

## **APPENDIX 1B**

### **REROUTE AT SKP 710.2 TO SKP 742.9 ALIGNMENT SHEET PACKAGE**

**ENVIRONMENTAL ALIGNMENT SHEET PACKAGE  
FOR SKP 710.2 TO 742.9 REROUTE**

**FOR THE**

**ENBRIDGE PIPELINES INC.  
LINE 3 REPLACEMENT PROGRAM**

**April 2015**

Prepared for:



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GENERAL INFORMATION

STATION/TERMINAL LOCATIONS

Station	Station SKP Enter	Station SKP Exit	Legal Location
Richardson	710.2 + 30.7	710.2 + 31.0	NW 22-16-18 W2M

GENERAL INFORMATION

The Environmental Alignment Sheets (EAS) provide information pertaining to the environmental and socio-economic setting below the photomosaic. Potential environmental and socio-economic issues identified during Project planning, and their corresponding mitigation measures, are positioned above their respective location on the photomosaic.

Environmental Issues and corresponding mitigation notes are positioned above the photomosaic. Mitigation measures consist of measures described in the Pipeline Environmental Protection Plan (Pipeline EPP) to be implemented during construction of the Project. The mitigation measures included in the mitigation notes do not include all of the potential mitigation measures to be implemented. Consult the Pipeline EPP for additional protection measures. Pipeline EPP Section, Appendix and Construction Drawing references are provided in these Environmental Notes where applicable. Construction Drawings are provided in Appendix E of the Pipeline EPP.

Items included on these EAS were documented during the planning phase of the Line 3 Replacement Program. For all Environmental Notes (EN), refer to page 3 of these EAS Index Sheets. For example, EN-06 refers to Note 06 and has corresponding mitigation measures to be implemented during construction.

Feature identification numbers have been assigned to:

- watercourses and waterbodies (SKR-WC#####);
- wetlands (SK-#####).

These numbers (e.g., SKR-WC#####) can be used to cross reference specific environmental features with the summary tables provided in the index sheets which provide additional information. Although there is no reason to believe that there are any errors associated with the data used to generate this product itself, users of the data are advised that errors in the data may be present.

Remotely-operated sectionalizing valves are indicated on the alignment sheets as “Valve Sites”. The locations depicted are preliminary sites.

GENERAL LANDOWNER INFORMATION

**Municipal Authority** - The regional or municipal jurisdictional authority of the land encountered along the pipeline route.

**Ownership** - Identifies privately-owned (Patented) or public (Crown) land.

ENVIRONMENTAL PROTECTION PLAN MEASURES

**Seed Mix** - Recommended seed mixes to be used on non-cultivated lands. Special landowner requests from the Line List have not been considered and the line list must be consulted to identify landowner requests prior to seeding.

**Topsoil Salvage Procedure** - Recommended topsoil salvage width to be conducted along the route. These recommendations do not account for the presence of site-specific features which may require additional mitigation.

**Topsoil Salvage Depth** - Recommended topsoil salvage depths to be used as a guide during topsoil salvage.

**Compaction and Rutting** - Soils with increased susceptibility to compaction and rutting.

**Topsoil** - Locations with deep topsoil (over 25 cm) or shallow topsoil (under 10 cm).

**Erosion** - Locations with soil properties susceptible to wind erosion and conditions that present water erosion potential.

**Trench** - Soils with properties that may cause trench walls to be prone to sloughing.

**General** - Locations with soil conditions that warrant additional mitigation.

**Wetlands** - Mitigation measures to be implemented at wetlands encountered by the construction right-of-way and identification of specific wetlands which require shrub staking.

**Watercourses/Hydrology** - Crossing methods to be used at watercourses encountered by the construction right-of-way.

**Wildlife and Wildlife Habitat** - Mitigation measures to be implemented at locations along the construction right-of-way with concerns relating to wildlife and wildlife habitat.

**Vegetation** - Mitigation measures to be implemented for rare plants and rare ecological community sites encountered by the construction right-of-way and also specifies locations where swamp matting is recommended.

**Socio-Economic** - Mitigation measures to be implemented to address socio-economic concerns along the construction right-of-way.

**Construction Timing Restrictions** - Identifies timing restrictions associated with environmental features.

**Biosecurity** - Indicates the level of vehicle sanitation measures to be implemented at vehicle cleaning stations along the construction right-of-way.

**Land Use** - Predominant land use at the time of Application.

ENVIRONMENTAL SETTING INFORMATION

**Natural Regions and Ecoregions** - Ecoregions for all provinces in addition to Natural Region in Alberta.

**Soils Parent Material** - Parent material encountered along the pipeline route from which current soils have evolved.

**Canada Land Inventory (CLI) Soils Classification** - Soil Capability Classification of Agriculture as defined by the CLI classification system.

**Wetlands** - Classification of the portions of wetlands that are encountered by the construction right-of-way as well as artificial wetlands and dugouts. The wetland class encountered by the right-of-way may differ from the overall wetland class provided in the summary table.

**Watercourses/Hydrology** - Watercourse and waterbody crossings.

**Fish Habitat Quality** - Fish habitat quality of watercourses or waterbodies encountered by the construction right-of-way.

**Wildlife and Wildlife Habitat** - Locations along the construction right-of-way with concerns related to important wildlife habitat areas and site-specific features.

**Vegetation** - Species abbreviation codes for rare plants or rare ecological communities encountered by the construction right-of-way.

**Socio-Economic** - Locations along the construction right-of-way with socio-economic land-use and infrastructure concerns.

**Biosecurity** - Type of biosecurity concern encountered along the construction right-of-way.

GENERAL NOTES

Topsoil Salvage Procedures

Topsoil salvage widths vary depending on land use and ground conditions (*i.e.*, frozen vs. non-frozen). Recommended topsoil salvage procedures indicated on the EAS are for non-frozen soil conditions. Implement topsoil salvage procedures as outlined in Section 7.2 of the Pipeline EPP. Refer to Table 1 for the topsoil salvage procedures to be implemented during frozen and non-frozen ground conditions. Refer to the Criteria for Alternate Topsoil Salvage Width (see Appendix D1 of the Pipeline EPP) to assist in the determination of the appropriate salvage procedure and width in areas where the recommended topsoil salvage procedure is not appropriate. Refer to the Wetlands note below for soils handling procedures in and near wetlands.

Implement the Soil Handling Contingency Measures (see Appendix D16 of the Pipeline EPP) during topsoil salvage if any of the following are encountered: little or no topsoil; poor colour separation or an uneven boundary between topsoils and subsoils; stony soils; uneven surface on native prairie or tame pasture; high winds; or requests for alternate topsoil handling methods by a landowner. Implement the Contaminated Soils Discovery Contingency Plan (see Appendix D10 of the Pipeline EPP) in the event that contaminated or potentially contaminated soils are encountered.

Reduce the topsoil salvage width at localized, sensitive areas during frozen or non-frozen conditions where feasible or as directed by the Environmental Inspector (see Appendix D1 of the Pipeline EPP). Salvage topsoil from the entire construction right-of-way on tame pasture, hay and cultivated lands if wet or thawing soil conditions are anticipated, or when Project activities cannot be postponed. Salvage a greater width of topsoil at sharp sidebends and at crossings of watercourses, roads, rail lines and foreign lines to accommodate a wider and deeper trench, and increased workspace. Increase the width of topsoil salvage at known locations (*e.g.*, sandy soils, high water table) where the trench may be prone to sloughing or the trench walls require sloping in order to prevent topsoil from sloughing into the trench.

For dry (*i.e.*, lacking surface water and/or saturated soils) Class I/II marsh wetlands, as well as swamp wetlands, topsoil is to be salvaged and handled as per surrounding land-use. Reduce topsoil salvage widths at any Class of wetland containing surface water and/or saturated soils to the width of the trench area (see Details 17 to 19 in Appendix E of the Pipeline EPP). Consult with the Environmental Inspector to identify the boundaries and appropriate salvage widths in the field at the time of construction. For wet wetlands, store wetland topsoil and spoil separately from upland topsoil and spoil and mark/flag appropriately. Refer to Appendix Q of the Pipeline EPP for further details on crossing methods.

Disc well-sodded lands prior to topsoil salvage in order to facilitate topsoil salvage activities. Retain sod on native prairie if a competent sod layer exists and grade only where safety considerations dictate in order to reduce disturbance to the sod.

TABLE 1

GENERAL TOPSOIL SALVAGE PROCEDURES

Ground Conditions	Land Use	Topsoil Salvage Method (EAS abbreviation) <sup>1</sup>
Non-Frozen	Native Prairie	Trench and spoil (TS); Detail 12
	Native Prairie susceptible to work lane compaction	Trench, spoil and work lane (TSWL); Detail 18
	Native Prairie where topsoil salvage from the entire construction right-of-way is warranted due to grading or other safety requirements.	Full right-of-way (ROW); Detail 13
	All Other Land Uses: <ul style="list-style-type: none"><li>• Cultivated;</li><li>• Hay;</li><li>• Tame Pasture;</li><li>• Treed;</li><li>• Treed Pasture;</li><li>• Hay Pasture;</li><li>• Shrub Pasture; and</li><li>• Disturbed Land.</li></ul>	Full right-of-way (ROW); Detail 13
Frozen	Native Prairie (all).	Trench and spoil (TS); Detail 12
	Wetland Soils.	Trench and spoil (TS); Detail 12, or salvage width of adjacent lands
	All Other Land Uses: <ul style="list-style-type: none"><li>• Cultivated;</li><li>• Hay;</li><li>• Tame Pasture;</li><li>• Treed;</li><li>• Treed Pasture;</li><li>• Hay Pasture;</li><li>• Shrub pasture; and</li><li>• Disturbed Land.</li></ul>	Trench and spoil (TS); Detail 12

Note: - Details are provided in Appendix E of the Pipeline EPP.  
1 Alternate topsoil salvage procedures and the criteria for alternative topsoil salvage handling are provided in Appendix D1 of the Pipeline EPP.

Topsoil Salvage Depth

Topsoil depths provided on the EAS indicate ranges of topsoil likely to be present and are intended to be used as a guide during topsoil salvage activities. Salvage topsoil to the plow layer, to the color change or to 10 cm, whichever is greatest, at locations where there is little to no topsoil on hay and cultivated land. Salvage all available root zone material to the color change or to 10 cm, whichever is greatest, at locations where there is little to no topsoil on native prairie, tame pasture, hay pasture, shrub pasture, treed pasture or treed lands. Salvage to a maximum depth of 40 cm unless a greater depth is specifically noted on the EAS for selected soils. Where soils are not readily distinguishable by colour, the Environmental Inspector will provide direction. Alternative soils handling measures to be applied in areas with problem lower subsoils are outlined under the Three-Lift Soils Handling and Overstripping sections on these Index Sheets.

Three-Lift Soils Handling

Conduct three-lift soils handling on lands with problem lower subsoils (*e.g.*, a higher salt content in the lower subsoil than the upper subsoil, variable textured soils) as indicated on the EAS. At three-lift soil handling areas, square brackets indicate upper subsoil salvage depths. For example, “20 [30]” noted on the Environmental Alignment Sheet indicates 20 cm of topsoil is to be salvaged followed by the salvage of 30 cm of upper subsoil. Note that salvaging of the upper subsoil may be deferred until trenching (see Section 7.3 of the Pipeline EPP). Salvage topsoil from the full right-of-way during non-frozen conditions (Detail 15) and from a minimal width centered over the trench (Detail 16) during frozen conditions (see Table 2). Salvage and store the upper subsoil separately from the lower subsoil at locations where three-lift soil handling is to be conducted and grading is necessary. Salvage the upper subsoil from a width at least twice the width of the trench during both non-frozen and frozen soil conditions. Ensure that the lower lift of subsoil is backfilled and compacted before the upper lift of subsoil where three-lift soils handling has been conducted.

TABLE 2

TOPSOIL SALVAGE PROCEDURES FOR DESIGNATED THREE-LIFT AREAS

Ground Conditions	Land Use	Topsoil Salvage Method
Non-Frozen	All	Full right-of-way; Details 14, 15
Frozen	All	Minimal Width; Details 14, 15

Overstripping

Areas requiring overstripping should salvage topsoil to the depth specified on the EAS so sufficient depth of desirable material can be returned over the pipeline during final clean-up.

Seed Mix

Seed disturbed areas of the construction right-of-way on non-cultivated lands, or as requested by landowners or the land authority as soon as practical after final clean-up and as weather and soil conditions permit as per Section 7.6 of the Pipeline EPP (see Detail 36). Conduct seeding in the spring, if feasible. When seeding cannot be completed in the spring, suspend seeding during the summer and seed in the fall. If seeding cannot take place until fall, install temporary erosion control measures in erosion-prone sites and adjacent to watercourses and wetlands.

Allow Class III and higher wetlands, including shrubby swamps, to naturally regenerate following construction (*i.e.*, do not seed). Hand broadcast seed within the disturbed margins of Class I and Class II wetlands with Seed Mix No. 23 in the Mixed Grassland, Moist Mixed Grassland and Lake Manitoba Plain Ecoregions (*i.e.*, SKP 289.20 to SKP 751.21 and SKP 1217.42 to SKP 1281.36) and Seed Mix No. 24 in the Aspen Parkland and Southwest Manitoba Upland Ecoregions (*i.e.*, SKP 185.20 to SKP 289.20 and SKP 751.21 to SKP 1217.42).

Seed disturbed soil on upland and saline range sites within Progress and Mariposa AAFC-CPP lands with Seed Mix No. 15. Seed disturbed soil on sandy and sandy loam range sites within Progress and Mariposa AAFC-CPP land with Seed Mix No. 16 (see Detail 36 in Appendix E of the Pipeline EPP). Seed disturbed soil within Elbow AAFC-CPP lands with Seed Mix No. 16. Native seed used for reclamation on AAFC-CPP lands must be analyzed by a Canadian Food Inspection Agency accredited laboratory and tested for purity and germination.

Determine seed mix requirements for hay/pasture lands through consultation with the landowner.

