ENVIRONMENTAL PROTECTION PLAN
FOR THE
WESTCOAST ENERGY INC.
DAWSON PROJECT

Updated ~~December 14, 2010~~February 3, 2011

[redacted]

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF DETAILS

1.0 INTRODUCTION

This Environmental Protection Plan (EPP) addresses Project-specific environmental protection measures for the proposed Dawson Project, as described in Section 2 of the ESA. These measures have been designed to minimize the potential impacts of the Project on the environment and meet the commitments made to government agencies and stakeholders during the planning stages of the Project. The EPP is intended as a companion document and supplement to Westcoast's Environmental Manual. Cross references to the Environmental Manual are provided in the EPP where applicable.

Westcoast Energy Inc., carrying on business as Spectra Energy Transmission (Westcoast), submitted an updated version of its Environmental Manual for Construction Projects in Canada (Environmental Manual) to the National Energy Board (NEB) on May 28, 2010. The Environmental Manual applies to the Dawson Project (the Project) and describes environmental protection policies, mitigative measures and contingency plans for projects generally.

This EPP describes the environmental protection measures to be used during the construction of the Project in order to minimize the potential impacts previously identified in Section 6 of the Environmental and Socio-Economic Assessment (ESA) for the Project. This EPP is written in construction specification format and should be read in conjunction with the Environmental Alignment Sheet which identifies where specific mitigative measures will be applied. Within each section of this EPP, measures to be addressed by Westcoast are noted, where applicable, as well as mitigative measures to be implemented by the Contractor.

Subject to regulatory approval, Project construction is scheduled to commence in January 2011 and will carry on until the fall of 2011. Pipeline construction is expected to occur during nonfrozen conditions. Clean-up will be conducted immediately following construction. If conditions permit, completion of final clean-up will take place in spring of 2012. This EPP has been prepared to address both winter construction during frozen conditions at the proposed plant site and spring/summer/fall construction during nonfrozen conditions.

1.1 Preconstruction Activities

The following construction preparation measures are the responsibility of Westcoast.

Activity	Preparation Measures
EPP and Contract	1. The EPP shall form part of the contract documents. The Environmental Alignment Sheets for the Project will form part of the construction drawings. Should any conflict in contract and EPP requirements arise, the more stringent conditions will apply.
Construction Documents	2. The Contractor and Westcoast inspectors will be provided the EPP, Environmental Alignment Sheet and copies of all approvals including the most recent updates and revisions.
Discipline	3. Those who show careless or wanton neglect of the environment or disregard the EPP shall be removed from the work.
Licences and Permits	4. All necessary licences and permits shall be obtained prior to the commencement of applicable local construction activities (see Appendix 2).
Pre-Job Meeting	5. Prior to the commencement of construction, a pre-job meeting shall be held with Westcoast's engineering and environmental staff, and the Project Contractors. This meeting is designed to make supervisory construction personnel aware of the key environmental issues, general environmental concerns, contingency plans, rules and regulations applicable to the construction area.
Environmental Inspection	6. Westcoast will have a qualified Environmental Inspector as part of the Project field staff for all phases of construction, as described in Section 8.0 of the ESA. Westcoast's Environmental Inspector will ensure the implementation of the EPP during all critical phases (topsoil stripping and replacement; grading; watercourse crossings; and clean-up).
Environmental Training	7. All Project personnel, including visitors to the right-of-way and plant site, will receive the appropriate level of environmental training before they are allowed to access any development site associated with the Project, as described in Section 8.0 of the ESA. Further details are provided in Section 1.2.3 of this EPP.
Traffic Management	8. Prior to the commencement of construction, a traffic management plan will be prepared by the Project contractor, in consultation with Westcoast, which will describe specific measures and procedures for vehicular traffic associated with construction of the Project. This Plan will be implemented throughout Project construction.

1.2 Environmental Compliance

1.2.1 Accountability

The Environmental Inspector will be accountable for ensuring environmental compliance during the construction of the Project. All incidents that qualify as being in non-compliance of applicable laws, commitments made by Westcoast and/or specific approval conditions by regulators, shall be reported to the Environmental Inspector. The Environmental Inspector shall take necessary steps to rectify the situation through appropriate notification of regulators, implementation of suitable mitigation measures and record keeping of the circumstances that resulted in the noncompliance, any remedial measures taken and any recommendations for future monitoring.

1.2.2 Decision Making Criteria

The Environmental Inspector will consider the following criteria when deciding which protection measure(s) and/or procedures to implement during construction of the Project:

- site conditions at the time of construction (*e.g.,* slope gradient and aspect, soil texture, frozen/nonfrozen surface, etc.);
- weather conditions at the time of construction (*e.g.,* wind, precipitation forecast, air temperature, etc.);
- equipment and/or materials availability at the time of construction;
- contractor experience with conducting specific construction techniques; and
- inspection staff experience with implementing applicable protection measures and/or procedures.

1.2.3 Environmental Training

All Project personnel, including visitors to the right-of-way, will receive the appropriate level of environmental training before they are allowed to access any development site associated with the Project. Environmental training will include, at a minimum, the following:

- the process(es) to follow should an environmental feature be located and/or disturbed during construction;
- initial response should a spill of any controlled substance occur; and
- the expectation that speed limits and signage, flagging and/or fences delineating environmental features shall be respected at all times.

2.0 ENVIRONMENTAL SCOPE OF WORK

The purpose of this section is to provide the Contractor with a brief overview of the environmental issues associated with the Project and to identify any mitigative measures necessary to address those issues that differ from routine pipeline construction. Construction activities that could affect these issues or require the implementation of nonroutine mitigative measures will be more carefully scrutinized by Westcoast inspection staff and government representatives.

This scope of work identifies:

- the general environmental setting of the Project;
- environmental concerns that may require specific mitigative measures; and
- mitigative measures that are unique or are not routine during pipeline construction.

2.1 Environmental Setting

- The Project lies on privately owned land within the Agriculture/Settlement Resource Management Zone of the Dawson Creek Land and Resource Management Plan (LRMP);
- the proposed plant site is located on previously disturbed hay lands;
- the proposed Bessborough Pipeline will parallel existing linear disturbances for 100% of its length and crosses 0.4 km of agricultural land and 0.6 km of wooded land;
- the proposed Liquids Handling Loop Pipeline will parallel linear disturbances for 50% of its length and is located entirely within disturbed hay land;
- the proposed access road will be within wooded land for approximately 350 m and the remaining 450 m will be constructed to follow an existing trail which is currently used for agricultural purposes;
- the Project is located within the Kiskatinaw River and Lower Peace River watershed groups. The proposed pipeline route crosses one unnamed tributary to Dawson Creek which is categorized as an S6 (nonfish-bearing) watercourse; and
- the Project lies within the Boreal White and Black Spruce Biogeoclimatic Zone.

2.2 Key Mitigative Measures

Mitigative measures that could be applied to address the environmental concerns noted above include:

- isolated open cut pipeline crossing of the unnamed tributary to Dawson Creek;
- implementation of erosion and sediment control where required (*e.g.*, unnamed tributary to Dawson Creek);
- soils handling procedures as described in the soil assessment to maintain soil capability following construction;
- implementation of a traffic management plan, including provisions to reduce vehicle packing; and
- salvage of any merchantable timber.

3.0 NOTIFICATION OF CONCERNED PARTIES

Goal

To minimize interference with other land uses and to appraise relevant government personnel prior to, and if warranted, during construction activities.

Company Measures

The following measures are the responsibility of Westcoast.

Contacts	Measures
Regulatory Authorities	1. Notify the NEB prior to construction as directed in the Order. Contact shall be maintained until Project completion. 2. Notify applicable provincial authorities (*i.e.*, BC Ministry of Environment [MOE]) prior to construction as directed in any provincial authorizations and permits (see Appendix 4, Contacts). Contact shall be maintained until Project completion. 3. Notify the BC MOE Regional Habitat Officer 45 days (min.) prior to commencement of vehicle water crossing installation or water crossing construction in accordance with Section 9 of the *Water Act*. Notify the Regional Office within 72 hours in the event of a contravention of the *Water Act*. 4. Notify the MOE representatives if instream blasting is necessary. 5. Contact the BC Ministry of Forests and Range (MOFR) District Office to obtain a Timber Mark if salvageable timber is to be salvaged and hauled.
Government Liaison	6. Regular liaison with government field representatives during construction will be the responsibility of Westcoast's Environmental Inspector.
Aboriginal Groups	7. Notify representatives of First Nations and Aboriginal groups of the proposed construction schedule unless otherwise specified in agreements.
Landowner and Lessees	8. Notify landowners and lessees, including those who live adjacent to the proposed access routes, prior to initiation of construction, of construction details including the Project schedule.

