
Construction Manager – Bert Fillion	Office: 780-508-7507 Cell: 780-982-5991 Bert.Fillion@enbridge.com
Senior Environmental Advisor – Brad Kilgour	Office: 780-392-4348 Cell: 780-991-0665 Brad.Kilgour@enbridge.com
Regulatory Lead – Karin Schmidt	Office: 403-231-3948 Cell: 587-435-7032 Karin.Schmidt@enbridge.com

Appendix G

Species at Risk Information Sheets

WOODLAND CARIBOU (RANGIFER TARANDUS), BOREAL POPULATION - WOCAB



Species Description and Biology

Woodland caribou are dark brown with a white mane and some white on their sides. Height at the shoulder is 1.0 meter (m) to 1.2 m and mature females and males usually weigh 110 kilograms (kg) to 150 kg and 160 kg to 210 kg, respectively. Both sexes are capable of growing antlers, though up to half of females may lack antlers or have one antler (Government of Canada 2019).

The boreal population of woodland caribou is the most widespread population, ranging from the Mackenzie Mountains in the northwest to southern Labrador in the east and as far south as Lake Superior (Government of Canada 2019). During winter, woodland caribou typically rely on large tracts of mature to old lodgepole pine or mixed pine-spruce-fir forests at high elevations where snow depths are reduced by wind, and terrestrial lichen is available for winter forage (Dzus 2001). Preferred summer habitat consists of sub-alpine and alpine habitats and moist alpine meadows.

The rutting season occurs from late September through October. Calving occurs in June, approximately 7.5 months after breeding (Dzus 2001). (Photo Credit: L. Pittaway).

Species Range and Recorded Occurrences

Enbridge Regions with Enbridge infrastructure (e.g., pipelines, facilities, etc.) located within the known range of woodland caribou (boreal population) are provided in Table 1. This table also identifies the Enbridge Regions with recorded occurrences of woodland caribou (boreal population) within 500 m of Enbridge pipeline right-of-ways (ROWs).

TABLE 1
WOODLAND CARIBOU (BOREAL POPULATION) RANGE
AND RECORDED OCCURRENCES WITHIN THE ENBRIDGE REGIONS

Species Range	Enbridge Region					
	Northern	Athabasca	Western	Central	EPSI	Eastern
Within Species Range	✓	✓	--	--	--	--
Recorded Occurrence within 500 m of pipeline ROW ¹	✓	✓	--	--	--	--

Note: 1 Only occurrences that meet the species inclusion criteria within the associated province or territory within an Enbridge Region are indicated in the table. Occurrences in jurisdictions where a species or population is secure are not included in the atlas.

Conservation Status and Activity Restrictions

The federal and territorial (GNWT) conservation status of woodland caribou (boreal population), as well as applicable activity restrictions surrounding individual occurrences are provided in Table 2.

TABLE 2
CONSERVATION STATUS AND ACTIVITY RESTRICTIONS

Conservation Status and Activity Restriction(s)	
SARA Rank ^[1]	Threatened (Schedule 1)
COSEWIC Rank ^[1]	Threatened
Federal Activity Restrictions ^[2]	Disturbance of individuals or critical habitat prohibited
NWT Conservation Status ^[3]	Threatened
NWT Activity Restrictions ^[4]	Development of Wildlife Management and Monitoring Plans (WMMPs) are required on a case-by-case basis. New unpermitted disturbance within critical habitat is prohibited.

Notes: 1 Government of Canada 2019
2 Government of Canada 2002
3 Working Group on General Status of NWT Species 2016
4 Government of Northwest Territories (GNWT) 2019

Sensitivities and Threats

Threats to woodland caribou populations may affect caribou numbers directly through mortality or indirectly through disturbance or displacement, resulting in increased energetic costs or mortality risks. Direct threats include predation, hunting, poaching, vehicle collisions, and diseases and parasites. Indirect threats include road development and associated traffic, persistent recreational activities on caribou ranges, and habitat loss and alteration that results in increased mortality risks. Most mortality due to predation occurs during late winter (January to April), which is often influenced by snow cover (Government of Canada 2019). June and July are sensitive periods for calving.

Mitigation Measures

In the event that work is scheduled to occur within the vicinity of known woodland caribou (boreal population) develop appropriate mitigation measures specific to the type of activity and the location in consultation with Enbridge's Environment Department and the appropriate local government biologist(s).