## ENVIRONMENTAL NOTES

**EN-01 - Compaction and Rutting:** Ensure there is sufficient frost or low enough soil moisture to allow construction without causing excessive rutting or soil compaction. Suspend activities during wet soil conditions. Narrow down temporary workspace if necessary. Postpone topsoil salvage activities until immediately prior to trenching. Reduce the width of grading in order to limit and avoid the potential for subsoil compaction. Assess the need for special trench compaction measures or equipment prior to the commencement of backfilling. Determine the locations where subsoil compaction has occurred by comparing compaction levels on and off the construction right-of-way. Decompect compacted subsoils, temporary construction access and soils damaged during wet weather to a depth of 30 cm, prior to topsoil replacement. If soils are wet, postpone decompaction until soils dry to ensure that compaction alleviation measures are effective. Employ a subsoiler plow (e.g., Paratiller) or other appropriate equipment, along segments of the construction right-of-way where topsoil salvage did not occur and subsoil compaction is severe. Do not use a subsoiler plow on native prairie or treed lands.

**EN-02 - Shallow/Deep Topsoil:** Locations with less than 10 cm of topsoil are indicated with “*shallow topsoil*” and locations with topsoils greater than 25 cm are indicated with “*deep topsoil*” on the EAS. Where there is little to no topsoil, salvage topsoil (or root zone material) to the plow layer, to the colour change or to 10 cm, whichever is greatest. However, no topsoil salvage is warranted on disturbed land where no topsoil is present. Locations with no observed topsoil cover are also labeled as “*shallow topsoil*”, indicating that a minimum of 10 cm of upper material must be salvaged and returned during final cleanup. Adjust temporary workspace areas in areas with deep topsoil, if warranted, to allow for suitable topsoil storage for construction during non-frozen soil conditions. Salvage topsoil to a maximum depth of 40 cm unless a greater depth is specifically noted for selected soils.

**EN-03 - Wind Erosion:** Implement erosion control measures as outlined in the Pipeline EPP (Sections 7.2 and 7.6, and Appendix D12 and D20 of the Pipeline EPP) at locations where soils prone to wind erosion have been identified. Suspend topsoil handling operations if drifting or topsoil loss is evident. Postpone topsoil salvage activities until 3 days prior to trenching in areas with limited topsoil depth that are prone to erosion by wind. Conduct straw crimping on wind erosion prone soils where identified by the Environmental Inspector and approved by the landowner (see Section 7.6 of the Pipeline EPP for types of straw to be used). Evaluate windrowed topsoils and tackify, apply a cereal cover crop or pack the topsoil windrow with a sheep's-foot packer or other approved equipment during non-frozen conditions, if the assessment by the Environmental Inspector indicates that soils are likely to be prone to erosion by wind. Walk-down topsoil windrow and windrow snow over it to reduce the risk of wind erosion during frozen conditions. Consider tackifying or watering down the topsoil windrow if snow is not available during frozen soil conditions.

**EN-04 - Water Erosion:** Implement erosion control measures as outlined in the Pipeline EPP (see Section 7.2, 7.6 and Appendix D12 of the Pipeline EPP) at locations with identified water erosion concerns. Install cross ditches and diversion berms on moderate to strong slopes on tame pasture, treed, treed-pasture and native prairie lands, where needed, to prevent runoff along the construction right-of-way and subsequent erosion (see Detail 31 in Appendix E of the Pipeline EPP). Exact locations of berms will be determined in the field. Tie berms into existing erosion control structures where prevalent on the adjacent right-of-way. Install berms immediately downslope of all breakers on moderate to steep slopes, where present. Construct temporary berms of subsoil, utilize sandbags or bales, or construct temporary cross berms, if approved by the landowner on cultivated and hay lands.

**EN-05 - Unstable Trench:** Increase the width of topsoil salvage where full right-of-way topsoil salvage is not planned and the trench may be prone to sloughing or the trench walls may be sloped in order to prevent topsoil from sloughing into the trench (see Detail 19 in Appendix E of the Pipeline EPP). Increase the topsoil salvage width if: trench walls do not stand up; a wider or deeper trench is otherwise needed; and extra storage is required for trench spoil. Back slope the trench until stable (up to 1:1). Limit the length of open trench and the amount of time between trenching and backfilling operations to reduce the amount of trench sloughing.

**EN-06 - Problem Lower Subsoils:** Conduct alternative soils handling (i.e., three-lift soils handling or overstripping) on lands with problem lower subsoils (e.g., soils with a higher salt content in the lower subsoil than the upper subsoil or variable textured soils).

**EN-07 - Saline, Coarse and Droughty Soils:** Straw crimp on saline, sandy and droughty soils where vegetation may be difficult to re-establish, where identified by the Environmental Inspector and approved by the landowner (see Section 7.6 of the Pipeline EPP for types of straw to be used). Crimp or anchor straw into the soil to an approximate depth of 5 cm. Straw should stand vertically 5-20 cm out of the ground in rows spaced approximately 15 cm apart. Ensure straw used for erosion control is free of regulated and non-native invasive weeds and disease. Straw to be crimped must have a minimum stem length of 30 cm.

**EN-08 - High Water Table:** Delay trenching until immediately prior to lowering-in at locations with a high water table. Assess the need for well points or other dewatering methods prior to commencing trenching to intercept groundwater at site-specific locations before it enters the trench. Dewater the trench, if warranted, when laying pipe in areas with high water tables. Direct water to an approved (when applicable), well-vegetated, upland area (see Detail 20 in Appendix E of the Pipeline EPP) at a rate that promotes infiltration of the ground surface. Ensure ground protection measures are in place to prevent scouring and/or erosion. Discharge trench water through an appropriate sediment filtering medium (e.g., geotextile bag, straw bale/silt fence dewatering structure), where warranted (see Details 20 and 21 in Appendix E of the Pipeline EPP). Monitor the water discharge site to ensure that erosion, saturation of the discharge site, flooding or flow off of the property does not occur. Suspend dewatering and either apply erosion control measures, reduce the flow or move the discharge site if it appears that the above effects could occur. Do not dewater any wetlands. Although temporary dewatering may be necessary during trenched wetland crossings, water should not be permanently removed from wetland.

**EN-09 - Wetlands:** Implement the mitigation measures outlined in Section 7.8 of the Pipeline EPP for wetlands crossed or disturbed during construction (a list of wetlands encountered by the route is provided in Table 6 of these EAS Index Sheets). Avoid or reduce grading at wetlands where practical. Narrow down the area of disturbance, including brushing and mowing at Class III, IV and V marsh wetlands and swamp wetlands, if feasible. See Appendix Q of the Pipeline EPP for topsoil salvage widths to be used at wetland crossings.

Salvage the upper surface material of all wetlands to a maximum depth of 40 cm, or to the depth of colour change where there is less than 40 cm of surface material, or as advised by the Environmental Inspector.

Salvage live, flagged or fenced willows and other shrubs and trees from the banks of wetlands where present, or as directed by the Environmental Inspector. Store at the side of the construction right-of-way in a manner in which they will not dry out before they are replanted during restoration. Install willow staking along the disturbed margins of the wetland to stabilize disturbance, reduce the potential for sediment introduction and restore habitat function where shrubs were present prior to construction in wetlands where “*willow staking*” is noted or as directed by the Environmental Inspector (see Detail 40 in Appendix E of the Pipeline EPP).

**EN-10 - Watercourses and Fish-Bearing Drainages:** Refer to Table 4 of these EAS Index Sheets for crossing methods and reclamation procedures for watercourses and fish bearing drainages. Maintain low vegetation or a vegetative ground mat within the riparian buffer of watercourses and wetlands, to the extent practical, by walking, storing and constructing over the undisturbed areas. Clearing and grading within the riparian buffer may be approved if completion of these activities will result in a reduction in erosion or sedimentation risk. Clearing and grading within the riparian buffer will be subject to the approval of the Environmental Inspector after considering slope gradient both before grading and after the slope has been graded out; and potential for sedimentation (i.e., soil texture of materials to be graded). Abide by all federal and provincial regulatory requirements and notification procedures. Adhere to the notification measures in Section 5.0 of the Pipeline EPP for navigable watercourses and implement the mitigation measures in Section 7.7 of the Pipeline EPP for navigation safety.

**EN-11 - Nonfish-Bearing Drainages:** Adhere to the relevant general mitigation measures outlined in Section 6.0 of the Pipeline EPP. See Table 4 of these EAS Index Sheets for detailed information regarding nonfish-bearing drainages.

**EN-12 - Wildlife Feature:** Implement the mitigation measures found in Section 6.0 of the Pipeline EPP. Adhere to the restricted activity period applicable to site-specific/species-specific habitat features when necessary. Refer to Appendix O of Pipeline EPP for detailed information regarding RAPs and Table 5 of these EAS Index Sheets for detailed site-specific mitigation measures.

**EN-13 - Wildlife Areas:** Adhere to the general pipeline construction mitigation measures found in Section 6.0 of the Pipeline EPP. Implement timing restriction and mitigation measures identified for each wildlife area in Appendix O of the Pipeline EPP. Refer to Table 5 of these EAS Index Sheets for site-specific mitigation recommendations.

**EN-14 - Rare Plants/Rare Communities:** Narrow down the construction right-of-way to avoid rare plants and rare ecological communities where feasible. Ensure rare plant populations are signed, staked, flagged and/or fenced-off and ensure they are maintained throughout topsoil salvage and grading activities. Implement the site-specific mitigative measures related to known vegetation species of concern as identified in Table 7 of these EAS Index Sheets. Restrict the application of herbicide within 30 m of known rare plant populations. Implement the measures outlined in the Plant Species of Concern Discovery Contingency Plan (see Appendix D2 of the Pipeline EPP) if vegetation species of concern are discovered prior to or during construction.

**EN-15 - Recreational Disturbance:** Implement the Environmental Traffic Control Plan (see Appendix D6 of the Pipeline EPP). Ensure all identified cross-country ski trails, snowmobile trails, hiking trails, equestrian trails or obvious wildlife trails are not blocked by clearing debris or slash windrows. Protect public safety near populated areas by controlling public access. Provide nearby landowners and residents, local recreation groups and Aboriginal communities with schedules prior to the initiation of construction activities to reduce disturbance to outdoor recreation and, if warranted, install signs at recreational access points notifying users of construction activities in the vicinity. Ensure that schedule changes are communicated to these groups prior to construction.

**EN-16 - Biosecurity:** Establish vehicle cleaning stations to clean equipment used during clearing and topsoil handling activities (see Appendix G of the Pipeline EPP). Implement the following vehicle cleaning methods as indicated on the EAS:

Level 1 (Rough Clean): Remove clumps of accumulated soil or crop debris from openings, tracks, tires and wheels using a hand scraper, shovel, broom or wire brush. This level of cleaning must occur on-site before leaving the selected cleaning location or the work area. Ensure cleaning is completed off of the travel lane, preferably in temporary workspace, and ensure a visual inspection is completed.

Level 2 (Mechanical Clean): Utilize compressed air after completing a rough clean, in accordance with Detail 1a (Appendix E) of the Pipeline EPP.

Level 3 (Fine Clean): Wash vehicles using a pressure washer, paying extra attention to areas where soil can accumulate (i.e., tires or undercarriage). For hydrovac trucks, cleaning includes the inside of the tank and any implement in contact with soil. This level of cleaning can be completed on-site as per Detail 1b (Appendix E) of the Pipeline EPP or at a central cleaning location. If cleaning is to occur at a central cleaning location, the equipment must be rough cleaned on-site and directly transported to the central cleaning location (i.e., car/equipment wash station or yard).

Level 4 (Disinfection): Disinfect all tracks, openings, tires, wheels and implements which may come in contact with soil with a 1-2% bleach (or alternative) solution. Where feasible, allow contact with bleach solution for approximately 15 to 20 minutes (keep areas wet with bleach solution by reapplying disinfectant when areas start to dry out). Under frozen conditions, the requirement to wait 15 to 20 minutes can be waived if the bleach mixture is freezing on the equipment. All equipment must be fine cleaned prior to disinfection with the exception of all-terrain vehicles, hand tools and boots that can be misted with disinfectant after a rough clean on-site (if a fine wash station is not available). Foot traffic may also utilize disposable boots. Hydrovac truck bleaching includes the inside of the tank and any implement in contact with soil. This level of cleaning can be completed on-site or at a central cleaning location. If cleaning is to occur at a central cleaning location the equipment must be rough cleaned on-site and directly transported to the central cleaning location (i.e., car/equipment wash station or yard).

LEGEND/GLOSSARY

TOPOGRAPHY CLASSES

Symbol	% Slope	Description
1	0-0.5	Level
2	> 0.5-2	Nearly Level
3	> 2-5	Very Gentle Slopes
4	> 6-9	Gentle Slopes
5	> 10-15	Moderate Slopes
6	> 16-30	Strong Slopes
7	> 31-45	Very Strong Slopes

LAND USE

Land Use	EAS Abbreviation	Description
Cultivated	C	Land under agricultural usage where the ground is tilled or disturbed regularly and used for the purposes of growing crops (excluding hay).
Disturbed Land	DL	Industrial or residential land or soils which have been disturbed due to prior construction activity.
Drainage Channel <sup>1</sup>	DC	Areas generally without defined bed and banks with poorly drained undifferentiated gleysolic soils along intermittent drains.
Hay	H	Land used primarily for hay production.
Hay/Pasture	HP	Land that is used for hay cultivation some years and left for grazing during others. Landowners must be consulted to determine seeding and reclamation requirements.
Native Prairie	NP	Land that supports native prairie vegetation.
Open Water <sup>2</sup>	Q	Open bodies of water.
River <sup>2</sup>	RI	Notable rivers.
Rough Broken <sup>1</sup>	RB	Steep slopes along drainage channels highly susceptible to soil erosion and slumping when the protective vegetation is removed.
Shrub Pasture	SP	Pasture land with shrub cover in excess of 10-20%.
Stream Channel <sup>1</sup>	SC	Channels with defined banks with undifferentiated regosolic and gleysolic soils developed on recent fluvial sediments.
Tame Pasture	P	Cleared land that is not being cultivated and does not support native prairie vegetation which is predominantly used for grazing.
Treed	T	Land with tree cover in excess of 5%.
Treed Pasture	T-P	Areas that are a mixture of trees and pasture.
Not Surveyed	NS	Locations where surveys will be completed prior to construction.

**Note:**

1

Miscellaneous land units identified by the soils program are delineated and labelled on the photomosaic portion of the alignment sheets. These areas are assigned at a smaller scale than general land use designations and are, therefore, not included in land use.