Contractor Measures

The following measures are to be implemented by the Contractor.

Contacts	Measures
Local Authorities	9. Notify Utility Officer(s) if required by road crossing agreements prior to construction.
Water Users	10. Notify appropriate authorities and licensees if required by terms and conditions of approvals, prior to commencement of water crossing construction and prior to withdrawing water for hydrostatic testing.
Resource Companies	11. Notify applicable companies for road and foreign line crossings, if required, by crossing and road use agreements.
Environmental Inspector	12. Notify the Environmental Inspector 12 hours (minimum) prior to commencement of water crossing construction.

See Appendix 4 for a more complete list of persons to contact.

4.0 GENERAL ENVIRONMENTAL PROTECTION MEASURES

General environmental protection specifications are provided in Section 6.1 of the Environmental Manual for Construction Projects in Canada. Project-specific details are provided below. Subsequent sections of the EPP provide detailed specifications for each phase of plant and pipeline construction.

Contractor Measures

The Contractor shall be responsible for the implementation of the following measures.

Activity/Concern	Mitigation Measures
Pre-job Meeting	1. Key Contractor staff will be required to attend a pre-job meeting with Westcoast's construction management and inspection staff.
Scheduling	2. Schedule clearing construction activities outside of the time when most migratory birds are nesting (generally considered to be May 1 to July 31). 3. Ensure that all necessary equipment and materials are onsite and ready for installation prior to commencing instream work. Complete all work as quickly as practical to minimize the duration of disturbance.
Contingency Plans	4. Review the following documents prior to commencement of construction: • The emergency contacts list (Appendix 3) • Extreme Weather Contingency Plan (Section 6.11.4 of the Environmental Manual) • Contaminated Soils Contingency Plan (Section 6.11.6 of the Environmental Manual) • Flood and Excessive Flow Contingency Plan (Section 1 of Appendix 5) • Fire Contingency Plan (Section 2 of Appendix 5) • Wet/Thawed Soils Contingency Plan (Section 3 of Appendix 5) • Soil Handling Contingency Plan (Section 4 of Appendix 5) • Soil Erosion Contingency Plan (Section 5 of Appendix 5) • Siltation of Watercourse Contingency Plan (Section 6 of Appendix 5) • Spill Contingency Plan (Section 7 of Appendix 5) • Plant Species and Ecological Communities of Concern Discovery Contingency Plan (Section 8 of Appendix 5) • Wildlife Species of Concern Discovery Contingency Plan (Section 9 of Appendix 5) • Wildlife Encounter Contingency Plan (Section 10 of Appendix 5) • Heritage Resource Discovery Contingency Plan (Section 11 of Appendix 5) 5. All key personnel on the right-of-way and plant site should be aware of these plans.
Wet Conditions	6. In the event of wet or thawed soils, refer to Section 6.1, items 12 to 15 and Section 6.3.2, Item 10 of the Environmental Manual and to the Wet/Thawed Soils Contingency Plan (Section 3 of Appendix 5).
Weeds	7. As directed in Section 6.1, item 16 of the Environmental Manual, all construction equipment shall arrive on the right-of-way and plant site in a clean condition to minimize the risk of weed introduction. Any equipment which arrives unclean shall not be allowed on the right-of-way until it has been cleaned off at a suitable location.

Activity/Concern	Mitigation Measures
Weeds (cont'd)	8. Prior to the start of construction (in the event construction occurs during spring or summer), it may be desirable to manage weeds present along the proposed right-of-way and plant site to prevent the setting of further seed, using the following recommendations, depending on the species and conditions present. • Large areas of weeds may be mowed prior to seed maturation. • Any cuttings that are beginning to produce flower buds should be collected and burned, or hauled to an appropriate facility, so the seed does not mature and disperse onsite. 9. If other areas of concern are identified for weedy species, prior to or during construction, by the Chief and/or Environmental Inspector, local weed specialist or landowners, all equipment involved in topsoil handling at weed-infested sites will be cleaned with a shovel and broom or compressed air prior to leaving the location. 10. Based on landowner request or construction specifications, additional areas may be identified where it is also deemed appropriate to clean right-of-way preparation and topsoil handling equipment with shovels and brooms or compressed air before proceeding to adjacent land. 11. Any sites where equipment was specifically cleaned due to concerns associated with weeds will be recorded and monitored during the following growing season. 12. Monitor weed growth on topsoil piles during the course of construction and corrective measures (*i.e.*, spraying) will be conducted if warranted. 13. Identify and keep a log of all equipment that has been verified as being cleaned of soil potentially holding weed seeds and/or clubroot disease spores. Provide this log to the Environmental Inspector for record keeping.
Clubroot Disease	14. Ensure any equipment that is brought from areas where clubroot disease has been identified (Edmonton, Alberta area including Sturgeon County, Strathcona County, Strathcona City, Leduc County and Flagstaff County), is sanitized by misting with a weak disinfectant (1-2%) (*i.e.*, bleach solution) following steam or high pressure water cleaning.
Spill Prevention	15. The Contractor shall ensure that during the course of the Project no fuel, lubricating fluids, hydraulic fluids, methanol, antifreeze, herbicides, biocides, or other chemicals are dumped on the ground or into the unnamed tributary to Dawson Creek. Follow the Spill Contingency Plan (Section 7 of Appendix 5) in the event of a spill.
Equipment Refuelling and Servicing	16. During refuelling and lubrication of equipment, ensure spills are prevented by following the guidelines provided in Section 6.1, item 7 of the Environmental Manual.
Noise	17. Ensure that noise abatement equipment (*e.g.*, mufflers) on machinery is in good working order to control noise levels. Take reasonable measures to control construction related noise near residential areas. Alter equipment, erect noise barriers or change the work schedule if excessive noise becomes a nuisance to nearby residents.
Air Quality/ Emissions	18. Use well maintained equipment to minimize emissions. 19. Minimize unnecessary idling of Project equipment. 20. Utilize multi-passenger vehicles for the transport of crews to and from job sites to the extent practical to minimize emissions during construction.

Activity/Concern	Mitigation Measures
Air Quality/ Emissions (cont'd)	21. Control dust (*i.e.,* watering of access, plant site or right-of-way) during construction and reclamation activities, if warranted.
Hazardous Materials and Waste Management	22. Manage Hazardous Materials and Waste as directed in Section 6.1, items 8 to 11 of the Environmental Manual.
Garbage	23. Collect waste material and remove from the right-of-way and plant site on a regular basis. Ensure waste materials, including hazardous wastes, are contained and removed to the appropriate location and recycled where practical. 24. All garbage will be stored in bear-proof containers when potential bear/human conflicts may occur.
Roads, Access and Shoo-Flies	25. Construction activities shall be confined to the allotted right-of-way and facility site. Construction traffic shall be restricted to existing roads, the right-of-way, facility site and approved access. All roads damaged by construction vehicles shall be repaired to preconstruction conditions. All traffic safety and road closure regulations shall be followed. 26. Construction traffic shall be restricted to the trench area or work side of the right-of-way to reduce the area subjected to potential soil compaction.
Watercourses	27. General environmental protection measures to minimize siltation, maintain streamflow and prevent water pollution/contamination during construction of the water crossing are provided in Section 6.6 of the Environmental Manual. 28. Restore disturbed bed and banks of unnamed tributary to Dawson Creek to as close as preconstruction condition as practical. 29. Notify BC MOE Regional Habitat Officer 45 days (min.) prior to commencement of pipeline water crossing construction. Abide by all terms and conditions of approvals as dictated by the BC MOE.
Erosion and Siltation	30. Soil erosion and water siltation shall be prevented or controlled to the satisfaction of Westcoast's Inspectors and the landowner, as directed in Section 6.2.2 of the Environmental Manual. The Contractor will make available personnel and equipment to control erosion when warranted (see Section 5 of Appendix 5).
Wildlife	31. Follow the direction provided in Section 6.8 of the Environmental Manual and in the Traffic Management Plan to protect wildlife.
Fires	32. Complete and implement all recommendations of the Forest Fire Prevention Risk Assessment prior to initiating Project activities in forested areas (Section 2 of Appendix 5). 33. Designate a Fire Boss (*i.e.*, on-shift foreman) prior to commencement of construction. The Fire Boss will be suitably trained in the areas of fire suppression techniques, fire behaviour and fire line safety, and will be familiar with fire-fighting techniques and equipment. The Fire Boss will be equipped with mobile communication equipment so that contact with local fire protection agencies is not delayed. 34. Construction crews will be provided with adequate fire fighting equipment for the conditions in compliance with BC MOFR requirements. Note that all crews will carry at minimum one fully charged fire extinguisher. 35. Inform construction crews of fire hazards, locations of fire-fighting equipment and fire suppression procedures during regular safety briefings. All personnel shall be made aware of proper disposal methods for welding rods, cigarette butts and other hot or burning material.