References

- Dzus, E. 2001. Status of the Woodland Caribou (*Rangifer tarandus caribou*) in Alberta. Alberta Environment, Fisheries and Wildlife Management Division, and Alberta Conservation Association, Wildlife Status Report No. 30, Edmonton, AB. 47 pp.
- Government of Canada. 2019. Woodland Caribou (*Rangifer tarandus*), Boreal population. Retrieved on November 19, 2020 from <https://species-registry.canada.ca/index-en.html#/species/636-252>
- Government of Canada. 2002. Species At Risk Act. Amended October 6, 2020.
- Government of Northwest Territories. 2019. A Framework for Boreal Caribou Range Planning. Environment and Natural Resources, Government of the Northwest Territories, Yellowknife, NT. 87 pp.
- Working Group on General Status of NWT Species. 2016. NWT Species 2016-2020 – General Status Ranks of Wild Species in the Northwest Territories, Department of Environment and Natural Resources, Government of the Northwest Territories, Yellowknife, NT. 304 pp.

OLIVE-SIDED FLYCATCHER (*Contopus cooperi*) - OSFL



Species Description and Biology

Olive-sided flycatchers are average sized songbirds approximately 18-20 cm long. The flycatcher is easily distinguished by its singing, perching conspicuously on the top of tall trees and whistling a loud three note song which can be heard up to a kilometre away. Their song sounds very similar to "Quick, THREE BEERS". They possess an olive gray plumage on their sides and flanks, contrasting their white breast and belly. Distinctive wing bars may be observed near the rump, which distinguishes the olive-sided flycatcher from Eastern and Western wood-peewees (COSEWIC 2008, Environment Canada 2016).

Olive-sided flycatchers breed throughout forested Canada, from the Yukon south through the Rocky Mountains and from British Columbia to Newfoundland. The highest concentrations are found west of the Rocky Mountains in British Columbia. In the Northwest Territories, they are found primarily east of

Great Bear Lake and Great Slave Lake. During the breeding season, olive-sided flycatchers are associated with naturally occurring openings in forests such as wetlands, or human made openings such as clear-cuts. The presence of tall snags and residual tall trees are essential for their nesting and foraging. In the boreal forest, they are associated with open habitat of muskeg, bogs and swamps with dominant spruce and tamarack trees. Singing males have been observed to prefer perches that are approximately 1.4 times the height of the surrounding trees. These perches are also used for foraging activities, where olive-sided flycatchers fly from and return to the same perch while catching aerial insects. Nests are placed in conifers slightly below the average canopy height for the area, and a thick overstory is essential for nesting success. Olive-sided flycatchers have been observed to return to the same nest year after year, often with the same pair of adults returning to breed together. Adult olive-sided flycatchers have very few recorded predators. The main predatory threats to the species come from nest predators during the breeding season, including squirrels, jays and raptors. The diet of olive-sided flycatchers consists primarily of flying insects such as bees, wasps, ants and beetles (COSEWIC 2008). (Photo Credit: Sherony 2009).

Olive-sided flycatchers are migratory. They arrive on their breeding grounds in mid-May and they begin nesting soon after. Typical nests contain 2-5 eggs, with typical reproductive success being very low. Fledglings will start to fly from the nests between 17-23 days of age but continue to rely on their parents to feed them for weeks afterwards (COSEWIC 2008).

Conservation Status and Activity Restrictions

Table 1 lists the federal and territorial conservation status of the olive-sided flycatcher, as well as applicable activity restrictions.

TABLE 1
CONSERVATION STATUS AND ACTIVITY RESTRICTIONS

Conservation Status and Activity Restriction(s)	
SARA Status	Threatened - Schedule 1
COSEWIC Status	Threatened
Territorial Conservation Status	N/A
Federal Activity Restrictions	150 - 300 m setback from nests (May 1 – August 31)
Provincial / Territorial Activity Restrictions	300 m setback from nests

Sources: Environment Canada 2016

Sensitivities and Threats

The main threat to olive-sided flycatcher populations is the degradation, loss or fragmentation of their habitat, especially the loss or change of their breeding and overwintering habitats. Clearing of forests has been postulated to create an environment attractive for breeding pairs while also increasing opportunities for nest predators. This causes these areas to act as ecological traps. Another postulated factor in their decline is the decreased abundance of aerial insects due to pesticide use. The extremely low reproductive rate of this species further increases their sensitivity to the above disturbances (COSEWIC 2008).

Mitigation Measures

All vegetation clearing should occur outside of the general migratory bird nesting period for the region (May 4 to August 22). If vegetation clearing is required within the breeding bird timing window, nest sweeps should be completed by a qualified professional to identify potential nests. These surveys are valid for a 7 day period. If any active nests are identified during breeding bird surveys, they must be buffered appropriately, as determined by a qualified professional, and monitored until fledglings have left the nest. Where feasible, narrow down the proposed area of disturbance within the right-of-way. Clearly identify woodland boundaries and limit traffic within these identified areas to only that which is necessary to complete the project works. If nests are found during construction activities, stop and notify the Environmental Inspector. If breeding birds and/or nests are observed within the work area, work should not continue in the buffer around the nest until it has been determined by a qualified professional that the young have left the nest.