2

Land Units which have implications to soil properties and are labelled on the photomosaic. These areas may be assigned at a smaller scale than general land use designations and therefore may differ from the overall land use designation.

SOIL PHASES

Soil Phase	EAS Label	Soils Description
Gleyed	gl	Imperfectly-drained and exhibit mottling and gleying features in the subsoil.
Gravelly	gv	Areas of Biggar soils that are gravelly.
Shallow	sh	Soils with an unconforming parent material within 1.7 m of the surface ( <i>i.e.</i> , till overlying weathered bedrock, glaciofluvial material overlying till, or glaciolacustrine material overlying till).
Stony	st	Asquith, Darlingford, Oxbow and Weyburn soils that are stonier than normal. Usually these soils are very to exceedingly stony at the surface.
Saline lower subsoil	sc	Chernozemic soils with a higher level of salts in the lower subsoil than upper subsoil. Usually salts are displayed in the lower subsoil.
Saline	sa	Areas of Chernozemic and Gleysolic soils that are moderately to strongly saline at or near the surface. The topsoil horizon may also be saline.

Source:                   Mentiga Pedology Consultants (Mentiga) 2014

FISH AND FISH HABITAT QUALITY

Rating	Description
Low	No suitable habitat present for a specific fish species and/or life history stage. Indicators of low quality habitat include: A reach where habitat characteristics, such as water quality, were considered inadequate to support aquatic life (Canadian Council of Ministers of the Environment) and/or physical attributes of the reach were insufficient to provide for the life history stage requirements of fish species that may be present within the study reach.
Moderate	Habitat that has low productive capacity and contributes marginally to fish production. Moderate quality habitat provides limited habitat potential for fish life history requirements. Moderate quality habitat includes habitat that is not available to fish due to natural permanent barriers as well as habitat that is available to fish but supports limited fish use. Indicators of moderate quality habitat include: the absence of suitable spawning or wintering habitat and habitat with low rearing potential ( <i>e.g.</i> , locations with a distinct absence of deep pools, undercut banks or stable debris and with little or no suitable spawning substrate for the fish species present), poor water quality and/or limiting hydrological or physical conditions.
High	Habitat that is used by fish for feeding, rearing, wintering and migration that is important to the fish population but is not deemed to be critical. This category of habitat usually contains a large amount of similar habitat that is readily available to fish. High quality habitat provides the necessary physical and biological requirements for a fish species and life history stage. Generally, habitat with optimal or suboptimal habitat potential is high quality. Indicators of high quality habitat include: Important migration corridors, the presence of suitable spawning and wintering habitat, and/or habitat with moderate rearing potential for the fish species present.
Very High	Habitat that is essential in sustaining a subsistence, commercial or recreational fishery, or a species of management concern ( <i>i.e.</i> , provincially-listed species, those designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or <i>Species at Risk Act</i> (SARA)-listed species). Very high quality habitat is rare or uncommon, exceptionally productive, has very high habitat values, and is not often encountered. Indicators of very high quality habitat include: the presence of exceptionally high value spawning or rearing habitat ( <i>e.g.</i> , locations with an abundance of suitable spawning substrate, deep pools, undercut banks, or stable debris) which are essential to the fish population present; or the presence of a SARA-listed species, its residence or essential habitat identified in a SARA recovery strategy or action plan.

**Note:**                   -               Fish habitat ratings pertain to sportfish only and low quality habitat may still contain non sportfish.

WATERCOURSES/HYDROLOGY

Feature	Description
Watercourse	Defined bed and banks and sufficient annual flow to scour out the land and leave behind some deposition. Usually the bottom is covered with fine silt, sand, gravel, cobble, etc.
Waterbody	Lacks defined bed or banks.

GENERAL SOILS ISSUES

Issue	Description
Problem Lower Subsoils	Soils that meet the criteria for alternative soils handling.
High Water Table	Locations along the construction right-of-way with increased potential to experience groundwater discharge in open excavations by intersecting the water table.
Coarse Soils	Soils with very coarse textures that may hinder revegetation efforts.
Saline Upper Soils	Soils which are strongly saline at the surface that may hinder revegetation efforts.
Droughty Soils	Soils with low water-holding capacities that may hinder revegetation efforts.

Source:                   Mentiga 2014

SOIL PARENT MATERIALS

Parent Material	EAS Label	Description
Colluvium	C	Colluvium refers to sediments that are deposited by the force of gravity. Colluvium deposits are usually loose, weathered materials located at the foot of a cliff or slope.
Eolian	E	Eolian deposits are sediments that have been transported by wind and generally consist of medium to fine sand and coarse silt.
Fluvial	F	Fluvial deposits are sediments that have been transported by rivers and streams ( <i>i.e.</i> , moving water). Generally these sediments are composed of sand and gravel with minor silt.
Glaciofluvial	GF	Glaciofluvial deposits are fluvial deposits that been deposited in front of, or in contact with, glacier ice.
Glaciolacustrine	GL	Glaciolacustrine refers to sediments associated with glacial lakes. Glaciolacustrine sediments are generally stratified fine sand, silt, and clay deposited on a glacial lake bed, or moderately well sorted and stratified sand and coarser material deposited by wave action.
Organic	O	Organic deposits form when the rate of organic accumulation exceeds the rate of decomposition. Generally, organic deposits contain greater than 40 cm of organic material overlaying mineral deposits.
Till	T	Till is unstratified and poorly sorted material deposited by glacial ice. Till is composed of varying degrees of sand, silt or clay.
Veneer	V	Unconsolidated materials too thin to mask the minor irregularities of the underlying surface. Veneer's range in depth from 10-100 cm and show no form typical of parent genesis.
Weathered bedrock	B	Underlying bedrock that is soft and can be excavated using normal construction equipment.
Not applicable	-	Soil parent material not discernible or not present.
Not surveyed	NS	Surveys will be completed prior to construction.

Source:                   Mentiga 2014

ECOREGIONS

Province	Ecoregion (AB Natural Region)	Proportion of Route	Description
SK	Aspen Parkland	20.25%	<ul style="list-style-type: none"><li>Native vegetation consists of a mosaic of aspen groves and fescue grasslands.</li><li>Trembling aspen, Saskatoon, wolf willow, and bluegrass.</li></ul>
SK	Mixed Grassland	5.81%	<ul style="list-style-type: none"><li>Native vegetation consists of speargrass, blue grama, wheatgrass, June grass and sedges.</li></ul>
SK	Moist Mixed Grassland	37.58%	<ul style="list-style-type: none"><li>Native vegetation consists of speargrass, wheatgrass, blue grama, rough fescue, chokecherry, wolf willow and Saskatoon.</li></ul>

Source: Saskatchewan Environment and Resource Management 1998

CLI SOIL CLASSES

Class	Description
1	No significant limitations in use for crops.
2	Moderate limitations that restrict the range of crops or require moderate conservation practices.
3	Moderately severe limitations that restrict the range of crops or require special conservation practices.
4	Severe limitations that restrict the range of crops or require special conservation practices.
5	Very severe limitations that restrict their capability in producing perennial forage crops, and improvement practices are feasible.
6	Capable only of producing perennial forage crops, and improvement practices are not feasible.
7	No capacity for arable culture or permanent pasture.
0	Organic Soils (not placed in capability classes).

Source: Agriculture and Agri-Food Canada 2013.

CLI SOIL SUBCLASSES

Subclass	Description
C	Adverse climate
D	Undesirable soils structure and/or low permeability
E	Erosion
F	Low fertility
I	Inundation by streams or lakes
M	Moisture limitations
N	Salinity
P	Stoniness
R	Consolidated bedrock
S	Combination of subclasses
T	Topography
W	Excess water
X	This subclass is comprised of soils having a limitation resulting from the cumulative effect of two or more adverse characteristics

Source: Agriculture and Agri-Food Canada 2013.

WETLANDS

Dominant Wetland Class	General Wetland Class Characteristics
Class I (Ephemeral Marsh)	Occur in low areas and contain prairie vegetation species such as arnicas and white camas, as well as Kentucky bluegrass.
Class II (Temporary Marsh)	The wet meadow zone dominates the deepest part of the wetland area. A peripheral low-prairie zone is usually present. The central zone is usually dominated by vegetation species that can tolerate some salts, such as western wheatgrass, foxtail barley and salt-grass.
Class I/Class II (Ephemeral Marsh/Temporary Marsh)	Class I and II wetlands identified during the helicopter overflight and not identified in previous projects, were identified as Class I/II. The vegetation community structure must be assessed during ground-based surveys to categorize as a Class I or Class II wetland with certainty.
Class III (Seasonal Marsh)	Seasonal potholes are wetlands with a shallow-marsh zone dominating the deepest part of the wetland area. These ponds are frequently surrounded by a ring of willows with a wet centre containing sedges for freshwater wetlands, or bulrushes in more brackish wetlands. Pondweeds may occur in the open-water. Brackish ponds may have halophytic vegetation in the drawdown area, such as foxtail barley, red goosefoot, oak-leaved goosefoot or summer cypress.
Class IV (Semi-Permanent Marsh)	The deep-marsh zone dominates the deepest part of the wetland area. Shallow-marsh, wet meadow and low-prairie zones are usually present. Cattails and rushes are typical emergent species, while aquatic plants such as pondweeds, bladderwort, water-milfoil and water hornwort are found floating in the centre. The edges of brackish semi-permanent potholes typically contain prairie bulrush, alkali grass and red samphire.
Class V (Open Water Pond)	The permanent open-water zone dominates the deepest part of the wetland area. Peripheral deep-marsh, shallow-marsh, wet meadow and low-prairie zones are often present. The centre portion of a permanent lake or pothole is typically open-water, although submerged vegetation may occur, such as widgeon-grass (S1).
Class VI (Alkali Marsh)	The intermittent alkali zone dominates the deepest part of the wetland area. This zone is characterized by highly saline shallow water that, in its drawn-down phase, appears as white alkali salt flats. In Alkali Ponds and Lakes peripheral shallow-marsh, wet meadow, and low-prairie zones are usually present and populated with more salt-tolerant vegetation, such as Nuttall's salt-meadow grass, salt grass, samphire, western wheatgrass, arrowgrass and scratch grass.
Swamp (Treed and Shrubby)	Mineral wetland with the occasional peat veneer. The water table in these wetlands is typically at or below the surface. Deciduous and/or coniferous tree species dominate the vegetation community of treed swamps. Shrub species ( <i>e.g.</i> , willows) dominate the vegetation community of shrubby swamps.
Wetland Complex	Features that are hydrologically connected ( <i>e.g.</i> , through drainage features) or exhibit more than one wetland type ( <i>e.g.</i> , swamp and marsh).
Artificial Wetland	Artificial wetlands likely contain surface water and may contain wetland vegetation and hydric soils. These features have been anthropogenically altered and may have features that impede surficial hydrology ( <i>e.g.</i> , berms, roads). Artificial wetlands may be associated with naturally occurring wetlands, watercourses, or drainage features.
Dugout	Considered artificial wetlands intended for agricultural use.
Non-Wetland	Wetland classes are assigned based on the presence of three necessary wetland criteria: hydrology, hydric soils and wetland vegetation. Features that lack one of the three wetland criteria ( <i>e.g.</i> , wetland lacks necessary vegetation as it seeded with agronomic species), have been delineated as non-wetland features.

RARE PLANTS AND RARE COMMUNITIES

Feature	Description
Rare Plant	A population of a plant species considered to be uncommon, rare or in decline by provincial ( <i>e.g.</i> , Alberta Conversation Information Management System [ACIMS], Saskatchewan CDC, Manitoba CDC) and federal ( <i>e.g.</i> SARA, COSEWIC) conservation authorities.
Rare Community	A recurring assemblage of plant species considered to be uncommon, rare or in decline by provincial ( <i>e.g.</i> , ACIMS, Saskatchewan CDC, Manitoba CDC) and federal ( <i>e.g.</i> SARA, COSEWIC) conservation authorities.

RARE PLANTS AND RARE COMMUNITY RANKINGS

Rank <sup>1</sup>	Description
S1 Critically Imperilled	Due to extreme rarity or due to some factor(s) making it especially vulnerable to extirpation. Typically five or fewer occurrences or very few remaining individuals (<1,000).
S2 Imperilled	Due to rarity or due to some factor(s) making it very vulnerable to extirpation. Typically 6-20 occurrences or few remaining individuals (1,000-3,000).
S3 Vulnerable	Rare and uncommon, or found in a restricted range (even if abundant at some locations), or due to other factors making it vulnerable to extirpation. Typically 21-100 occurrences or between 3,000 and 10,000 individuals.
S4 Apparently Secure	Uncommon, however, not rare and usually widespread in the province. Possible cause of long-term concern. Usually more than 100 occurrences and more than 10,000 individuals.
S5 Secure	Common, widespread and abundant in the province. Essentially ineradicable under present conditions. Typically with considerably more than 100 occurrences and more than 10,000 individuals.
SNo. SNo. Range Rank	A numeric range rank ( <i>e.g.</i> , S2S3) is used to indicate the range of uncertainty about the exact status of the element.
SH Possibly Extirpated	Known from only historical records but still some hope of rediscovery. There is evidence that the species may no longer be present in the jurisdiction, but not enough to state this with certainty.
SU Unrankable	Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNo. ? Inexact numeric rank	Denotes inexact numeric rank.
Q Questionable taxonomy	Taxonomic status is questionable; numeric rank may change with taxonomy.
T	Designates a rank associated with a subspecies.
(W) Watch List	Elements that are not currently considered as high conservation concern, but there is some information to suggest that they may become rare should there be significant alterations to the element's habitats or population. Data for watch listed elements are collected by ACIMS (Alberta Tourism, Parks and Recreation [ATPR] 2013).
NR Unranked	Rank not yet assessed.

Note: 1 Provincial (S) ranks are assigned by the provincial and federal Conservation Data Centre(s) (CDC[s]); in cases of conflict or missing data, the provincial CDC will have preference. Ranks range from 1 (five or fewer occurrences) to 5 (demonstrably secure under present conditions); definitions are adapted from NatureServe (2013) unless noted otherwise.