Activity/Concern	Mitigation Measures
Fires (cont'd)	36. Park all vehicles in cleared/mowed, open areas within the approved work limits. Vehicles will not be parked on readily combustible areas such as tall dry grass or shrubs when the fire hazard is high. 37. Maintain the exhaust and engine systems of equipment in good working condition. All machines will be kept free of accumulations of dried grass or oily material. All fuel, oil and hydraulic lines will be in sound condition and radiators will be checked periodically to ensure that they are free of obstructions that may cause overheating. Construction equipment will be equipped with spark arrestors or mufflers where appropriate and in compliance with the safety standards. 38. Implement the Fire Contingency Plan (Section 2 of Appendix 5) and notify proper authorities in the event of an uncontrolled fire.
Archaeological or Historical Discovery	39. Work in proximity to archaeological or historical sites discovered during construction shall be suspended. No work at that particular location shall continue until permission is granted by the Heritage Branch of the BC Ministry of Natural Resource Operations.

5.0 SURVEYING AND CLEARING

Goal

To restrict the Project footprint to approved workspace and to limit the disturbance to vegetation (*i.e.*, crops, merchantable timber and native vegetation) to the extent practical. General environmental protection measures to be implemented to achieve this goal are provided in Section 6.4 of the Environmental Manual and Project-specific measures are provided below.

Company Measures

The following measures are the responsibility of Westcoast.

Activity/Concern	Mitigation Measures
Staking	1. Stake the right-of-way for the pipelines as directed in Section 6.4.1, Item 1 of the Environmental Manual, and so the unnamed tributary to Dawson Creek is crossed perpendicularly and slopes are ascended or descended along the fall line. 2. Stake the facility site and associated access as directed in Section 6.4.1, Item 1 of the Environmental Manual. 3. Stake both boundaries of the access road right-of-way, as well as any additional temporary workspace.
Schedule	4. Ensure the clearing contractor removes timber and/or mows agronomic grasses from the right-of-way and temporary workspace prior to the onset of the critical bird nesting season in the spring (typically May 15). See the Environmental Alignment Sheet for locations to be precleared and/or premowed.
Workspace	5. Identify the need for extra workspace prior to construction. Take extra workspace at: • sharp sidebends as well as foreign line and road crossings to ensure sufficient separation (min. 1 m) between topsoil and spoil piles; • sidehills and on hummocky terrain to ensure sufficient storage space for graded material; • locations where deep topsoils are identified (over 25 cm); and • unnamed tributary to Dawson Creek crossing to ensure room to permit storage of topsoil and spoil a sufficient distance back from the top of the bank. Note that a vegetative buffer is to be left in place at the unnamed tributary to Dawson Creek crossing unless otherwise approved by the Environmental Inspector.
Notification / Approvals	6. Notify the BC MOE Regional Habitat Officer (Appendix 4) 45 days (min.) prior to commencement of vehicle water crossing installation, as directed in the Standards and Best Practices for Instream Works (BC Ministry of Water, Land and Air Protection 2004).
Preconstruction Wildlife Survey	7. In the event clearing must take place between May 1 and July 31, conduct a breeding bird survey of forested or pasture lands prior to clearing to ensure no migratory birds are nesting along the proposed right-of-way and consult with Environment Canada and BC MOE. 8. In the event of a discovery, follow the Wildlife Species of Concern Discovery Contingency Plan (Section 9 of Appendix 5).

Contractor Measures

The following measures are to be implemented by the Contractor.

Activity/Concern	Mitigation Measures
Workspace	9. The Contractor shall conduct a constructability review of the proposed right-of-way and workspace. If additional workspace is required during construction, Westcoast will obtain permission from the landowner prior to taking additional workspace in the field.
Fences	10. Brace fences properly before cutting. Install gates in fences crossed by the right-of-way. Close gates after use.
Survey Slash Lines	11. Fell all timber onto the right-of-way during survey line clearing. No fallen or leaning trees shall be permitted off right-of-way or in the unnamed tributary to Dawson Creek.
Bar Ditch Ramps	12. Salvage topsoil from the area where upper B (upper subsoil) horizon will be removed for use as ditch ramping material (see Detail No. 1, Appendix 1). Use the Environmental Alignment Sheet as a guide for depth of topsoil to be salvaged. 13. Salvage a maximum of 15 cm of the upper B (upper subsoil) horizon for use as ditch ramping material at road crossings located adjacent to cultivated, hay or seeded pasture lands. Construct bar ditch ramps with subsoil on all land uses unless otherwise approved by the landowner or Environmental Inspector. 14. Install culverts in bar ditch ramps to maintain drainage. Culvert specifications will be determined by the Project engineer.
Foreign Pipelines	15. Construct ramps on the work side of the right-of-way over existing foreign pipelines as per Crossing Agreements. 16. Construct ramps on the access road over existing foreign pipelines as per Crossing Agreements.
Hot Line Exposure/ Hydrovac	17. Salvage topsoil prior to exposing hot lines. Topsoil salvage is not required prior to exposing hotlines for holes less than 1 m in diameter if soil will be removed using a hydrovac where the area to be exposed will be subsequently subject to topsoil salvage as part of right-of-way preparation activities. 18. In the event of contaminated soils discovery during hydrovac activities, follow the guidance provided in the Contaminated Soils Contingency Plan (Section 6.11.6 of the Environmental Manual) and the procedures outlined in Westcoast's Recommended Soil and Water Handling Procedures during Excavation of Potential Contamination (Appendix 6). 19. Empty the hydrovac truck onto subsoil at approved locations (*e.g.,* at road crossings where the topsoil has been stripped). Ensure that hydrovac material is contained within the designated release area (*i.e.,* will not migrate to a waterbody or onto topsoil).
Wetlands	20. Minimize the removal of vegetation and the disturbance of soil adjacent to wetlands. 21. Narrow down the proposed area of disturbance and protect the wetland by using fencing, clearly mark the wetland boundaries using flagging and limit traffic in the vicinity of the flagged area.

Activity/Concern	Mitigation Measures
Watercourse	22. Remove only that vegetation adjacent to the unnamed tributary to Dawson Creek that is necessary and, on the pipeline right-of-way, leave a minimal disturbance zone of at least 10 m adjacent to the unnamed tributary to Dawson Creek as directed in Section 6.6.1, Items 13 to 17, of the Environmental Manual. 23. With the exception of equipment required to construct the plant access vehicle crossing at the unnamed tributary to Dawson Creek or to travel over the vehicle crossing, no clearing equipment shall be permitted to operate within 5 m of the unnamed tributary to Dawson Creek in accordance with the Timber Harvesting Practices Regulation of the *Forest Practices Code of BC Act*. 24. Obtain and mark extra temporary workspace, if warranted, prior to initiation of instream work. Ensure temporary workspace does not encroach within the vegetated buffers.
Vegetation Clearing	25. Use brushcutters, brushhogs or other equipment which will result in minimal terrain disturbance to clear timber and brush to assist in maintaining an intact ground surface in areas where grading is not warranted.
Grubbing	26. Grub tree roots (where required) with a brush rake attachment on the bulldozer to preserve topsoil. 27. Minimize the width of grubbing through wet areas during construction to facilitate the restoration of shrub communities. 28. Restrict root grubbing in wet areas to avoid creation of bog holes. 29. Consider using a stump mulcher rather than grubbing on areas where stripping and grubbing are not necessary. 30. Restrict grubbing within 2 m of the edge of the right-of-way to prevent damaging adjacent trees. 31. Restrict root grubbing near the unnamed tributary to Dawson Creek. Do not grub within vegetated buffers adjacent to the unnamed tributary to Dawson Creek except along the trench line and spoil pile area (only if deemed absolutely necessary). Clearing and grading within the vegetated buffer may be approved if completion of these activities will result in a reduction in erosion or sedimentation risk. Clearing and grading within the vegetated buffer will be subject to the approval of the Environmental Inspector. 32. Where grading or ground preparation are not necessary, mow surface vegetation (shrubs, small trees, etc.) to ground level rather than grubbing, to encourage more rapid regeneration of vegetation.
Leaning and Damaged Trees	33. Fell all trees damaged during construction activities immediately. Do not postpone felling or painting of damaged trees until clean-up. Remove any trees that fall off right-of-way.
Slash Piling	34. Use appropriate equipment to push slash and nonmerchantable timber into piles along the centerline of the right-of-way or to a side of the right-of-way that has been previously cleared. This will facilitate preservation of any topsoil. Leave a firebreak (8 m minimum) at 60 m (maximum) intervals.
Slash Disposal	35. Dispose of slash and stumps as directed in Section 6.4.1, items 17 to 24 of the Environmental Manual. 36. Implement Westcoast's Forest Fire Prevention Risk Assessment (Section 2 of Appendix 5) prior to burning slash.