References

- COSEWIC. 2008. COSEWIC Assessment and Status Report on the Olive-sided Flycatcher *Contopus cooperi* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.
(www.sararegistry.gc.ca/status/status_e.cfm).
- Environment Canada. 2016. Recovery Strategy for the Olive-sided Flycatcher (*Contopus cooperi*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 52 pp.
- Sherony, Dominic. 2009. Olive-sided Flycatcher, CC BY-SA 2.0,
<https://commons.wikimedia.org/w/index.php?curid=7169279>. Accessed on: September 24, 2017.

COMMON NIGHTHAWK (*Chordeiles minor*) - CONI



Species Description and Biology

Common nighthawks are medium sized birds approximately 21-25 cm long and weighing 65-98 g. The common nighthawk is easily distinguished from other birds by its silhouette, which consists of long slender wings and a long, slightly notched tail. While hunting, they make a distinctive booming noise created by their wings when they dive for prey. Their colouration is cryptic, consisting of mottled browns and blacks that render them almost invisible when immobile. A distinctive wing patch at the bottom of the primaries on each wing can be observed when the nighthawk is in flight (COSEWIC 2007).

Common nighthawks breed throughout Canada, the United States and Mexico. A small year round population is present in Central America, and the migratory population overwinters in South

America. In Canada, the common nighthawk is found in all provinces and territories except Nunavut. In the Northwest Territories, they are found along the border with Alberta and Saskatchewan and along the Mackenzie River up to Norman Wells. During the breeding season, common nighthawks are associated with open habitats such as beaches, forest clearings, pastures, gravel roads, rock barrens, ploughed fields, agricultural lands, airports and marshes. Due to the wide variety of habitats used for nesting and breeding, it is difficult to infer specific habitat associations. While nighthawks have been observed using urban areas nesting, they show a distinct preference for natural areas. Common nighthawks do not create a nest. They lay their eggs directly on bare soil or rock, relying on their natural camouflage as protection from predators. Consequently, high temperatures combined with their preferred rocky substrate can result in premature mortality for common nighthawk eggs. As a ground nesting bird, there are many potential nest predators of common nighthawks. These include domestic cats, kestrels, falcons, crowns, foxes, snakes, foxes and coyotes. The diet of common nighthawks consists primarily of insects such as grasshoppers, beetles, flies, bees, wasps and ants. (COSEWIC 2007). (Photo Credit: Reago and McClarren 2014).

Common nighthawks are migratory, breeding in North America and overwintering in South America. They arrive on their breeding grounds in early May and will lay eggs from mid-May until early August. Each nest contains only two eggs. Fledglings will start to fly from the nests at 18 days of age and can catch their own insects at 25-30 days of age (COSEWIC 2007).

Conservation Status and Activity Restrictions

Table 1 lists the federal and territorial conservation status of the olive-sided flycatcher, as well as applicable activity restrictions.

TABLE 1
CONSERVATION STATUS AND ACTIVITY RESTRICTIONS

Conservation Status and Activity Restriction(s)	
SARA Status	Threatened - Schedule 1
COSEWIC Status	Threatened
Territorial Conservation Status	N/A
Federal Activity Restrictions	200 – 500 m setback from nests (May 1 – August 31)
Provincial / Territorial Activity Restrictions	500 m setback from nests

Sources: Environment Canada 2016, COSEWIC 2007

Sensitivities and Threats

The main threat to common nighthawk populations is the large-scale use of insecticides on their breeding and overwintering habitats. This has caused a marked decrease in the quantity of prey available to common nighthawks. Other potential factors in their decline include forest fire suppression practices and changes in harvesting methods, which create less open areas in forested regions in addition to increasing the numbers of terrestrial predators such as skunks, cats and racoons (COSEWIC 2007).

Mitigation Measures

All vegetation clearing should occur outside of the general migratory bird nesting period for the region (May 4 to August 22). If vegetation clearing is required within the breeding bird timing window, nest sweeps should be completed by a qualified professional to identify potential nests. These surveys are valid for a 7 day period. If any active nests are identified during breeding bird surveys, they must be buffered appropriately, as determined by a qualified professional, and monitored until fledglings have left the nest. Where feasible, narrow down the proposed area of disturbance within the right-of-way. Clearly identify woodland boundaries and limit traffic within these identified areas to only that which is necessary to complete the project works. If nests are found during construction activities, stop and notify the Environmental Inspector. If breeding birds and/or nests are observed within the work area, work should not continue in the buffer around the nest until it has been determined by a qualified professional that the young have left the nest.

References

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