WILDLIFE AND WILDLIFE HABITAT

EAS Label	Species/Feature
STGR	Sharp-tailed grouse
AMBI	American bittern
BLTE	Black tern
CATO	Canadian toad
LOSH	Loggerhead shrike
PLSP	Plains spadefoot
FEHA	Ferruginous hawk
EAGR	Eared grebe
HOGH	Horned grebe
NLFR	Northern leopard frog
MBC SITE	Migratory Bird Convention Site

WILDLIFE AND WILDLIFE HABITAT PROVINCIAL RANKINGS

Rank <sup>1</sup>	Description
S1 Critically Imperilled	At high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats or other factors.
S2 Imperilled	At risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats or other factors.
S3 Vulnerable	At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats or other factors.
S4 Apparently Secure	At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats or other factors.
S5 Secure	At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.
SNo. SNo. Range Rank	A numeric range rank ( <i>e.g.</i> , S2S3) is used to indicate any range of uncertainty about the status of the species.
SU Unrankable	Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNo. ? Inexact numeric rank	Inexact numeric rank: denotes inexact numeric rank.
Q Questionable taxonomy	Taxonomic status is questionable; numeric rank may change with taxonomy.
(W) Watch List	Elements that are not currently considered as high conservation concern, but there is some information to suggest that they may become rare should there be significant alterations to the element's habitats or population (ACIMS 2014a).
--	Data unavailable.

Note: 1 Provincial (S) ranks are assigned by ATPR (2014). Only ranks S1 to S3 or a rank involving S1 to S3 (*e.g.*, S3S4) are included in this table, as well as all species on the ACIMS Tracking and Watch lists. All definitions are adapted from NatureServe (2014), unless otherwise noted.

WILDLIFE AND WILDLIFE HABITAT FEDERAL RANKINGS

Rank <sup>1</sup>	Description
Endangered	A wildlife species facing imminent extirpation or extinction.
Threatened	A wildlife species that is likely to become Endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
Special Concern	A wildlife species that may become Threatened or Endangered because of a combination of biological characteristics and identified threats.

Note: 1 Values in this table are based on information from the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (2014) and the *Species at Risk Act* (SARA). The *Act* establishes Schedule 1 as the list of species to be protected on all federal lands in Canada. The *Act* also applies to all lands in Canada for Schedule 1 bird species cited in the *Migratory Birds Convention Act*. This table only includes designations of Endangered, Threatened and Special Concern.



TABLE 1

SUMMARY OF SOIL CHARACTERISTICS ALONG THE LINE 3 REPLACEMENT ROUTE IN SASKATCHEWAN

Soil Type	Soil Name	KP Range <sup>1</sup>	Proportion (length) of Route	Soils Classification	Parent Material	Texture Class	Drainage Class	Topsoil Depth Range (cm)	Colour Differentiation	Erosion Hazard <sup>2</sup>		Susceptible to		Comments or Other Concerns
										Wind	Water	Compaction and Rutting	Trench Instability	
GR	Grill Lake	710.2 + 4.18 to 710.2 + 35.79	8.82% (3.42 km)	saline Rego Gleysol	glaciolacustrine	clay to heavy clay	poorly	15-20	Poor	S	S	Yes	-	These soils are usually saline at or near the surface which may hinder revegetation efforts - may have unstable trench walls in excessively wet areas
RA	Regina	710.2 + 0.00 to 710.2 + 38.79	66.12% (25.65 km)	Vertic Dark Brown Chernozem	glaciolacustrine	clay to heavy clay	moderately well	10-20	Poor	M	S-M	Yes	-	Extremely poor colour change between topsoil and subsoil: susceptible to wind erosion if material is pulverized
scRA	Regina with saline lower subsoil	710.2 + 3.89 to 710.2 + 28.15	24.90% (9.66 km)	Vertic Dark Brown Chernozem with saline lower subsoil	glaciolacustrine	clay to heavy clay	moderately well	10-20	Poor	M	S	Yes	-	Extremely poor colour change between topsoil and subsoil: <ul style="list-style-type: none"><li>susceptible to wind erosion if material is pulverized</li></ul> some of these soils have been recommended for the 3-lift soils handling procedure due to a higher level of salinity in the lower subsoil
SC	Stream Channel	710.2 + 28.15 to 710.2 + 28.21	0.14% (0.06 km)	-	-	-	-	-	-	-	-	-	-	-

**Source:** Mentiga 2014

**Notes:**

1

Soil occurs intermittently between listed KP locations.

2

Erosion Hazard Ratings:  
S - slight  
M - moderate  
H - high

TABLE 2

SUMMARY OF THE WATERCOURSE AND WATERBODY CROSSINGS ALONG THE LINE 3 REPLACEMENT ROUTE IN SASKATCHEWAN

Site No.	Watercourse SKP <sup>1</sup>	Legal Location	UTM Coordinates	RAP/Restricted Activity Timing Window <sup>2</sup>	Mean Channel Morphology (m)			Fish Habitat Quality Rating	Recommended Pipeline Crossing Method	Recommended Pipeline Crossing Method (Contingency)	Vehicle/Equipment Crossing Method		Requires Mitigation for Navigation and Navigation Safety (Yes/No) <sup>3</sup>	Restoration Notes
					Bankfull	Wetted	Depth				Frozen	Open Water		
SKR-WC1001	Unnamed Drainage Ditch SKP 710.2 + 16.0	5-17-16-19 W2M	13U 529206E 5577149N	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown	unknown	Recontour and revegetate
SKR-WC1002	Wascana Creek SKP 710.2 + 28.1	7-20-16-18 W2M	13U 539721E 5578504N	April 1 to May 31	9.4	7.6	0.27	Moderate	Isolate if water present/open cut if dry or frozen to bottom	n/a	Snow fill/Ice bridge	Clear span bridge	Yes	Recontour and revegetate

**Notes:**

n/a : Not applicable

1

List is preliminary and subject to change following additional field work and supplemental studies. All crossing recommendations assume instream construction outside the RAP/Restricted Activity Timing Windows.

2

Determined from the Saskatchewan DFO Timing Windows (DFO 2013).

3

Based on previous determinations of navigability by Transport Canada and watercourse characteristics (see Appendix 11 of ESA). Additional information on navigation may be obtained from Enbridge's ongoing consultation program.

TABLE 3

WETLANDS ENCOUNTERED ALONG THE LINE 3 REPLACEMENT ROUTE IN SASKATCHEWAN

Wetland Report ID	Overall Wetland Class	SKP Start to SKP End¹	Legal Location of Construction within Wetland	Centroid UTM¹	Length of Disturbance by Centre Line (km)	Area of Disturbance by Footprint (ha)	Site-Specific Mitigation	Comments
SK-1413	seasonal marsh (Class III)	710.2 + 5.40 to 710.2 + 5.48	NE 21-16-20-W2M	521562E 5579475N 13U	0.38	0.21	--	--
		710.2 + 5.53 to 710.2 + 5.69	NE 21-16-20-W2M	521696E 5579411N 13U	0.8	0.47		
SK-1414	semi-permanent marsh (Class IV)	710.2 + 6.18 to 710.2 + 6.33	NE 21-16-20-W2M to NW 22-16-20-W2M	522288E 5579103N 13U	1.13	0.79	--	--
		710.2 + 6.37 to 710.2 + 6.68	NW 22-16-20-W2M	522544E 5578985N 13U	3	1.17		
SK-1415	seasonal marsh (Class III)	710.2 + 7.14 to 710.2 + 7.18	SW 22-16-20-W2M	523085E 5578690N 13U	0.00	0.05	--	--
SK-1416	seasonal marsh (Class III)	710.2 + 8.95 to 710.2 + 9.19	NW 14-16-20-W2M	524493E 5577685N 13U	1.91	0.91	--	--
SK-1417	seasonal marsh (Class III)	710.2 + 10.71 to 710.2 + 10.80	SW 13-16-20-W2M	525871E 5576711N 13U	0.54	0.24	--	--
		710.2 + 11.02 to 710.2 + 11.09	SW 13-16-20-W2M	526110E 5576547N 13U	0.5	0.26		
SK-1418	seasonal marsh (Class III)	710.2 + 11.75 to 710.2 + 11.87	NE 12-16-20-W2M	526746E 5576127N 13U	1.09	0.45	--	--
SK-1419	ephemeral/temporary marsh (Class I/Class II)	710.2 + 12.24 to 710.2 + 12.32	NE 12-16-20-W2M	527135E 5575852N 13U	0.00	0.21	seed mix	--
SK-1420	temporary marsh (Class II)	710.2 + 12.80 to 710.2 + 13.05	NW 07-16-19-W2M	527751E 5575627N 13U	1.6	1.10	seed mix	--
SK-1421	temporary marsh (Class II)	710.2 + 13.11 to 710.2 + 13.21	NW 07-16-19-W2M	527920E 5575635N 13U	0.95	0.43	seed mix	--
		710.2 + 13.29 to 710.2 + 13.31	NE 07-16-19-W2M	528082E 5575612N 13U	0.00	0.01		
SK-1422	seasonal marsh (Class III)	710.2 + 13.36 to 710.2 + 13.56	NE 07-16-19-W2M	528207E 5575656N 13U	1.29	1	--	--
SK-1423	seasonal marsh (Class III)	710.2 + 17.93 to 710.2 + 18.06	SW 16-16-19-W2M	531211E 5577153N 13U	1.19	0.54	--	--
SK-1424	seasonal marsh (Class III)	710.2 + 18.52 to 710.2 + 18.62	SE 16-16-19-W2M	531783E 5577143N 13U	0.00	0.17	--	--
		710.2 + 18.72 to 710.2 + 18.86	SE 16-16-19-W2M	532005E 5577138N 13U	0.00	0.35		
SK-1425	temporary marsh (Class II)	710.2 + 20.00 to 710.2 + 20.19	SW 22-16-19-W2M	532413E 5578083N 13U	0.77	0.45	seed mix	--
SK-1426	temporary marsh (Class II)	710.2 + 20.54 to 710.2 + 20.61	SW 22-16-19-W2M	532851E 5578096N 13U	0.62	0.24	seed mix	--
SK-1427	seasonal marsh (Class III) wetland complex	710.2 + 21.46 to 710.2 + 21.52	SW 23-16-19-W2M	533753E 5578106N 13U	0.35	0.11	seed mix	--
		710.2 + 21.55 to 710.2 + 21.65	SW 23-16-19-W2M	533875E 5578103N 13U	0.65	0.28		
SK-1428	seasonal marsh (Class III)	710.2 + 21.97 to 710.2 + 22.09	SW 23-16-19-W2M	534312E 5578099N 13U	0.52	0.34	--	--
SK-1429	semi-permanent marsh (Class IV)	710.2 + 23.21 to 710.2 + 23.26	SE 23-16-19-W2M	534814E 5578791N 13U	0.27	0.14	--	--
SK-1430	seasonal marsh (Class III) wetland complex	710.2 + 23.73 to 710.2 + 23.84	SE 23-16-19-W2M to SW 24-16-19-W2M	535355E 5578784N 13U	0.78	0.61	seed mix	--
		710.2 + 23.96 to 710.2 + 24.07	SW 24-16-19-W2M	535595E 5578799N 13U	0.83	0.31		
SK-1431	seasonal marsh (Class III) wetland complex	710.2 + 24.61 to 710.2 + 24.65	SE 24-16-19-W2M	536208E 5578780N 13U	0.00	0.01	seed mix	--
		710.2 + 24.73 to 710.2 + 24.84	SE 24-16-19-W2M	536365E 5578803N 13U	0.85	0.38		
SK-1432	seasonal marsh (Class III)	710.2 + 25.18 to 710.2 + 25.25	SE 24-16-19-W2M	536790E 5578817N 13U	0.64	0.15	--	--
SK-1433	ephemeral/temporary marsh (Class I/Class II)	710.2 + 25.78 to 710.2 + 25.86	SW 19-16-18-W2M	537378E 5578806N 13U	0.48	0.25	seed mix	--
SK-1434	ephemeral/temporary marsh (Class I/Class II)	710.2 + 26.19 to 710.2 + 26.28	SW 19-16-18-W2M to SE 19-16-18-W2M	537803E 5578806N 13U	0.54	0.29	seed mix	--
SK-1435	ephemeral/temporary marsh (Class I/Class II)	710.2 + 26.58 to 710.2 + 26.61	SE 19-16-18-W2M	538161E 5578792N 13U	0.00	0.01	seed mix	--
SK-1436	temporary marsh (Class II)	710.2 + 34.37 to 710.2 + 34.42	NE 26-16-18-W2M	544866E 5580694N 13U	0.36	0.17	seed mix	--
SK-1437	seasonal marsh (Class III)	710.2 + 35.57 to 710.2 + 35.70	NW 25-16-18-W2M to NE 25-16-18-W2M	545974E 5581095N 13U	1.21	0.51	--	--

Notes: Wetlands listed include those that are crossed by the construction right-of-way and/or extra temporary workspaces (e.g., for laydown areas, temporary access roads, shoo-flies, etc.). Wetlands that are located internal to the boundaries of pump stations/terminals are shown on the environmental photomosaics.

1 The delineated start and end locations provided are intended to identify the transition zone as accurately as possible and were derived during the desktop mapping exercise. Centroid UTM's are specific to the area of disturbance by the replacement pipeline route at each wetland crossing.

TABLE 4

RECOMMENDED VEHICLE CLEANING STATION LOCATIONS ALONG THE ENBRIDGE LINE 3 REPLACEMENT ROUTE

SKP¹	UTM Coordinates	Legal Location	Concern/Issue	Mitigation
710.2 + 25.27 to 710.2 + 25.47	536950E 5578814N U13	SE 24-16-19 W2M	Municipal Boundary	Level 4 Vehicle Cleaning (Disinfection)

Note: 1 All SKP locations are approximate. Final vehicle cleaning station locations will be determined based upon the direction of construction activities.

## REFERENCES

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- TERA, a CH2M Hill company. 2014c. Aquatics Technical Report for the Proposed Enbridge Pipelines Inc. Line 3 Replacement Program. Prepared for Enbridge Pipeline Inc. Calgary, AB.