Activity/Concern	Mitigation Measures
Slash Disposal (cont'd)	37. Restrict burning of slash to areas where topsoil has been pre-stripped and avoid burning over peaty soils. 38. Unless otherwise approved by the appropriate authority, burning will not be undertaken within 100 m of waterbodies. 39. Implement techniques to limit smoke production including limiting pile size, minimizing moisture content (*e.g.*, minimize snow content in burn piles), minimize soil in burn piles and maintaining loose burning piles.
Hay/Crops	40. Arrange for landowner or lessee to harvest crops or hay, if practical. Mow any remaining crops or hay along the right-of-way and at the plant site to facilitate topsoil handling.

6.0 FACILITIES CONSTRUCTION

6.1 TOPSOIL SALVAGE AND GRADING

Goal

To minimize impacts to soil capability, surface drainage patterns, land use and wildlife habitat.

General environmental protection measures to be implemented to achieve this goal are provided in Section 6.3 of the Environmental Manual. Project-specific measures are detailed below.

Contractor Measures

The following measures are to be implemented by the Contractor.

Activity/Concern	Mitigation Measures
Site Preparation	1. Identify and locate all foreign lines and underground facilities prior to starting construction or soils handling activities. 2. Ensure the working area is sufficient for all planned construction activities. 3. Confine equipment maintenance activities to designated areas or use secondary containment devices (*e.g.*, drip pans and pails, cellar installation, catch basins, pit liners) to collect fluids when maintaining equipment onsite. 4. Do not drive or set equipment on portions of the facility site where unstripped and unprotected topsoil is present, to avoid rutting and subsequent soil damage.
Topsoil Salvage	5. Strip all available topsoil from the access road and areas of the facility site where grading or surface gravelling will be conducted. 6. Store topsoil in low, gently sloping berms along the most appropriate edges of the access road and facility site as directed by the Environmental Inspector. 7. Suspend topsoil salvage activities if soil conditions become saturated, to prevent rutting and mixing of surface material with subsoils. 8. Leave gaps in the topsoil windrow along the access road, if warranted, at obvious drainages. 9. Do not strip topsoil from areas of the access road right of way or facility site where grading and/or gravelling is not required and construction activities will not result in mixing of surface material and subsoil or excessive damage to the topsoil. 10. Salvage all available topsoil as directed in the soil survey. Where soils are not readily distinguishable by colour, the Environmental/Grading Inspector will provide direction based on an evaluation of soil texture and structure as well as the recommended depths noted in the soils survey and on the Environmental Alignment Sheet. 11. Locate topsoil berms along the boundaries of the plant site and access road so they do not alter natural drainage patterns and are accessible and available for replacement during final reclamation and away from: grade, subsoil materials; construction activities; and day-to-day operations. If feasible, locate them on the upslope side of the site to avoid contamination from accidental spills. 12. Ensure that the location of the topsoil stockpile berms are noted so they can be easily identified when required for abandonment of the site.

Activity/Concern	Mitigation Measures
Topsoil Salvage (cont'd)	13. Ensure that topsoil berms are located within well-drained areas which are unlikely to collect water during spring break-up or heavy rain events. 14. Contour and seed with the appropriate seed mix or otherwise stabilize topsoil berms as soon as possible to minimize loss by wind and water erosion.
Silt Fences	15. Erect silt fences near the edge of graded areas following grading to prevent silt-laden runoff from leaving the site (see Dwg. 2 of the Environmental Manual). Inspect the temporary erosion control structures regularly and repair, if warranted.
Gravel Padding	16. Source gravel padding only from approved sites as directed by the Westcoast Construction Supervisor. 17. Place gravel over high traffic areas of the facility site. Obtain gravel as described in Section 6.2.3 of the Environmental Manual. 18. Grade the surface to provide for drainage of rain and melt water away from the above-grade infrastructure and off of the surface of the site.

6.2 ACCESS CONSTRUCTION

Goal

To control soil erosion by wind and water along the Plant access road during the construction and operations phases of the Project and to maintain surface drainage in the surrounding area and across the road.

Contractor Measures

The following measures are to be implemented by the Contractor.

Protection Measures

Activity/Concern	Mitigation Measures
Roadway Surfaces	1. Use surface compaction and aggregate cover to minimize surface erosion and provide a stable working surface during construction. 2. Create a sloped or crowned road surface to avoid water pooling on the road surface. 3. Source gravel only from approved sites as directed by the Westcoast Construction Supervisor. Obtain gravel as described in Section 6.2.3 of the Environmental Manual.
Watercourse Crossing	~~3.~~4. Install an appropriately sized ramp and culvert crossing of the tributary to Dawson Creek, following the BC Ministry of Water, Land and Air Protection Interim Standards and Best Practices for Instream Works (2004) and as described in Section 6.6.3 and Appendix B, Dwg. 21 of the Environmental Manual.
Erosion Control - Around Roadway	~~4.~~5. Use techniques to reduce water erosion, where warranted, such as: cross-ditching to intercept and divert surface runoff from roadways to areas of heavy vegetation or brush; berms to direct surface water to a protected ditch, if approved by the appropriate regulatory authorities.
Drainage Control - Culverts	~~5.~~6. Install culverts, where required, to prevent accumulation of runoff water on the upslope side of the road. ~~6.~~7. Place armouring at both inflow and outflow ends of culverts, if warranted, to prevent erosion. ~~7.~~8. Ensure that culverts of proper size, number and alignment are in place to handle peak runoff events and to minimize water movement along ditches and the road surface. ~~8.~~9. Minimize alteration of natural drainage patterns by aligning culverts with the drainage and at angles other than right angles to the road.
Drainage Control - Ditches	~~9.~~10. Ensure that ditches do not drain directly into a watercourse and are adequately sized to control runoff.
Road Maintenance - Erosion Prevention	~~10.~~11. Maintain access road to allow proper drainage and to prevent erosion. This includes regular examination and maintenance of ditches, culverts and erosion control structures.
Road Maintenance - Revegetation	~~11.~~12. Revegetate all bare surfaces, with the exception of the road surface and bed, within one full growing season to minimize erosion.

Activity/Concern	Mitigation Measures
Road Maintenance - Reworking Gravel	~~12.~~13. Conduct grading frequently enough to prevent creation of large potholes. Do not blade the gravel onto the shoulders of the road when reworking gravel during maintenance operations. Ensure maintenance personnel eliminate ridges along the edges of the roadway to prevent retention of runoff water.
Road Maintenance - Dust Control	~~13.~~14. Use water or Westcoast approved dust suppressants as described in Section 6.9, item 4, of the Environmental Manual for dust control during maintenance activities. Use of oil as a dust suppressant is prohibited.
Road Maintenance – Weed and Vegetation Monitoring and Control~~Road Maintenance - Vegetation Control~~	~~14.~~15. Maintain the access road right-of-way clear of tall growing bushes and trees to maintain sight lines for safe stopping distances. Do not use bulldozers for vegetation clearing. Instead use light equipment with rotary mowers, sickle bars or equivalent to manage vegetation.
	16. Monitor the access road right-of-way for the presence of restricted or noxious weeds and take prompt action to selectively control weeds through either mechanical removal or proper use of herbicide by licensed applicators.

6.3 FACILITY CLEAN-UP AND OPERATIONS

Activity/Concern	Mitigation Measures
Fence Facility	1. Fence the facility site to prevent large wildlife from entering the site.
Site Containment and Drainage	2. Install appropriate sized berms and drainage ditches at the site to control surface runoff and, where warranted, to provide containment in the event of a spill.
Noise During Operations	3. Follow the direction provided in the Noise Impact Assessment (NIA) (Appendix B of the ESA) to ensure all noise producing equipment meets provincial regulations. 4. Operate facility in accordance with the equipment manufacturer's instructions to minimize operational noise. 5. Ensure that noise levels at the facility boundary are in compliance with applicable provincial regulations, as directed in the NIA.
Air Quality	6. Store any volatile compounds onsite in sealed container systems to eliminate potential fugitive emissions from these potential sources in accordance with provincial standards/guidelines. 7. Maintain all equipment onsite in good working order. Unnecessary vehicle idling will be discouraged.
Spill Prevention During Operations	8. Ensure that any equipment which uses hydraulic fluids or oils have appropriate secondary containment to ensure any leaks will be contained. 9. In the event of a spill, implement the spill contingency plan (Section 7 of Appendix 5 of this EPP).
Waste Handling	10. Record and handle all waste following applicable regulations. Ensure that waste material is hauled away by a contractor certified to handle that waste.
Garbage Segregation and Disposal	11. Store litter in a covered metal receptacle (if not to be incinerated) and dispose of on an as-needed basis at an approved site.
Erosion Control	12. Evaluate graded areas to identify unstable areas or locations where revegetation is not successful. Employ additional erosion control and revegetation measures, when warranted.
Weed and Vegetation Monitoring and Control	13. Monitor the site for the presence of restricted or noxious weeds and take prompt action to selectively control weeds through either mechanical removal or proper use of herbicide by licensed applicators. 14. Use brushcutters, brushhogs or other equipment which will result in minimal terrain disturbance during nonfrozen conditions to clear tall brush and small trees where maximum vegetation heights must be maintained adjacent to the plant.
Topsoil Replacement	15. Replace topsoils in areas that will not be gravelled or used as activity areas during operations. 16. Store remaining topsoil in low (*i.e.*, less than 1 m high), gently sloping windrow(s) in a manner that will not impede drainage as directed by the Environmental Inspector. 17. Contour and seed with an appropriate seed mix or otherwise stabilize the topsoil berms to minimize weed infestation as well as loss by wind and/or water erosion.
Clean-up and Reclamation	18. Conduct clean-up immediately following construction.

Activity/Concern	Mitigation Measures
Seeding	19. Seed the areas of the permanent fenced facility site that were not gravelled and will not be used during the operations phase with an appropriate seed mix as per Section 7.5 of this EPP.
Sediment Control	20. Install silt fence, or equivalent, where warranted, to ensure silt laden water drained from the site is not permitted to flow directly into adjacent waterbodies and/or wetlands (Section 6.2.2 of the Environmental Manual). Maintain silt fence in place until the site has been suitably revegetated to filter water draining off of the site.

7.0 PIPELINE CONSTRUCTION

7.1 TOPSOIL SALVAGE AND GRADING

Goal

To minimize impacts to topsoil capability, surface drainage patterns, land use and wildlife habitat.

Company Measures

The following measure is to be implemented by Westcoast.

Activity/Concern	Mitigation Measures
Potentially Droughty Soils	1. Assess the wind erosion hazard, competency of the sod and potential for soil pulverization due to droughty soils. Notify the Contractor, if measures applicable to droughty, wind erodible soils will apply to minimize the impact of soil pulverization and wind erosion (see Sections 4 and 5 of Appendix 5).

Contractor Measures

The following measures are to be implemented by the Contractor.

Activity/Concern	Mitigation Measures
Sod Conservation	2. Retain sod on bush, hay and seeded pasture lands if a competent sod layer exists. Grade only where safety considerations dictate in order to minimize disturbance to sod.
Topsoil Handling Contingency Measures	3. Implement the Soil Handling Contingency Measures during topsoil stripping if any of the following are encountered: little or no topsoil; uneven boundary between topsoils and subsoils; poor colour separation between topsoils and subsoils; stony soils; uneven surface on native prairie or seeded pasture; wetlands; high winds; or requests for alternate topsoil handling methods by a landowner (Sections 4 and 5 of Appendix 5).
Topsoil Salvage - Wooded Lands and Well-Sodded Hay Lands	4. Salvage topsoil from the trench area (see Appendix B, Drawing 9 of the Environmental Manual) on all bush lands and well-sodded hay lands as indicated on the Environmental Alignment sheet. Limit topsoil stripping activities to equipment capable of accurately stripping variable depths of topsoil. 5. Salvage topsoil from all areas where root grubbing is planned.
Topsoil Salvage - Cultivated Lands	6. Salvage topsoil on cultivated lands from the trench and spoil areas of the right-of-way (see Appendix B, Drawing 8 of the Environmental Manual) as indicated on the Environmental Alignment Sheet.
Stripping Depth	7. Salvage all available topsoil as directed in the soil survey using the Environmental Alignment Sheet as a guide. Where soils are not readily distinguishable by colour, the Environmental/Grading Inspector will provide direction based on an evaluation of soil texture and structure as well as the recommended depths noted in the soils survey and on the Environmental Alignment Sheet. 8. Salvage the total depth of topsoil, up to a maximum depth of 40 cm. The upper 15-20 cm of root-zone material should be salvaged from undisturbed bush areas that lack a topsoil horizon.

Activity/Concern	Mitigation Measures
Windrow Gaps	9. Leave gaps in the topsoil windrow, if warranted, at obvious drainage courses, access trails and wildlife trails and where requested to allow farm machinery and livestock to cross the right-of-way.
Sidebends and Crossings	10. Salvage a greater width of topsoil at sharp sidebends and at crossings of the unnamed tributary to Dawson Creek, roads and foreign lines to accommodate grading and/or a wider and deeper trench. 11. Strip topsoil from either the full right-of-way or bellhole and spoil storage areas at all bored crossings on cultivated lands. 12. Strip topsoil from an area larger than the bellhole on well-sodded lands to allow feathering-out of spoil over the stripped area.
Wind Erosion of Topsoil Windrow	13. Where persistent high winds are eroding topsoil piles, measures such as the application of water, mulch or tackifiers will be used to stabilize the topsoil.
Grading	14. Salvage topsoil from all areas to be graded and windrow to the closest edge of the construction right-of-way. Avoid overstripping. 15. Minimize grading throughout the route, especially at the unnamed tributary to Dawson Creek and lands with a competent sod layer. Minimize the width of grading in order to limit the potential for erosion and subsoil compaction. 16. Conduct grading adjacent to wetlands away from the wetland to the extent practical to reduce the risk of sediment and other material entering the wetland. Keep wetland soils separate from upland soils. 17. Ensure graded material does not spread off right-of-way. 18. Do not place graded material on the slopes or closer than 20 m to the crest of the slopes unless otherwise advised by a Westcoast.
Watercourse	19. Grade away from the unnamed tributary to Dawson Creek to minimize introduction of soil and organic debris. Do not place windrowed or fill material in the unnamed tributary to Dawson Creek during grading. 20. Use the existing farm trail/vehicle crossing of the unnamed tributary to Dawson Creek during pipeline construction. (see Environmental Alignment Sheet).
Temporary Berms/ Silt Fences	21. Install temporary berms on approach slopes to the unnamed tributary to Dawson Creek and erect silt fences near the base of approach slopes to the watercourse following grading. Inspect the temporary sediment control structures on a daily basis and repair, if warranted, before the end of each working day.

7.2 STRINGING, WELDING, TRENCHING AND LOWERING-IN

Goal

To minimize ground disturbance, interference with other land uses and movements of wildlife.

General environmental protection measures to be implemented to achieve this goal are provided in Section 6.3 of the Environmental Manual. Project-specific measures are detailed below.

Contractor Measures

The following measures are to be implemented by the Contractor.

Activity/Concern	Mitigation Measures
Timing	1. Work during dry soil conditions and ensure that there is low enough soil moisture to allow construction without causing excessive rutting or soil compaction.
Gaps in Set-Up Pipe	2. Leave gaps in set-up and welded pipe to allow wildlife, farm equipment and livestock to cross the right-of-way. Gaps shall be located at obvious game trails and, where requested, for farm equipment and livestock. Breaks in pipe shall be coincident with gaps in topsoil windrows.
Welding	3. Weld up pipe prior to trenching in order to minimize the time the trench is left open. Equip trenching wheel with slope cutters, if warranted, to minimize the risk of trench sloughing.
Trenching	4. Follow the direction provided in Section 6.3.1, items 6 to 10 of the Environmental Manual during trenching. 5. Minimize trench width during trenching in order to limit spoil storage requirements and sod disturbance. 6. Leave gaps in spoil pile and trench line at obvious game trails and where requested to allow farm equipment and livestock to cross the right-of-way. Gaps shall be coincident with gaps in topsoil windrows.
Organic Soils	7. Follow the direction provided in Section 6.3.3, item 2 of the Environmental Manual in areas of organic soils.
Bedrock	8. Rip bedrock in trench, if encountered and if feasible. Ripping is preferred over blasting.
Blasting Near Domestic Water Wells	9. Monitor water quality where blasting is required in the vicinity of domestic water wells.
Topsoil/Subsoil Separation	10. Keep spoil pile separate from topsoil pile. Maintain sufficient separation between topsoil and spoil piles to ensure that the piles do not mix. 11. Consider using a physical barrier (*e.g.*, geotextile) to separate the topsoil and subsoil piles if separation is not feasible. Consult with the Environmental Inspector who will discuss options with the landowner.
Unstable Trench Walls	12. Suspend trenching and strip a wider area of topsoil if the trench walls slough into the trench and the potential for topsoil/subsoil mixing exists. Back slope the trench walls until stable. Equip hoe with a swamp bucket, or equip trenching wheel with slope cutters, if practical, to minimize trench sloughing.