MUNICIPAL AUTHORITY		RURAL MUNICIPALITY SHERWOOD NO. 159	
OWNERSHIP		PATENTED	
ENVIRONMENTAL PROTECTION PLAN	SEED MIX		N/A
	TOPSOIL SALVAGE	PROCEDURE	FULL ROW; REDUCE WHERE APPROPRIATE
		DEPTH (cm)	10-15
	POTENTIAL SOILS ISSUES AND PROTECTION MEASURES	COMPACTION/RUTTING	COMPACTION AND RUTTING; EN-01
		TOPSOIL	
		EROSION	
		TRENCH	
		GENERAL	
	OTHER POTENTIAL ISSUES AND PROTECTION MEASURES	WETLANDS	
		WATERCOURSES/HYDROLOGY	
WILDLIFE			
VEGETATION			
SOCIO-ECONOMICS			
CONSTRUCTION TIMING RESTRICTIONS			
BIOSECURITY			
LAND USE		CULTIVATED	
LEGEND			
	Valve Sites		
	Station Kilometre Post		
	Richardson Reroute		
	Highway/Paved Road		
	Gravel/Dirt/Loose Surface		
	Municipality Boundary		
	Provincial Boundary		
	Railway		
	Construction Kickoff Site		
	Construction Right-of-Way		
	Extra Workspace		
	Access/Shoofly		
	Terminal/Pump Station		
	Proposed Pump Station Expansion		
	Previously Approved Expansion Area		
	City / Town Boundary		
	Indian Reserve		
	Parks & Protected Areas		
Wetlands			
	Wetland		
	Non-wetland		
ENVIRONMENTAL SETTING	ECOREGION	MOIST MIXED GRASSLAND - REGINA PLAIN	
	SOILS PARENT MATERIAL	GLACIOLACUSTRINE	
	CLI SOILS CLASSIFICATION	SOIL CLI CLASS 2C AND 3X	
	WETLANDS		
	WATERCOURSES/HYDROLOGY		
	FISH HABITAT QUALITY		
	WILDLIFE & WILDLIFE HABITAT		
	VEGETATION		
	SOCIO-ECONOMICS		
	BIOSECURITY		
ENVIRONMENTAL PROTECTION PLAN NOTES		SOURCES	
Items included on these EAS were documented during the planning phase of the Line 3 Replacement Program. For all Environmental Notes (EN), refer to the index sheets in the EAS package. For example, EN-06 refers to Note 06 and has corresponding mitigation measures to be implemented during construction.  Feature identification numbers have been assigned to: - watercourses and waterbodies (AB-WC##, SK-WC##, MB-WC##); - wildlife features and areas (WF-##); and - wetlands (AB-###, SK-###, MB-###).  These numbers (i.e. AB-WC##) can be used to cross reference specific environmental features with the summary tables provided in the index sheets which provide additional information.  Although there is no reason to believe that there are any errors associated with the data used to generate this product itself, users of the data are advised that errors in the data may be present.		UTM Zone 13N Proposed Pipeline Current to April 2015 (V 5.0); Colour Imagery provided by Enbridge Pipeline Inc 2013 Licensed by Pictometry 2012; Roads: IHS Inc. 2015; Rural Municipalities/Cities/Towns: ISCS 2014, Manitoba Community Planning Services 2007, AltaLIS 2014; Hydrography: Natural Resources Canada 2007-2011; Railways: NRCan 2012; Indian Reserves: Government of Canada 2015; Parks & Protected Areas: MDC 2011; AESB Community Pasture: Saskatchewan Environment 2013.	
		SOIL NOTATIONS	
		10 Soil Investigation Site 31 Soil Sampling Site D4 Drill & Soil Sample Site to the 1.9m depth Soil Break Soil Phase gIAGS(35) Soil Unit 3 Depth of Topsoil (cm) Topography Class	
		<b>Topography Classes:</b> 1. 0 to 0.5% - level 2. >0.5 to 2% - nearly level 3. >2 to 5% - very gentle slopes 4. >5 to 10% - gentle slopes 5. >10 to 15% - moderate slopes 6. >15 to 30% - strong slopes 7. >30 to 45% - very strong slopes	
		LINE 3 REPLACEMENT PROGRAM ENVIRONMENTAL ALIGNMENT SHEETS	
		 A CH2M HILL Company	
		SCALE: 1:10,000	
		DATE: April 2015	
		SHEET: 001 of 019	
		PROJECT: L3RP_AS_Richardson_10K_V5.0	



MUNICIPAL AUTHORITY		RURAL MUNICIPALITY SHERWOOD NO. 159				
OWNERSHIP		PATENTED				
ENVIRONMENTAL PROTECTION PLAN	SEED MIX		N/A			
	TOPSOIL SALVAGE	PROCEDURE	FULL ROW; REDUCE WHERE APPROPRIATE			
		DEPTH (cm)	10-15	20	10-15	
	POTENTIAL SOILS ISSUES AND PROTECTION MEASURES	COMPACTION/RUTTING	COMPACTION AND RUTTING; EN-01			
		TOPSOIL				
		EROSION				
		TRENCH				
	GENERAL	[SALINE UPPER SOILS; EN-07]				
	OTHER POTENTIAL ISSUES AND PROTECTION MEASURES	WETLANDS				
		WATERCOURSES/HYDROLOGY				
WILDLIFE						
VEGETATION						
SOCIO-ECONOMICS						
CONSTRUCTION TIMING RESTRICTIONS						
BIOSECURITY						
LAND USE		CULTIVATED				
LEGEND						
	Valve Sites					
	Station Kilometre Post					
	Richardson Reroute					
	Highway/Paved Road					
	Gravel/Dirt/Loose Surface					
	Municipality Boundary					
	Provincial Boundary					
	Railway					
	Construction Kickoff Site					
	Construction Right-of-Way					
	Extra Workspace					
	Access/Shoofly					
	Terminal/Pump Station					
	Proposed Pump Station Expansion					
	Previously Approved Expansion Area					
	City / Town Boundary					
	Indian Reserve					
	Parks & Protected Areas					
Wetlands						
	Wetland					
	Non-wetland					
ENVIRONMENTAL SETTING	ECOREGION	MOIST MIXED GRASSLAND - REGINA PLAIN				
	SOILS PARENT MATERIAL	GLACIOLACUSTRINE				
	CLI SOILS CLASSIFICATION	SOIL CLI CLASS 2C AND 3X				
	WETLANDS					
	WATERCOURSES/HYDROLOGY					
	FISH HABITAT QUALITY					
	WILDLIFE & WILDLIFE HABITAT					
	VEGETATION					
SOCIO-ECONOMICS						
BIOSECURITY						
ENVIRONMENTAL PROTECTION PLAN NOTES		SOURCES		SOIL NOTATIONS		
Items included on these EAS were documented during the planning phase of the Line 3 Replacement Program. For all Environmental Notes (EN), refer to the index sheets in the EAS package. For example, EN-06 refers to Note 06 and has corresponding mitigation measures to be implemented during construction.  Feature identification numbers have been assigned to: - watercourses and waterbodies (AB-WC##, SK-WC##, MB-WC##); - wildlife features and areas (WF-##); and - wetlands (AB-##, SK-##, MB-##).  These numbers (i.e. AB-WC##) can be used to cross reference specific environmental features with the summary tables provided in the index sheets which provide additional information.  Although there is no reason to believe that there are any errors associated with the data used to generate this product itself, users of the data are advised that errors in the data may be present.		UTM Zone 13N Proposed Pipeline Current to April 2015 (V 5.0); Colour Imagery provided by Enbridge Pipeline Inc 2013 Licensed by Pictometry 2012; Roads: IHS Inc. 2015; Rural Municipalities/Cities/Towns: ISCS 2014, Manitoba Community Planning Services 2007, AltaLIS 2014; Hydrography: Natural Resources Canada 2007-2011; Railways: NRCan 2012; Indian Reserves: Government of Canada 2015; Parks & Protected Areas: MDC 2011; AESB Community Pasture: Saskatchewan Environment 2013.		       <b>Topography Classes:</b> 1. 0 to 0.5% - level 2. >0.5 to 2% - nearly level 3. >2 to 5% - very gentle slopes 4. >5 to 10% - gentle slopes 5. >10 to 15% - moderate slopes 6. >15 to 30% - strong slopes 7. >30 to 45% - very strong slopes		
		LINE 3 REPLACEMENT PROGRAM ENVIRONMENTAL ALIGNMENT SHEETS		 A CH2M HILL Company		
						SCALE: 1:10,000
						DATE: April 2015
						SHEET: 002 of 019
				PROJECT: L3RP_AS_Richardson_10K_V5.0		



MUNICIPAL AUTHORITY		RURAL MUNICIPALITY SHERWOOD NO. 159											
OWNERSHIP		PATENTED											
ENVIRONMENTAL PROTECTION PLAN	SEED MIX		N/A										
	TOPSOIL SALVAGE	PROCEDURE	FULL ROW; REDUCE WHERE APPROPRIATE										
		DEPTH (cm)	10-15	20	15	20	15	20	15	20	15		
	COMPACTION/RUTTING		COMPACTION AND RUTTING; EN-01										
	POTENTIAL SOILS ISSUES AND PROTECTION MEASURES	TOPSOIL											
		EROSION											
		TRENCH											
		GENERAL	SALINE UPPER SOILS; EN-07		SALINE UPPER SOILS; EN-07		SALINE UPPER SOILS; EN-07		SALINE UPPER SOILS; EN-07				
	OTHER POTENTIAL ISSUES AND PROTECTION MEASURES	WETLANDS	WETLAND; EN-09		WETLAND; EN-09				WETLAND; EN-09				
		WATERCOURSES/HYDROLOGY											
WILDLIFE													
VEGETATION													
SOCIO-ECONOMICS													
CONSTRUCTION TIMING RESTRICTIONS													
BIOSECURITY													
LAND USE		CULTIVATED											
LEGEND													
ENVIRONMENTAL SETTING	ECOREGION	MOIST MIXED GRASSLAND - REGINA PLAIN											
	SOILS PARENT MATERIAL	GLACIOLACUSTRINE											
	CLI SOILS CLASSIFICATION	SOIL CLI CLASS 2C AND 3X											
	WETLANDS	CLASS III (SK-1413)		CLASS IV (SK-1414)				CLASS III (SK-1415)					
	WATERCOURSES/HYDROLOGY												
	FISH HABITAT QUALITY												
	WILDLIFE & WILDLIFE HABITAT												
	VEGETATION												
	SOCIO-ECONOMICS												
	BIOSECURITY												
ENVIRONMENTAL PROTECTION PLAN NOTES		SOURCES		SOIL NOTATIONS				ENBRIDGE		LINE 3 REPLACEMENT PROGRAM ENVIRONMENTAL ALIGNMENT SHEETS		tera A CH2M HILL Company	
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MUNICIPAL AUTHORITY			RURAL MUNICIPALITY SHERWOOD NO. 159									
OWNERSHIP			PATENTED									
ENVIRONMENTAL PROTECTION PLAN	SEED MIX		N/A									
	TOPSOIL SALVAGE	PROCEDURE	FULL ROW; REDUCE WHERE APPROPRIATE									
		DEPTH (cm)	15	15-20	20	15-20	15					
	POTENTIAL SOILS ISSUES AND PROTECTION MEASURES	COMPACTION/RUTTING	COMPACTION AND RUTTING; EN-01									
		TOPSOIL										
		EROSION										
		TRENCH										
	OTHER POTENTIAL ISSUES AND PROTECTION MEASURES	GENERAL	[ SALINE UPPER SOILS; EN-07 ]									
		WETLANDS							WETLAND; EN-09			
		WATERCOURSES/HYDROLOGY										
WILDLIFE												
VEGETATION												
SOCIO-ECONOMICS												
CONSTRUCTION TIMING RESTRICTIONS												
LAND USE		CULTIVATED										
LEGEND												
ENVIRONMENTAL SETTING	ECOREGION	MOIST MIXED GRASSLAND - REGINA PLAIN										
	SOILS PARENT MATERIAL	GLACIOLACUSTRINE										
	CLI SOILS CLASSIFICATION	SOIL CLI CLASS 2C AND 3X										
	WETLANDS	CLASS III (SK-1416)										
	WATERCOURSES/HYDROLOGY											
	FISH HABITAT QUALITY											
	WILDLIFE & WILDLIFE HABITAT											
	VEGETATION											
	SOCIO-ECONOMICS											
	BIOSECURITY											
ENVIRONMENTAL PROTECTION PLAN NOTES			SOURCES			SOIL NOTATIONS				LINE 3 REPLACEMENT PROGRAM ENVIRONMENTAL ALIGNMENT SHEETS	 A CH2M HILL Company	SCALE: 1:10,000
<p>Items included on these EAS were documented during the planning phase of the Line 3 Replacement Program. For all Environmental Notes (EN), refer to the index sheets in the EAS package. For example, EN-06 refers to Note 06 and has corresponding mitigation measures to be implemented during construction.</p> <p>Feature identification numbers have been assigned to:</p> <ul style="list-style-type: none"><li>- watercourses and waterbodies (AB-WC##, SK-WC##, MB-WC##);</li><li>- wildlife features and areas (WF-##); and</li><li>- wetlands (AB-###, SK-###, MB-###).</li></ul> <p>These numbers (i.e. AB-WC##) can be used to cross reference specific environmental features with the summary tables provided in the index sheets which provide additional information.</p> <p>Although there is no reason to believe that there are any errors associated with the data used to generate this product itself, users of the data are advised that errors in the data may be present.</p>			<p>UTM Zone 13N Proposed Pipeline Current to April 2015 (V 5.0); Colour Imagery provided by Enbridge Pipeline Inc 2013 Licensed by Pictometry 2012; Roads: IHS Inc. 2015; Rural Municipalities/Cities/Towns: ISCS 2014; Manitoba Community Planning Services 2007, AltaLIS 2014; Hydrography: Natural Resources Canada 2007-2011; Railways: NRCan 2012; Indian Reserves: Government of Canada 2015; Parks &amp; Protected Areas: MDC 2011; AESB Community Pasture: Saskatchewan Environment 2013.</p>			<p>× 10 Soil Investigation Site</p> <p>⊙ 31 Soil Sampling Site</p> <p>⊙ D4 Drill &amp; Soil Sample Site to the 1.9m depth Soil Break</p> <p>— Soil Phase</p> <p>— Soil Unit</p> <p>glAGS(35) Depth of Topsoil (cm)</p> <p>3 Topography Class</p> <p><b>Topography Classes:</b></p> <ol style="list-style-type: none"><li>0 to 0.5% - level</li><li>&gt;0.5 to 2% - nearly level</li><li>&gt;2 to 5% - very gentle slopes</li><li>&gt;5 to 10% - gentle slopes</li><li>&gt;10 to 15% - moderate slopes</li><li>&gt;15 to 30% - strong slopes</li><li>&gt;30 to 45% - very strong slopes</li></ol>						
											DATE: April 2015	
											SHEET: 004 of 019	
											PROJECT: L3RP_AS_Richardson_10K_V5.0	



MUNICIPAL AUTHORITY		RURAL MUNICIPALITY SHERWOOD NO. 159														
OWNERSHIP		PATENTED														
ENVIRONMENTAL PROTECTION PLAN	SEED MIX		N/A													
	TOPSOIL SALVAGE	PROCEDURE	FULL ROW; REDUCE WHERE APPROPRIATE													
		DEPTH (cm)	15		20	10-15	20	10-15		20		15				
	POTENTIAL SOILS ISSUES AND PROTECTION MEASURES	COMPACTION/RUTTING	COMPACTION AND RUTTING; EN-01													
		TOPSOIL														
		EROSION														
		TRENCH														
	OTHER POTENTIAL ISSUES AND PROTECTION MEASURES	GENERAL	SALINE UPPER SOILS; EN-07				SALINE UPPER SOILS; EN-07				SALINE UPPER SOILS; EN-07					
		WETLANDS	WETLAND; EN-09		WETLAND; EN-09		WETLAND; EN-09				WETLAND; EN-09					
		WATERCOURSES/HYDROLOGY														
WILDLIFE																
VEGETATION																
SOCIO-ECONOMICS																
CONSTRUCTION TIMING RESTRICTIONS																
LAND USE	CULTIVATED															
LEGEND																
Valve Sites	Station Kilometre Post															
Richardson Reroute	Highway/Paved Road															
Gravel/Dirt/Loose Surface	Municipality Boundary															
Provincial Boundary	Railway															
Construction Kickoff Site	Construction Right-of-Way															
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Terminal/Pump Station	Proposed Pump Station Expansion															
Previously Approved Expansion Area	City / Town Boundary															
Indian Reserve	Parks & Protected Areas															
<b>Wetlands</b>																
Wetland	Non-wetland															
ENVIRONMENTAL SETTING	ECOREGION	MOIST MIXED GRASSLAND - REGINA PLAIN														
	SOILS PARENT MATERIAL	GLACIOLACUSTRINE														
	CLI SOILS CLASSIFICATION	SOIL CLI CLASS 2C AND 3X														
	WETLANDS	CLASS III (SK-1417)		CLASS III (SK-1417)		CLASS III (SK-1418)				CLASS I/CLASS II (SK-1419)						
	WATERCOURSES/HYDROLOGY															
	FISH HABITAT QUALITY															
	WILDLIFE & WILDLIFE HABITAT															
	VEGETATION															
SOCIO-ECONOMICS																
BIOSECURITY																
ENVIRONMENTAL PROTECTION PLAN NOTES		SOURCES		SOIL NOTATIONS				LINE 3 REPLACEMENT PROGRAM ENVIRONMENTAL ALIGNMENT SHEETS		 A CH2M HILL Company		SCALE: 1:10,000				
Items included on these EAS were documented during the planning phase of the Line 3 Replacement Program. For all Environmental Notes (EN), refer to the index sheets in the EAS package. For example, EN-06 refers to Note 06 and has corresponding mitigation measures to be implemented during construction.		UTM Zone 13N Proposed Pipeline Current to April 2015 (V 5.0); Colour Imagery provided by Enbridge Pipeline Inc 2013 Licensed by Pictometry 2012; Roads: IHS Inc. 2015; Rural Municipalities/Cities/Towns: ISCS 2014; Manitoba Community Planning Services 2007; AltaLIS 2014; Hydrography: Natural Resources Canada 2007-2011; Railways: NRCan 2012; Indian Reserves: Government of Canada 2015; Parks & Protected Areas: MDC 2011; AESB Community Pasture: Saskatchewan Environment 2013.		10 Soil Investigation Site 31 Soil Sampling Site D4 Drill & Soil Sample Site to the 1.9m depth Soil Break Soil Phase Soil Unit gIAGS(35) Depth of Topsoil (cm) 3 Topography Class								Topography Classes: 1. 0 to 0.5% - level 2. >0.5 to 2% - nearly level 3. >2 to 5% - very gentle slopes 4. >5 to 10% - gentle slopes 5. >10 to 15% - moderate slopes 6. >15 to 30% - strong slopes 7. >30 to 45% - very strong slopes		DATE: April 2015		
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Although there is no reason to believe that there are any errors associated with the data used to generate this product itself, users of the data are advised that errors in the data may be present.														PROJECT: L3RP_AS_Richardson_10K_V5.0		



MUNICIPAL AUTHORITY			RURAL MUNICIPALITY SHERWOOD NO. 159																
OWNERSHIP			PATENTED																
ENVIRONMENTAL PROTECTION PLAN	SEED MIX		N/A																
	TOPSOIL SALVAGE	PROCEDURE	FULL ROW; REDUCE WHERE APPROPRIATE																
		DEPTH (cm)	15	20	15	20	15	20	15	20	15	20	15						
	POTENTIAL SOILS ISSUES AND PROTECTION MEASURES	COMPACTION/RUTTING	COMPACTION AND RUTTING; EN-01																
		TOPSOIL																	
		EROSION																	
		TRENCH																	
	GENERAL	[SALINE UPPER SOILS; EN-07   SALINE UPPER SOILS; EN-07   SALINE UPPER SOILS; EN-07   [SALINE UPPER SOILS; EN-07   SALINE UPPER SOILS; EN-07]																	
	OTHER POTENTIAL ISSUES AND PROTECTION MEASURES	WETLANDS	[WETLAND; EN-09   WETLAND; EN-09   WETLAND; EN-09]																
		WATERCOURSES/HYDROLOGY																	
WILDLIFE																			
VEGETATION																			
SOCIO-ECONOMICS																			
CONSTRUCTION TIMING RESTRICTIONS																			
BIOSECURITY																			
LAND USE		CULTIVATED																	
LEGEND																			
ENVIRONMENTAL SETTING	ECOREGION		MOIST MIXED GRASSLAND - REGINA PLAIN																
	SOILS PARENT MATERIAL		GLACIOLACUSTRINE																
	CLI SOILS CLASSIFICATION		SOIL CLI CLASS 2C AND 3X																
	WETLANDS		[CLASS II (SK-1420)   CLASS II (SK-1421)   CLASS III (SK-1422)]																
	WATERCOURSES/HYDROLOGY																		
	FISH HABITAT QUALITY																		
	WILDLIFE & WILDLIFE HABITAT																		
	VEGETATION																		
	SOCIO-ECONOMICS																		
	BIOSECURITY																		
ENVIRONMENTAL PROTECTION PLAN NOTES			SOURCES			SOIL NOTATIONS						LINE 3 REPLACEMENT PROGRAM ENVIRONMENTAL ALIGNMENT SHEETS			 A CH2M HILL Company			SCALE: 1:10,000	
<p>Items included on these EAS were documented during the planning phase of the Line 3 Replacement Program. For all Environmental Notes (EN), refer to the index sheets in the EAS package. For example, EN-06 refers to Note 06 and has corresponding mitigation measures to be implemented during construction.</p> <p>Feature identification numbers have been assigned to:</p> <ul style="list-style-type: none"><li>- watercourses and waterbodies (AB-WC##, SK-WC##, MB-WC##);</li><li>- wildlife features and areas (WF-##); and</li><li>- wetlands (AB-###, SK-###, MB-###).</li></ul> <p>These numbers (i.e. AB-WC##) can be used to cross reference specific environmental features with the summary tables provided in the index sheets which provide additional information.</p> <p>Although there is no reason to believe that there are any errors associated with the data used to generate this product itself, users of the data are advised that errors in the data may be present.</p>			<p>UTM Zone 13N Proposed Pipeline Current to April 2015 (V 5.0); Colour Imagery provided by Enbridge Pipeline Inc 2013 Licensed by Pictometry 2012; Roads: IHS Inc. 2015; Rural Municipalities/Cities/Towns: ISCS 2014, Manitoba Community Planning Services 2007, AltaLIS 2014; Hydrography: Natural Resources Canada 2007-2011; Railways: NRCan 2012; Indian Reserves: Government of Canada 2015; Parks &amp; Protected Areas: MDC 2011; AESB Community Pasture: Saskatchewan Environment 2013.</p>			<p>× 10 Soil Investigation Site ⊙ 31 Soil Sampling Site ⊙ D4 Drill &amp; Soil Sample Site to the 1.9m depth Soil Break Soil Phase Soil Unit Depth of Topsoil (cm) 3 Topography Class</p> <p><b>Topography Classes:</b></p> <ol style="list-style-type: none"><li>0 to 0.5% - level</li><li>&gt;0.5 to 2% - nearly level</li><li>&gt;2 to 5% - very gentle slopes</li><li>&gt;5 to 10% - gentle slopes</li><li>&gt;10 to 15% - moderate slopes</li><li>&gt;15 to 30% - strong slopes</li><li>&gt;30 to 45% - very strong slopes</li></ol>												DATE: April 2015	
																		SHEET: 006 of 019	
																		PROJECT: L3RP_AS_Richardson_10K_V5.0	



MUNICIPAL AUTHORITY			RURAL MUNICIPALITY SHERWOOD NO. 159					
OWNERSHIP			PATENTED					
ENVIRONMENTAL PROTECTION PLAN	SEED MIX		N/A					
	TOPSOIL SALVAGE	PROCEDURE	FULL ROW; REDUCE WHERE APPROPRIATE					
		DEPTH (cm)	15					
	POTENTIAL SOILS ISSUES AND PROTECTION MEASURES	COMPACTION/RUTTING	COMPACTION AND RUTTING; EN-01					
		TOPSOIL						
		EROSION						
		TRENCH						
	OTHER POTENTIAL ISSUES AND PROTECTION MEASURES	GENERAL						
		WETLANDS						
		WATERCOURSES/ HYDROLOGY						
		WILDLIFE						
		VEGETATION						
		SOCIO-ECONOMICS						
	CONSTRUCTION TIMING RESTRICTIONS							
		BIOSECURITY						
LAND USE			CULTIVATED					
LEGEND								
<div><div><div><div><div></div><div></div></div><div>Valve Sites</div></div><div><div><div><div></div><div></div></div><div>Station Kilometre Post</div></div><div><div><div><div></div><div></div></div><div>Richardson Reroute</div></div><div><div><div><div></div><div></div></div><div>Highway/Paved Road</div></div><div><div><div><div></div><div></div></div><div>Gravel/Dirt/Loose Surface</div></div><div><div><div><div></div><div></div></div><div>Municipality Boundary</div></div><div><div><div><div></div><div></div></div><div>Provincial Boundary</div></div><div><div><div><div></div><div></div></div><div>Railway</div></div><div><div><div><div></div><div></div></div><div>Construction Kickoff Site</div></div><div><div><div><div></div><div></div></div><div>Construction Right-of-Way</div></div><div><div><div><div></div><div></div></div><div>Extra Workspace</div></div><div><div><div><div></div><div></div></div><div>Access/Shoofly</div></div><div><div><div><div></div><div></div></div><div>Terminal/Pump Station</div></div><div><div><div><div></div><div></div></div><div>Proposed Pump Station Expansion</div></div><div><div><div><div></div><div></div></div><div>Previously Approved Expansion Area</div></div><div><div><div><div></div><div></div></div><div>City / Town Boundary</div></div><div><div><div><div></div><div></div></div><div>Indian Reserve</div></div><div><div><div><div></div><div></div></div><div>Parks &amp; Protected Areas</div></div></div><div>Wetlands</div><div><div><div><div></div><div></div></div><div>Wetland</div></div><div><div><div><div></div><div></div></div><div>Non-wetland</div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div>								
ECOREGION						MOIST MIXED GRASSLAND - REGINA PLAIN		
SOILS PARENT MATERIAL						GLACIOLACUSTRINE		
CLI SOILS CLASSIFICATION						SOIL CLI CLASS 2C AND 3X		
WETLANDS								
WATERCOURSES/HYDROLOGY								
FISH HABITAT QUALITY								
WILDLIFE & WILDLIFE HABITAT								
VEGETATION								
SOCIO-ECONOMICS								
BIOSECURITY								
ENVIRONMENTAL PROTECTION PLAN NOTES			SOURCES					
Items included on these EAS were documented during the planning phase of the Line 3 Replacement Program. For all Environmental Notes (EN), refer to the index sheets in the EAS package. For example, EN-06 refers to Note 06 and has corresponding mitigation measures to be implemented during construction.			UTM Zone 13N Proposed Pipeline Current to April 2015 (V 5.0); Colour Imagery provided by Enbridge Pipeline Inc 2013 Licensed by Pictometry 2012; Roads: IHS Inc. 2015; Rural Municipalities/Cities/Towns: ISCS 2014, Manitoba Community Planning Services 2007, AltaLIS 2014; Hydrography: Natural Resources Canada 2007-2011; Railways: NRCan 2012; Indian Reserves: Government of Canada 2015; Parks & Protected Areas: MDC 2011; AESB Community Pasture: Saskatchewan Environment 2013.					
Feature identification numbers have been assigned to: - watercourses and waterbodies (AB-WC##, SK-WC##, MB-WC##); - wildlife features and areas (WF-##); and - wetlands (AB-###, SK-###, MB-###). These numbers (i.e. AB-WC##) can be used to cross reference specific environmental features with the summary tables provided in the index sheets which provide additional information. Although there is no reason to believe that there are any errors associated with the data used to generate this product itself, users of the data are advised that errors in the data may be present.			<div><div><div><div><div></div><div></div></div><div>× 10</div><div>Soil Investigation Site</div></div><div><div><div><div></div><div></div></div><div>⊙ 31</div><div>Soil Sampling Site</div></div><div><div><div><div></div><div></div></div><div>⊙ D4</div><div>Drill &amp; Soil Sample Site to the 1.9m depth</div></div><div><div><div><div></div><div></div></div><div>Soil Break</div></div><div><div><div><div></div><div></div></div><div>Soil Phase</div></div><div><div><div><div></div><div></div></div><div>Soil Unit</div></div><div><div><div><div></div><div></div></div><div>Depth of Topsoil (cm)</div></div><div><div><div><div></div><div></div></div><div>3</div><div>Topography Class</div></div></div></div></div><div><div>Topography Classes:</div><div>1. 0 to 0.5% - level</div><div>2. &gt;0.5 to 2% - nearly level</div><div>3. &gt;2 to 5% - very gentle slopes</div><div>4. &gt;5 to 10% - gentle slopes</div><div>5. &gt;10 to 15% - moderate slopes</div><div>6. &gt;15 to 30% - strong slopes</div><div>7. &gt;30 to 45% - very strong slopes</div></div></div></div></div></div></div></div>					
			LINE 3 REPLACEMENT PROGRAM ENVIRONMENTAL ALIGNMENT SHEETS					
 A CH2M HILL Company			SCALE: 1:10,000 DATE: April 2015 SHEET: 007 of 019 PROJECT: L3RP_AS_Richardson_10K_V5.0					