Activity/Concern	Mitigation Measures
Dewatering Trench	13. Dewater the trench, if warranted, when laying pipe in areas with high water tables or springs. Pump water onto stable and well-vegetated areas, tarpaulins or sheeting in a manner that does not cause erosion or any unfiltered or dirty water to re-enter the unnamed tributary to Dawson Creek. Place pumps on polyethylene sheeting above the high water mark of the watercourse. 14. Dewatering points shall not be located within 50 m of the unnamed tributary the Dawson Creek. 15. Do not dewater any permanent wetland.
Tributary to Dawson Creek	16. Conduct an open cut (wet) crossing of the tributary to Dawson Creek if dry at the time of construction as described in Section 6.6.2.b of the Environmental Manual. 17. Conduct an isolated crossing of the tributary to Dawson Creek if water is present at the time of construction as described in Section 6.6.2.a of the Environmental Manual and as shown in Drawing No. 13 of Appendix B of the Environmental Manual. 18. Instream excavation will not begin until the isolation is deemed functional to the satisfaction of the Environmental Inspector.
Buoyancy Control	19. Install buoyancy control (*e.g.*, pipe weights) at the unnamed tributary to Dawson Creek and in areas of high water table, as directed by the Project Engineer, to prevent floating pipe. 20. Weld, coat and weight pipe prior to commencement of instream construction.
Lowering-in	21. Minimize sideboom traffic on the topsoil windrow located on the work side during lowering-in.

7.3 BACKFILLING

Goal

To control subsurface drainage prior to backfilling and to backfill the trench such that preconstruction grades are restored in a manner that facilitates reclamation.

General environmental protection measures to be implemented to achieve this goal are provided in Section 6.3 of the Environmental Manual. Project-specific measures are detailed below.

Company Measures

The following measure is the responsibility of Westcoast.

Activity/Concern	Mitigation Measures
Assess Trench Compaction Issues	1. Assess the need for special trench compaction measures or equipment prior to commencement of backfilling. Factors to be considered by the Environmental Inspector, in consultation with the Chief Inspector, during the assessment include typical trench width, locations with a wider than normal trench (*e.g.*, sharp sidebends, bell holes, tie-ins, etc.), trench depth, soil texture and soil moisture content.

Contractor Measures

The following measures are to be implemented by the Contractor.

Activity/Concern	Mitigation Measures
Install Trench Breakers	2. Install trench breakers (sack, foam or bentonite) where warranted as described in Section 6.2.2, item 10 of the Environmental Manual.
Install Subdrains	3. Install subdrains as directed by Westcoast's engineer as described in Section 6.2.2, item 12 of the Environmental Manual.
Backfill Trench	4. Backfill the trench without mixing spoil with topsoil pile. Do not walk machinery on the topsoil pile while backfilling spoil. 5. Avoid scalping of the sod layer lands where trench only is stripped. Use equipment (*e.g.*, clean-up bucket) for final pass of backfilling which will minimize scalping and is approved by the Chief/Environmental Inspector. 6. Ensure that bedrock excavated from the trench is not backfilled into the upper 50 cm of the trench if the potential exists for a reduction in agricultural capability. Excess bedrock shall be disposed of at locations approved by the landowner. 7. Ensure that bedding or padding material is not deposited on unstripped topsoil prior to placement in the trench unless otherwise approved by the landowner or Environmental Inspector. 8. Backfill the trench in lifts and compact after each lift, if warranted, at locations where a wider than normal trench (*e.g.*, sharp sidebends, bell holes) is necessary. Adhere to other backfilling and/or trench compaction measures or equipment requirements arising from the assessment conducted by the Chief Inspector.

Activity/Concern	Mitigation Measures
Backfill Trench (cont'd)	9. Compact the backfill, if feasible, to minimize trench settlement by running a grader wheel over the backfill when the trench has been backfilled to the level of the surrounding ground or using a ditch packing wheel to compact the trench in lifts. Take extra care to compact the trench at the banks of the unnamed tributary to Dawson Creek crossing that have been trenched. 10. Backfill clay first, if salvaged separately from organic material in shallow muskeg or peaty areas, to ensure that cross drainage is maintained. 11. Have backfill up tight by the end of the working day to minimize hazards to livestock and wildlife, as well as reduce frost penetration.
Crown Trench	12. Crown the trench as directed in Section 6.3.2, item 9 and Section 6.3.3, item 4 of the Environmental Manual.
Excess Trench Spoil	13. Feather-out excess spoil over the stripped portion of the right-of-way to minimize the creation of a permanent mound. Ensure that excess spoil is not feathered-out over the stripped area to an extent that may cause excessive subsidence of the trench.
Recontour Right-of-Way	14. Recontour the right-of-way and restore the preconstruction grades and drainage channels. Where restoration of the preconstruction grade is not feasible due to risk of failure of fill on slopes, recontour to a stable grade as directed by Westcoast's engineer.

7.4 PRESSURE TESTING

Goal

To withdraw and release hydrostatic test water in accordance with applicable regulations and to control erosion and prevent the contamination of surface waters during dewatering activities.

General environmental protection measures to be implemented to achieve this goal are provided in Section 6.5.2 of the Environmental Manual. Project-specific measures are detailed below.

Company Measures

The following measures will be the responsibility of Westcoast.

Activity/Concern	Mitigation Measures
Obtain Approvals	1. Obtain all applicable government agency approvals for water withdrawal and discharge to allow for hydrostatic testing of the pipeline.
Federal Standards	2. Ensure that hydrostatic testing is undertaken in accordance with CSA Z662.
Onshore Pipeline Regulations	3. Conduct all hydrostatic testing activities in accordance with the NEB Onshore Pipeline Regulations.

Contractor Measures

The following measures are to be implemented by the Contractor.

Activity/Concern	Mitigation Measures
Approval Conditions	4. Adhere to all approval conditions including in the use of the approved water source and withdrawal rates. 5. Restrict water withdrawal at watercourses for hydrostatic testing to less than 10% of the streamflow of the watercourse at the time of withdrawal or as required by approval conditions.
Water Sources	6. Select water sources as directed in Section 6.5.2, item 2 of the Environmental Manual.
Equipment and Workers	7. Ensure that enough workers and equipment are available onsite to repair any rupture, leak or erosion problem that arises during testing.
Water Trucks	8. Ensure that water trucks, if used to transport test water to the fill site, are clean.
Scheduling	9. Abide by instream construction windows (see Table 1, Section 11) or federal approval conditions.
Sump Excavation	10. Obtain any federal or provincial approvals required for instream work and abide by approval conditions. Excavate sump, if necessary, in the substrate of the water source. Employ sediment reduction methods (*e.g.,* sediment mats, silt fence, sand bag, coffer dam, etc.), if warranted, to protect downstream fish, fish habitat and water users from increased sedimentation or reduced water quality.
Isolate Pumps	11. Isolate test pumps and storage tanks with an impermeable lined dike or depression to prevent spills of fuels or lubricants.

Activity/Concern	Mitigation Measures
Secondary Containment	12. Place secondary containment about hose and vessel fittings to prevent chemical spills where chemical additives (*e.g.*, methanol) are used during testing.
Pretest Pigging Debris	13. Collect pretest pigging debris and water. Discharge the water at an acceptable location onsite in a manner that does not cause erosion and does not allow unfiltered or silted water to directly re-enter a watercourse. Dispose of the remaining material with other construction waste, in accordance with BC Oil and Gas Waste Regulations.
Screen Intake	14. Screen test water intakes in accordance with Fisheries and Oceans Canada (DFO) screening requirements, to prevent the entrapment of fish or wildlife. Ensure pump intakes do not disturb the streambed and are screened with a maximum mesh size of 2.54 mm and approach velocity of 0.038 m/s.
Chemical Recovery	15. Recover methanol or methanol/water mix, if used, and return to supplier or dispose of in accordance with appropriate government regulations. 16. Sample test water as required by BC Oil and Gas Waste Regulations guidelines prior to dewatering.
Dewatering	17. Conduct dewatering as described in Section 6.5.2, Items 6 to 8 of the Environmental Manual.
Pigging Debris	18. Collect and dispose of pigging debris at an acceptable location (*e.g.*, landfill) in accordance with BC Oil and Gas Waste Regulation.
Daylighting	19. Follow applicable EPP protection measures if exposure (daylighting) of the pipe is needed for inspection or repairs.

7.5 CLEAN-UP AND RECLAMATION

Goal

To restore soil productivity, reclaim disturbed surfaces and control erosion to the satisfaction of the landowner and the applicable government agencies.

General environmental protection measures to be implemented to achieve this goal are provided throughout Section 6 of the Environmental Manual. Project-specific measures are detailed below.

Company Measures

The following measures will be the responsibility of Westcoast.

Activity/Concern	Mitigation Measures
Assess Subsoil Compaction	1. Determine locations where subsoil compaction has occurred by comparing compaction levels on and off right-of-way. Sites compared should be in close proximity and have similar drainage, soil moisture, aspect and land use.

Contractor Measures

The following measures are to be implemented by the Contractor.

Activity/Concern	Mitigation Measures
Scheduling	2. Complete final clean-up on the entire right-of-way as quickly as practical following completion of construction. 3. Complete final clean-up as soon as conditions allow following spring break-up if final clean-up is delayed due to onset of winter conditions. 4. Coordinate activities to minimize interference with agricultural operations as much as possible given the season. 5. Postpone work on excessively wet soils until conditions are dry.
Restore Watercourse	6. Restore the streambanks of the tributary to Dawson Creek to closely resemble the preconstruction condition. 7. Inspect any temporary erosion control structures installed on approach slopes, on a daily basis throughout crossing construction. Repair the structures, if warranted, before the end of each working day. 8. Maintain silt fences or equivalent sediment control structure in place at the base of approach slopes until revegetation of the right-of-way is complete.
Swamp Mats, Matting, Geotextiles	9. Remove geotextiles, swamp mats and matting from all locations on the right-of-way.
Debris	10. Remove all remaining garbage and debris from the right-of-way. 11. Avoid overpicking of small diameter slash in wooded areas with erodible soils.
Sediment Control Measures	12. Install appropriate sediment control measures (*i.e.*, sediment barriers, temporary interceptor dikes, temporary and permanent diversion berms and cross ditches) at the discretion of the Environmental Inspector, in consultation with the Chief Inspector, as described in Section 6.2.2, Items 1 to 9 of the Environmental Manual.
Regrading	13. Regrade areas with vehicle ruts, erosion gullies or where the trench has settled.

Activity/Concern	Mitigation Measures
Subsoil Compaction	14. Decompact subsoil on the stripped portion of the right-of-way (*e.g.*, rip or chisel plough) to a depth of at least 30 cm during clean-up. Travel on the right-of-way after decompaction will be minimized to avoid compaction.
Subsoil Preparation	15. Harrow or disc ploughed subsoils to smooth the surface.
Stony Subsoils	16. Pick stones so that the stone content of exposed subsoils that have been disturbed by construction activity (*e.g.*, trenching/backfilling, grading, ripping) is equivalent to that of exposed subsoils that have not been disturbed. Dispose of stones at locations approved by landowner.
Topsoil Replacement	17. Replace topsoil evenly over all portions of the right-of-way. Postpone replacement during wet weather or high winds to prevent damage to soil structure or erosion of topsoil.
Sod Conservation	18. Avoid scalping of the sod layer during topsoil replacement on lands where only the trench is stripped. Use equipment (*e.g.*, clean-up bucket), which will minimize scalping during the final pass of topsoil replacement and is approved by the Environmental Inspector.
Stony Topsoils	19. Pick stones on agricultural lands so that the right-of-way surface is equivalent to that of adjacent lands (*i.e.*, stone size and density). Dispose of stones at locations approved by landowner.
Excess Rock	20. Dispose of excess rock displaced from the trench or from blasting in discrete piles, windrows or scattered along right-of-way or as directed by landowner.
Cultivation	21. Disc or rip disturbed soils on lands where the sod layer has been broken or badly compacted and reseeding is warranted.
Seeding	22. Seeding on non-cultivated lands will be conducted as described in Section 6.4.2, Items 1 to 3 of the Environmental Manual. 23. Seed the disturbed portions of the right-of-way in bush lands and banks and approaches of the unnamed tributary to Dawson Creek, with a native seed mix (seed mix A below), unless otherwise recommended by regulators or requested by the landowner. SEED MIX A (Native Seed Mix) — Species Composition % seed by weight Fringed brome 30% Slender wheatgrass 25% June grass 15% Tufted hair grass 10% Fowl bluegrass 10% Slough grass 10% Seeding Rates: Drilled: 10-12 kg/ha Broadcast: 18-20 kg/ha 24. Use only Certified Canada No. 1 seed from a local source and provide the Certificates of Analysis to Westcoast for future documentation. For native seed, obtain the highest seed grade available. Do not accept seed that contains any noxious or restricted weeds.
Fertilizing	25. Fertilize lands to be seeded by the Contractor as recommended by the landowner on private lands. Streambanks do not need to be fertilized.

Activity/Concern	Mitigation Measures
Seeding of Woodland/Forest	26. Seed disturbed soil on level and gently sloping noncultivated terrain (woodland) with a seed mix requested by the landowner.
Seeding of Steep Slopes and Streambanks	27. Seed steep noncultivated slopes and the banks of the watercourse with seed mix requested by the landowner as well as a cover crop (*e.g.*, annual oats) at 45 kg/ha broadcast.
Seeding of Road Ditches	28. Seed road ditches with same mix as the adjacent land, where applicable. Roadside ditches adjacent to cultivated lands will be seeded with the same mix used for woodland areas.
Erosion Control	29. Implement erosion control measures, where warranted, as described in Section 6.2.2 and 6.4.2, items 4 to 7 of the Environmental Manual.
Fences	30. Repair fences and replace temporary gates with permanent fences of equal or better quality, unless otherwise requested by landowner. Ensure that lowest strand is at the height of the lowest strand on adjacent fences. 31. Install temporary fences, if warranted, to restrict grazing and trampling of seeded right-of-way until vegetation becomes established or less palatable.
Access Control	32. Limit vehicle access along the right-of-way following seeding.
Ditch Ramps	33. Remove any remaining bar ditch ramps, then seed and fertilize accordingly.

8.0 POST-CONSTRUCTION ACTIVITIES

Goal

To monitor the condition of the right-of-way following reclamation to determine soil productivity and the success of revegetation and erosion and sediment control efforts.

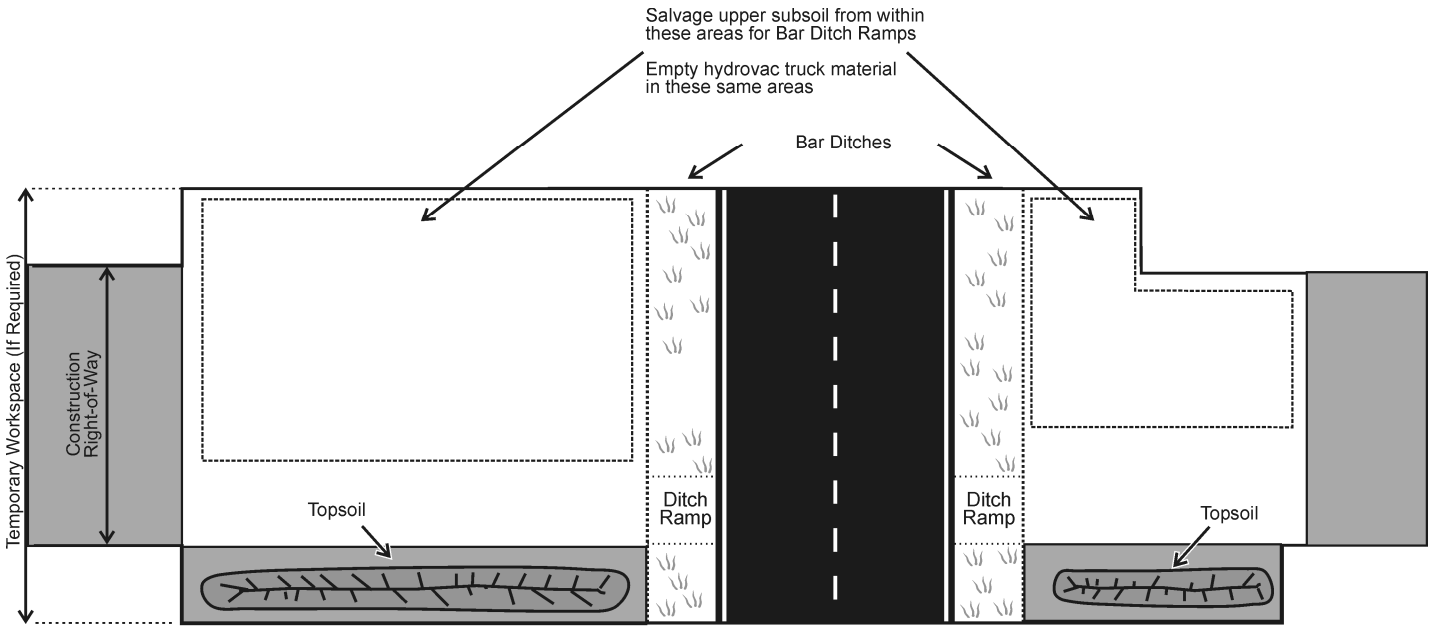
Company Measures

The following measures are the responsibility of Westcoast.