MUNICIPAL AUTHORITY				RURAL MUNICIPALITY SHERWOOD NO. 159				
OWNERSHIP				PATENTED				
ENVIRONMENTAL PROTECTION PLAN	SEED MIX				N/A			
	TOPSOIL SALVAGE	PROCEDURE	FULL ROW; REDUCE WHERE APPROPRIATE					
		DEPTH (cm)	15	20	10-15	20	10-15	
	POTENTIAL SOILS ISSUES AND PROTECTION MEASURES	COMPACTION/RUTTING	COMPACTION AND RUTTING; EN-01					
		TOPSOIL						
		EROSION						
		TRENCH						
	GENERAL	SALINE UPPER SOILS; EN-07			SALINE UPPER SOILS; EN-07			
	OTHER POTENTIAL ISSUES AND PROTECTION MEASURES	WETLANDS						
		WATERCOURSES/HYDROLOGY	WATERBODY (FISH); EN-10					
WILDLIFE								
VEGETATION								
SOCIO-ECONOMICS								
CONSTRUCTION TIMING RESTRICTIONS		AQ-SKR-WC1001 (APR1 TO MAY 31)						
BIOSECURITY								
LAND USE		CULTIVATED						
LEGEND								
	Valve Sites							
	Station Kilometre Post							
	Richardson Reroute							
	Highway/Paved Road							
	Gravel/Dirt/Loose Surface							
	Municipality Boundary							
	Provincial Boundary							
	Railway							
	Construction Kickoff Site							
	Construction Right-of-Way							
	Extra Workspace							
	Access/Shoofly							
	Terminal/Pump Station							
	Proposed Pump Station Expansion							
	Previously Approved Expansion Area							
	City / Town Boundary							
	Indian Reserve							
	Parks & Protected Areas							
Wetlands								
	Wetland							
	Non-wetland							
ENVIRONMENTAL SETTING	ECOREGION	MOIST MIXED GRASSLAND - REGINA PLAIN						
	SOILS PARENT MATERIAL	GLACIOLACUSTRINE						
	CLI SOILS CLASSIFICATION	SOIL CLI CLASS 2C AND 3X						
	WETLANDS							
	WATERCOURSES/HYDROLOGY	UNNAMED DRAINAGE DITCH (SKR-WC1001)						
	FISH HABITAT QUALITY	MODERATE						
	WILDLIFE & WILDLIFE HABITAT							
	VEGETATION							
	SOCIO-ECONOMICS							
	BIOSECURITY							
ENVIRONMENTAL PROTECTION PLAN NOTES		SOURCES		SOIL NOTATIONS				
Items included on these EAS were documented during the planning phase of the Line 3 Replacement Program. For all Environmental Notes (EN), refer to the index sheets in the EAS package. For example, EN-06 refers to Note 06 and has corresponding mitigation measures to be implemented during construction.		UTM Zone 13N Proposed Pipeline Current to April 2015 (V 5.0); Colour Imagery provided by Enbridge Pipeline Inc 2013 Licensed by Pictometry 2012; Roads: IHS Inc. 2015; Rural Municipalities/Cities/Towns: ISCS 2014, Manitoba Community Planning Services 2007, AltaUS 2014; Hydrography: Natural Resources Canada 2007-2011; Railways: NRCan 2012; Indian Reserves: Government of Canada 2015; Parks & Protected Areas: MDC 2011; AESB Community Pasture: Saskatchewan Environment 2013.		10 Soil Investigation Site 31 Soil Sampling Site D4 Drill & Soil Sample Site to the 1.9m depth Soil Break Soil Phase glAGS(35) Depth of Topsoil (cm) 3 Topography Class		<b>Topography Classes:</b> 1. 0 to 0.5% - level 2. >0.5 to 2% - nearly level 3. >2 to 5% - very gentle slopes 4. >5 to 10% - gentle slopes 5. >10 to 15% - moderate slopes 6. >15 to 30% - strong slopes 7. >30 to 45% - very strong slopes		
Feature identification numbers have been assigned to: - watercourses and waterbodies (AB-WC##, SK-WC##, MB-WC##); - wildlife features and areas (WF-##); and - wetlands (AB-###, SK-###, MB-###). These numbers (i.e. AB-WC##) can be used to cross reference specific environmental features with the summary tables provided in the index sheets which provide additional information. Although there is no reason to believe that there are any errors associated with the data used to generate this product itself, users of the data are advised that errors in the data may be present.						LINE 3 REPLACEMENT PROGRAM ENVIRONMENTAL ALIGNMENT SHEETS		
						 A CH2M HILL Company		
						SCALE: 1:10,000		
						DATE: April 2015		
						SHEET: 008 of 019		
						PROJECT: L3RP_AS_Richardson_10K_V5.0		



MUNICIPAL AUTHORITY			RURAL MUNICIPALITY SHERWOOD NO. 159													
OWNERSHIP			PATENTED													
ENVIRONMENTAL PROTECTION PLAN	SEED MIX		N/A													
	TOPSOIL SALVAGE	PROCEDURE	FULL ROW; REDUCE WHERE APPROPRIATE													
		DEPTH (cm)	10-15	20	10-15	20	10-15	20	10-15							
	POTENTIAL SOILS ISSUES AND PROTECTION MEASURES	COMPACTION/RUTTING	COMPACTION AND RUTTING; EN-01													
		TOPSOIL														
		EROSION														
		TRENCH														
	GENERAL			SALINE UPPER SOILS; EN-07		SALINE UPPER SOILS; EN-07		SALINE UPPER SOILS; EN-07								
		OTHER POTENTIAL ISSUES AND PROTECTION MEASURES	WETLANDS	WETLAND; EN-09				WETLAND; EN-09								
			WATERCOURSES/HYDROLOGY													
	WILDLIFE															
	VEGETATION															
	SOCIO-ECONOMICS															
	CONSTRUCTION TIMING RESTRICTIONS															
	BIOSECURITY															
LAND USE		CULTIVATED														
LEGEND																
<ul style="list-style-type: none"><li>Valve Sites</li><li>Station Kilometre Post</li><li>Richardson Reroute</li><li>Highway/Paved Road</li><li>Gravel/Dirt/Loose Surface</li><li>Municipality Boundary</li><li>Provincial Boundary</li><li>Railway</li><li>Construction Kickoff Site</li><li>Construction Right-of-Way</li><li>Extra Workspace</li><li>Access/Shoofly</li><li>Terminal/Pump Station</li><li>Proposed Pump Station Expansion</li><li>Previously Approved Expansion Area</li><li>City / Town Boundary</li><li>Indian Reserve</li><li>Parks &amp; Protected Areas</li></ul> <b>Wetlands</b> <ul style="list-style-type: none"><li>Wetland</li><li>Non-wetland</li></ul>																
ENVIRONMENTAL SETTING	ECOREGION	MOIST MIXED GRASSLAND - REGINA PLAIN														
	SOILS PARENT MATERIAL	GLACIOLACUSTRINE														
	CLI SOILS CLASSIFICATION	SOIL CLI CLASS 2C AND 3X														
	WETLANDS	CLASS III (SK-1423)											CLASS III (SK-1424)			
	WATERCOURSES/HYDROLOGY															
	FISH HABITAT QUALITY															
	WILDLIFE & WILDLIFE HABITAT															
	VEGETATION															
	SOCIO-ECONOMICS															
	BIOSECURITY															
ENVIRONMENTAL PROTECTION PLAN NOTES			SOURCES		SOIL NOTATIONS				LINE 3 REPLACEMENT PROGRAM ENVIRONMENTAL ALIGNMENT SHEETS	 A CH2M HILL Company	SCALE: 1:10,000					
<p>Items included on these EAS were documented during the planning phase of the Line 3 Replacement Program. For all Environmental Notes (EN), refer to the index sheets in the EAS package. For example, EN-06 refers to Note 06 and has corresponding mitigation measures to be implemented during construction.</p> <p>Feature identification numbers have been assigned to:</p> <ul style="list-style-type: none"><li>- watercourses and waterbodies (AB-WC##, SK-WC##, MB-WC##);</li><li>- wildlife features and areas (WF-##); and</li><li>- wetlands (AB-###, SK-###, MB-###).</li></ul> <p>These numbers (i.e. AB-WC##) can be used to cross reference specific environmental features with the summary tables provided in the index sheets which provide additional information.</p> <p>Although there is no reason to believe that there are any errors associated with the data used to generate this product itself, users of the data are advised that errors in the data may be present.</p>			<p>UTM Zone 13N Proposed Pipeline Current to April 2015 (V 5.0); Colour Imagery provided by Enbridge Pipeline Inc 2013 Licensed by Pictometry 2012; Roads: IHS Inc. 2015; Rural Municipalities/Cities/Towns: ISCS 2014, Manitoba Community Planning Services 2007, AltaLIS 2014; Hydrography: Natural Resources Canada 2007-2011; Railways: NRCan 2012; Indian Reserves: Government of Canada 2015; Parks &amp; Protected Areas: MDC 2011; AESB Community Pasture: Saskatchewan Environment 2013.</p>		<ul style="list-style-type: none"><li>× 10 Soil Investigation Site</li><li>⊙ 31 Soil Sampling Site</li><li>⊙ D4 Drill &amp; Soil Sample Site to the 1.9m depth Soil Break</li><li>Soil Phase</li><li>Soil Unit</li><li>Depth of Topsoil (cm)</li><li>glAGS(35)</li><li>3 Topography Class</li></ul> <p><b>Topography Classes:</b></p> <ol style="list-style-type: none"><li>0 to 0.5% - level</li><li>&gt;0.5 to 2% - nearly level</li><li>&gt;2 to 5% - very gentle slopes</li><li>&gt;5 to 10% - gentle slopes</li><li>&gt;10 to 15% - moderate slopes</li><li>&gt;15 to 30% - strong slopes</li><li>&gt;30 to 45% - very strong slopes</li></ol>						DATE: April 2015					
											SHEET: 009 of 019					
											PROJECT: L3RP_AS_Richardson_10K_V5.0					



MUNICIPAL AUTHORITY			RURAL MUNICIPALITY SHERWOOD NO. 159					
OWNERSHIP			PATENTED					
ENVIRONMENTAL PROTECTION PLAN	SEED MIX		N/A					
	TOPSOIL SALVAGE	PROCEDURE	FULL ROW; REDUCE WHERE APPROPRIATE					
		DEPTH (cm)	10-15					
	POTENTIAL SOILS ISSUES AND PROTECTION MEASURES	COMPACTION/RUTTING	COMPACTION AND RUTTING; EN-01					
		TOPSOIL						
		EROSION						
		TRENCH						
		GENERAL						
	OTHER POTENTIAL ISSUES AND PROTECTION MEASURES	WETLANDS	[WETLAND; EN-09]					
		WATERCOURSES/HYDROLOGY						
		WILDLIFE						
		VEGETATION						
		SOCIO-ECONOMICS						
		CONSTRUCTION TIMING RESTRICTIONS						
		BIOSECURITY						
LAND USE		CULTIVATED						
LEGEND								
Valve Sites								
Station Kilometre Post								
Richardson Reroute								
Highway/Paved Road								
Gravel/Dirt/Loose Surface								
Municipality Boundary								
Provincial Boundary								
Railway								
Construction Kickoff Site								
Construction Right-of-Way								
Extra Workspace								
Access/Shoofly								
Terminal/Pump Station								
Proposed Pump Station Expansion								
Previously Approved Expansion Area								
City / Town Boundary								
Indian Reserve								
Parks & Protected Areas								
Wetlands								
Wetland								
Non-wetland								
ENVIRONMENTAL SETTING	ECOREGION	MOIST MIXED GRASSLAND - REGINA PLAIN						
	SOILS PARENT MATERIAL	GLACIOLACUSTRINE						
	CLI SOILS CLASSIFICATION	SOIL CLI CLASS 2C AND 3X						
	WETLANDS	[CLASS II (SK-1425)]						
	WATERCOURSES/HYDROLOGY							
	FISH HABITAT QUALITY							
	WILDLIFE & WILDLIFE HABITAT							
	VEGETATION							
	SOCIO-ECONOMICS							
BIOSECURITY								
ENVIRONMENTAL PROTECTION PLAN NOTES		SOURCES	SOIL NOTATIONS			LINE 3 REPLACEMENT PROGRAM ENVIRONMENTAL ALIGNMENT SHEETS	 A CH2M HILL Company	SCALE: 1:10,000
Items included on these EAS were documented during the planning phase of the Line 3 Replacement Program. For all Environmental Notes (EN), refer to the index sheets in the EAS package. For example, EN-06 refers to Note 06 and has corresponding mitigation measures to be implemented during construction.		UTM Zone 13N Proposed Pipeline Current to April 2015 (V 5.0); Colour Imagery provided by Enbridge Pipeline Inc 2013 licensed by Pictometry 2012; Roads: IHS Inc. 2015; Rural Municipalities/Cities/Towns: ISCS 2014, Manitoba Community Planning Services 2007, AltaLIS 2014; Hydrography: Natural Resources Canada 2007-2011; Railways: NRCan 2012; Indian Reserves: Government of Canada 2015; Parks & Protected Areas: MDC 2011; AESB Community Pasture: Saskatchewan Environment 2013.	Soil Investigation Site Soil Sampling Site Drill & Soil Sample Site to the 1.9m depth Soil Break Soil Phase Soil Unit Depth of Topsoil (cm) Topography Class	<b>Topography Classes:</b> 1. 0 to 0.5% - level 2. >0.5 to 2% - nearly level 3. >2 to 5% - very gentle slopes 4. >5 to 10% - gentle slopes 5. >10 to 15% - moderate slopes 6. >15 to 30% - strong slopes 7. >30 to 45% - very strong slopes				DATE: April 2015
Feature identification numbers have been assigned to: - watercourses and waterbodies (AB-WC##, SK-WC##, MB-WC##); - wildlife features and areas (WF-##); and - wetlands (AB-##, SK-##, MB-##). These numbers (i.e. AB-WC##) can be used to cross reference specific environmental features with the summary tables provided in the index sheets which provide additional information. Although there is no reason to believe that there are any errors associated with the data used to generate this product itself, users of the data are advised that errors in the data may be present.				SHEET: 010 of 019				
								PROJECT: L3RP_AS_Richardson_10K_V5.0

ECOREGION

SOILS PARENT MATERIAL

CLI SOILS CLASSIFICATION

WETLANDS

WATERCOURSES/HYDROLOGY

FISH HABITAT QUALITY

WILDLIFE & WILDLIFE HABITAT

VEGETATION

SOCIO-ECONOMICS

BIOSECURITY



MUNICIPAL AUTHORITY			RURAL MUNICIPALITY SHERWOOD NO. 159					
OWNERSHIP			PATENTED					
ENVIRONMENTAL PROTECTION PLAN	SEED MIX		N/A					
	TOPSOIL SALVAGE	PROCEDURE	FULL ROW; REDUCE WHERE APPROPRIATE					
		DEPTH (cm)	10-15		20	10-15		
	POTENTIAL SOILS ISSUES AND PROTECTION MEASURES	COMPACTION/RUTTING	COMPACTION AND RUTTING; EN-01					
		TOPSOIL						
		EROSION						
		TRENCH						
	GENERAL	SALINE UPPER SOILS; EN-07						
	OTHER POTENTIAL ISSUES AND PROTECTION MEASURES	WETLANDS	WETLAND; EN-09		WETLAND; EN-09		WETLAND; EN-09	WETLAND; EN-09
		WATERCOURSES/HYDROLOGY						
		WILDLIFE						
		VEGETATION						
SOCIO-ECONOMICS								
CONSTRUCTION TIMING RESTRICTIONS								
BIOSECURITY								
LAND USE		CULTIVATED						
LEGEND								
	Valve Sites							
	Station Kilometre Post							
	Richardson Reroute							
	Highway/Paved Road							
	Gravel/Dirt/Loose Surface							
	Municipality Boundary							
	Provincial Boundary							
	Railway							
	Construction Kickoff Site							
	Construction Right-of-Way							
	Extra Workspace							
	Access/Shoofly							
	Terminal/Pump Station							
	Proposed Pump Station Expansion							
	Previously Approved Expansion Area							
	City / Town Boundary							
	Indian Reserve							
	Parks & Protected Areas							
Wetlands								
	Wetland							
	Non-wetland							
ENVIRONMENTAL SETTING	ECOREGION		MOIST MIXED GRASSLAND - REGINA PLAIN					
	SOILS PARENT MATERIAL		GLACIOLACUSTRINE					
	CLI SOILS CLASSIFICATION		SOIL CLI CLASS 2C AND 3X					
	WETLANDS		CLASS II (SK-1425)		CLASS II (SK-1426)	WETLAND COMPLEX (SK-1427)	CLASS III (SK-1428)	
	WATERCOURSES/HYDROLOGY							
	FISH HABITAT QUALITY							
	WILDLIFE & WILDLIFE HABITAT							
	VEGETATION							
	SOCIO-ECONOMICS							
	BIOSECURITY							
ENVIRONMENTAL PROTECTION PLAN NOTES			SOURCES			SOIL NOTATIONS		
<p>Items included on these EAS were documented during the planning phase of the Line 3 Replacement Program. For all Environmental Notes (EN), refer to the index sheets in the EAS package. For example, EN-06 refers to Note 06 and has corresponding mitigation measures to be implemented during construction.</p> <p>Feature identification numbers have been assigned to:</p> <ul style="list-style-type: none"><li>- watercourses and waterbodies (AB-WC##, SK-WC##, MB-WC##);</li><li>- wildlife features and areas (WF-##); and</li><li>- wetlands (AB-###, SK-###, MB-###).</li></ul> <p>These numbers (i.e. AB-WC##) can be used to cross reference specific environmental features with the summary tables provided in the index sheets which provide additional information.</p> <p>Although there is no reason to believe that there are any errors associated with the data used to generate this product itself, users of the data are advised that errors in the data may be present.</p>			<p>UTM Zone 13N Proposed Pipeline Current to April 2015 (V 5.0); Colour Imagery provided by Enbridge Pipeline Inc 2013 Licensed by Pictometry 2012; Roads: IHS Inc. 2015; Rural Municipalities/Cities/Towns: ISCS 2014, Manitoba Community Planning Services 2007, AltaLIS 2014; Hydrography: Natural Resources Canada 2007-2011; Railways: NRCan 2012; Indian Reserves: Government of Canada 2015; Parks &amp; Protected Areas: MDC 2011; AESB Community Pasture: Saskatchewan Environment 2013.</p>			<div><div><div><div><div>×</div><div>10</div></div><div>Soil Investigation Site</div></div><div><div><div>⊙</div><div>31</div></div><div>Soil Sampling Site</div></div><div><div><div>⊙</div><div>D4</div></div><div>Drill &amp; Soil Sample Site to the 1.9m depth Soil Break</div></div><div><div><div></div><div></div></div><div>Soil Phase</div></div><div><div><div></div><div></div></div><div>Soil Unit</div></div><div><div><div></div><div></div></div><div>Depth of Topsoil (cm)</div></div><div><div><div></div><div>3</div></div><div>Topography Class</div></div></div><div><div><b>Topography Classes:</b></div><div>1. 0 to 0.5% - level</div><div>2. &gt;0.5 to 2% - nearly level</div><div>3. &gt;2 to 5% - very gentle slopes</div><div>4. &gt;5 to 10% - gentle slopes</div><div>5. &gt;10 to 15% - moderate slopes</div><div>6. &gt;15 to 30% - strong slopes</div><div>7. &gt;30 to 45% - very strong slopes</div></div></div>		
<p>ENBRIDGE</p>			<p>LINE 3 REPLACEMENT PROGRAM</p> <p>ENVIRONMENTAL ALIGNMENT SHEETS</p>			<p>tera</p> <p>A CH2M HILL Company</p>		
						SCALE: 1:10,000		
						DATE: April 2015		
						SHEET: 011 of 019		
						PROJECT: L3RP_AS_Richardson_10K_V5.0		



MUNICIPAL AUTHORITY		RURAL MUNICIPALITY SHERWOOD NO. 159	
OWNERSHIP		PATENTED	
SEED MIX		N/A	
TOPSOIL SALVAGE		FULL ROW; REDUCE WHERE APPROPRIATE	
DEPTH (cm)		10-15	
COMPACTION/RUTTING		COMPACTION AND RUTTING; EN-01	
POTENTIAL SOILS ISSUES AND PROTECTION MEASURES			
TOPSOIL			
EROSION			
TRENCH			
GENERAL			
OTHER POTENTIAL ISSUES AND PROTECTION MEASURES			
WETLANDS			
WATERCOURSES/HYDROLOGY			
WILDLIFE			
VEGETATION			
SOCIO-ECONOMICS			
CONSTRUCTION TIMING RESTRICTIONS			
BIOSECURITY			
LAND USE		CULTIVATED	
LEGEND			
ECOREGION		MOIST MIXED GRASSLAND - REGINA PLAIN	
SOILS PARENT MATERIAL		GLACIOLACUSTRINE	
CLI SOILS CLASSIFICATION		SOIL CLI CLASS 2C AND 3X	
WETLANDS			
WATERCOURSES/HYDROLOGY			
FISH HABITAT QUALITY			
WILDLIFE & WILDLIFE HABITAT			
VEGETATION			
SOCIO-ECONOMICS			
BIOSECURITY			
ENVIRONMENTAL PROTECTION PLAN NOTES		SOURCES	
Items included on these EAS were documented during the planning phase of the Line 3 Replacement Program. For all Environmental Notes (EN), refer to the index sheets in the EAS package. For example, EN-06 refers to Note 06 and has corresponding mitigation measures to be implemented during construction. Feature identification numbers have been assigned to: - watercourses and waterbodies (AB-WC##, SK-WC##, MB-WC##); - wildlife features and areas (WF-##); and - wetlands (AB-###, SK-###, MB-###). These numbers (i.e. AB-WC##) can be used to cross reference specific environmental features with the summary tables provided in the index sheets which provide additional information. Although there is no reason to believe that there are any errors associated with the data used to generate this product itself, users of the data are advised that errors in the data may be present.		UTM Zone 13N Proposed Pipeline Current to April 2015 (V 5.0); Colour Imagery provided by Enbridge Pipeline Inc 2013 Licensed by Pictometry 2012; Roads: IHS Inc. 2015; Rural Municipalities/Cities/Towns: ISCS 2014; Manitoba Community Planning Services 2007, AltaLIS 2014; Hydrography: Natural Resources Canada 2007-2011; Railways: NRCan 2012; Indian Reserves: Government of Canada 2015; Parks & Protected Areas: MDC 2011; AESB Community Pasture: Saskatchewan Environment 2013.	
SOIL NOTATIONS		Topography Classes: 1. 0 to 0.5% - level 2. >0.5 to 2% - nearly level 3. >2 to 5% - very gentle slopes 4. >5 to 10% - gentle slopes 5. >10 to 15% - moderate slopes 6. >15 to 30% - strong slopes 7. >30 to 45% - very strong slopes	
		LINE 3 REPLACEMENT PROGRAM ENVIRONMENTAL ALIGNMENT SHEETS	
 A CH2M HILL Company		SCALE: 1:10,000 DATE: April 2015 SHEET: 012 of 019 PROJECT: L3RP_AS_Richardson_10K_V5.0	



MUNICIPAL AUTHORITY			RURAL MUNICIPALITY SHERWOOD NO. 159										RURAL MUNICIPALITY EDENWOLD NO. 158						
OWNERSHIP			PATENTED																
ENVIRONMENTAL PROTECTION PLAN	SEED MIX		N/A																
	TOPSOIL SALVAGE	PROCEDURE	FULL ROW; REDUCE WHERE APPROPRIATE																
		DEPTH (cm)	10-15	15-20	10-15	15-20	10-15	15-20	10-15	20	10-15								
	POTENTIAL SOILS ISSUES AND PROTECTION MEASURES	COMPACTION/RUTTING	COMPACTION AND RUTTING; EN-01																
		TOPSOIL																	
		EROSION																	
		TRENCH																	
	OTHER POTENTIAL ISSUES AND PROTECTION MEASURES	GENERAL	SALINE UPPER SOILS; EN-07			SALINE UPPER SOILS; EN-07			SALINE UPPER SOILS; EN-07			SALINE UPPER SOILS; EN-07							
		WETLANDS	WETLAND; EN-09			WETLAND; EN-09			WETLAND; EN-09			WETLAND; EN-09							
		WATERCOURSES/HYDROLOGY																	
		WILDLIFE																	
		VEGETATION																	
		SOCIO-ECONOMICS																	
	CONSTRUCTION TIMING RESTRICTIONS																		
		BIOSECURITY																	
	LAND USE		CULTIVATED																
LEGEND																			
ENVIRONMENTAL SETTING	ECOREGION	MOIST MIXED GRASSLAND - REGINA PLAIN																	
	SOILS PARENT MATERIAL	GLACIOLACUSTRINE																	
	CLI SOILS CLASSIFICATION	SOIL CLI CLASS 2C AND 3X																	
	WETLANDS	CLASS IV (SK-1429)			WETLAND COMPLEX (SK-1430)			WETLAND COMPLEX (SK-1430)			WETLAND COMPLEX (SK-1431)			WETLAND COMPLEX (SK-1431)			CLASS III (SK-1432)		
	WATERCOURSES/HYDROLOGY																		
	FISH HABITAT QUALITY																		
	WILDLIFE & WILDLIFE HABITAT																		
	VEGETATION																		
	SOCIO-ECONOMICS																		
	BIOSECURITY																		
ENVIRONMENTAL PROTECTION PLAN NOTES			SOURCES			SOIL NOTATIONS						LINE 3 REPLACEMENT PROGRAM ENVIRONMENTAL ALIGNMENT SHEETS			 A CH2M HILL Company			SCALE: 1:10,000	
Items included on these EAS were documented during the planning phase of the Line 3 Replacement Program. For all Environmental Notes (EN), refer to the index sheets in the EAS package. For example, EN-06 refers to Note 06 and has corresponding mitigation measures to be implemented during construction.			UTM Zone 13N Proposed Pipeline Current to April 2015 (V 5.0); Colour Imagery provided by Enbridge Pipeline Inc 2013 Licensed by Pictometry 2012; Roads: IHS Inc. 2015; Rural Municipalities/Cities/Towns: ISCS 2014, Manitoba Community Planning Services 2007, AltaLIS 2014; Hydrography: Natural Resources Canada 2007-2011; Railways: NRCan 2012; Indian Reserves: Government of Canada 2015; Parks & Protected Areas: MDC 2011; AESB Community Pasture: Saskatchewan Environment 2013.			<ul style="list-style-type: none"><li>× 10 Soil Investigation Site</li><li>⊙ 31 Soil Sampling Site</li><li>⊙ D4 Drill &amp; Soil Sample Site to the 1.9m depth Soil Break</li><li>Soil Phase</li><li>Soil Unit</li><li>glAGS(35) Depth of Topsoil (cm)</li><li>3 Topography Class</li></ul>												DATE: April 2015	
Feature identification numbers have been assigned to: <ul style="list-style-type: none"><li>- watercourses and waterbodies (AB-WC##, SK-WC##, MB-WC##);</li><li>- wildlife features and areas (WF-##); and</li><li>- wetlands (AB-###, SK-###, MB-###).</li></ul> These numbers (i.e. AB-WC##) can be used to cross reference specific environmental features with the summary tables provided in the index sheets which provide additional information.																		SHEET: 013 of 019	
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