Activity/Concern	Mitigation Measures
Post-Construction Monitoring and Follow-up	1. Conduct Post-Construction monitoring and follow up programs as directed in Section 7 of the Environmental Manual and Section 8 of the ESA.
Long-Term Monitoring	2. As part of day-to-day operations, Westcoast operations staff will monitor the facility and pipeline on a routine basis for the life of the facility. Any environmental issues identified will be reported to Westcoast's Environmental Staff. Westcoast will employ applicable remedial measures on a timely basis.

APPENDIX 1

DETAILS



Plan View
(Not to Scale)

Notes:

1. Acquire and mark sufficient temporary workspace. Restrict the area of temporary workspace where native vegetation is encountered.
2. At a minimum, salvage topsoil from area where upper B horizon (upper subsoil) will be salvaged for use as ditch ramping material. Restrict the area subject to topsoil salvage where native vegetation is encountered.
3. Install subsoil bar ditch ramps; do not salvage topsoil from bar ditches.
4. Install culverts in bar ditch ramp to maintain drainage along bar ditch.
5. Empty material from hydrovac trucks onto exposed subsoil on opposite side of the right-of-way from where topsoil is stored. Ensure hydrovac material is contained within designated release area.

tera ENVIRONMENTAL CONSULTANTS	**WESTCOAST ENERGY INC. DAWSON PROJECT**		
	BAR DITCH RAMP INSTALLATION		
	6605	December 2010	Detail 1

APPENDIX 2

APPROVALS/PERMITS POTENTIALLY REQUIRED FOR PROJECT DEVELOPMENT

Permit/License	Issuing Agency[1]
NEB approval order	NEB
Water Crossing	
- *Water Act* approval (Section 8 and 9)	MOE
Heritage Conservation Act Clearance	MNRO
Applicable approvals under the Oil and Gas Waste Regulation, Special Waste Regulation and Petroleum Storage and Distribution Facilities Storm Water Regulation of the *Waste Management Act*	MOE
Refuse Permit - *Waste Management Act*	MOE
Road Crossing Permits	MOTI
Burning Permits	MOFR
Wildlife Permit for Beaver Dam Removal	MOE

MOE	=	BC Ministry of Environment
MOFR	=	BC Ministry of Forests and Range
MOTI	=	BC Ministry of Transportation and Infrastructure
MNRO	=	BC Ministry of Natural Resources Operations
NEB	=	National Energy Board

APPENDIX 3

EMERGENCY CONTACTS

CONTACT	LOCATION	PHONE NUMBER
RCMP	Dawson Creek	911 or (250) 784-3700
Ambulance	Dawson Creek	911
Hospital	Dawson Creek	911 or (250) 782-8501
Fire	Dawson	(780) 782-9898
National Energy Board	Calgary	1-800-899-1265
BC Provincial Emergency Program (PEP)	----	1-800-663-3456
Area "C" Oil Spill Cooperative	Clean Harbours Fort St. John	1-888-698-5565
BC Forest Fire Reporting Centre	----	1-800-663-5555 (or *5555)

APPENDIX 4

CONTACTS

Basil Momah (Westcoast's Project Manager)
Principle Pipeline Engineer
Spectra Energy Transmission
Expansion Projects
Suite 2600, 245 - 1st Street S.W.
Calgary, Alberta T2P 3L8
Phone: (403) 699-1264
Email: bmomah@spectraenergy.com

Joel Lavers (Westcoast's Project Engineer)
Spectra Energy Transmission
Expansion Projects
Suite 2600, 245 - 1st Street S.W.
Calgary, Alberta T2P 3L8
Phone: (403) 699-1564
Email: jlavers@spectraenergy.com

William Kerr (Westcoast's Environmental Contact)
Construction Environmental Permitting Specialist
Expansion Projects
Spectra Energy Transmission
Suite 2600, 245 - 1st Street S.W.
Calgary, Alberta T2P 3L8
Phone: (403) 699-1819
Email:wbkerr@spectraenergy.com

Rodney Locke (Westcoast's Lands Contact)
Team Lead Lands/Community Relations
Spectra Energy Transmission
Lands and Comm Relations
Fort St. John, BC V1H 4H7
Phone: (250) 262-3457
Email: rllocke@spectraenergy.com

Steve Henderson (Westcoast's Community and Aboriginal Relations Lead)
Community and Aboriginal Relations
Spectra Energy Transmission
Expansion Projects
Suite 2600, 245 - 1st Street S.W.
Calgary, Alberta T2P 3L8
Phone: (250) 960-2036
Email: shenderson@spectraenergy.com

Andrew Povey (Environmental Consultant)
Senior Environmental Planner
TERA Environmental Consultants
1100, 815 - 8th Avenue S.W.
Calgary, Alberta T2P 3P2
Phone: (403) 265-2885 Ext. 5654
Direct: (403) 538-5654
Email: apovey@teraenv.com

Joanna Zoffmann (Heritage Consultant)
Operations Manager
Landsong Heritage Consulting
2262 Highway 29
Chetwynd, British Columbia V0C 1J0
Phone: (250) 788-3813
Email: landsong@landsong.com

Jason Quigley (CEAA Representative)
Regional Director
Canadian Environmental Assessment Agency (CEAA)
Pacific and Northern Regional Office
Suite 320, Sinclair Centre 757
Hastings Street West
Vancouver, BC V6C 1A1
Phone: (604) 666-6989
Fax: (604) 666-6990
Email: jason.quigley@ceaa-acee.gc.ca

Andrew Robinson (Environment Canada Representative)
Environmental Assessment Officer
Environment Canada
RR 1, 5421 Robertson Road
Delta, BC V4K 3N2
Phone: (604) 940-4685
Email: Andrew.Robinson@ec.gc.ca

Mike Malin (MOFR Representative)
Stewardship Technician
Oil and Gas Liaison
Ministry of Forests
Peace Forest District
Prince George Forest Region
9000 - 17th Street
Dawson Creek, BC V1G 4A4
Phone (250) 784-1250
Fax: (250) 784-0143
Email: Mike.Malin@gov.bc.ca

Kerry Harvey (MOE Representative)
Ecosystem Biologist
Ministry of Environment
Ecosystems Section, Peace Regional Office
Room 400, 10003 - 100th Avenue
Fort St. John, BC V1J 6M7
Phone: (250) 787-3427
Fax: (250) 787-3490
Email: Kerry.Harvey@gov.bc.ca

Katrina Stipec (BC CDC Representative)
Information Coordinator
Ministry of Environment
Conservation Data Centre (CDC)
Thompson Regional Office
P.O. Box 9358, Stn Prov Govt
Victoria, BC V8W 9M2
Phone: (250) 387-9798
Fax: (250) 387-2733
Email: Katrina.Stipec@gov.bc.ca

Bruce Simard General Director of Development Services Peace River Regional District Head Office P.O. Box 810, 1981 Alaska Avenue Dawson Creek, BC V1G 4H8 Phone: (250) 784-3204 Fax: (250) 784-3201 Email: bruce.simard@prrd.bc.ca	(Peace River Regional District Representative)
Robert Piccini Section Head Water Stewardship - Omineca Suite 325, 1011 - 4th Avenue Prince George, BC V2L 3H9 Phone: (250) 565-6411 Fax: (250) 565-6629 Email: Robert.piccini@gov.ab.ca	(MOE Water Stewardship Representative - Notify or make application for planned instream activities or short term water use)
Jamie Wilson Area “C” Regional Custodian Clean Harbors 6708 - 87A Avenue Fort St. John, BC V1J 6S2 Phone: 1-888-698-5565	(In the Event of a Spill)
BC Provincial Emergency Program (PEP) Phone: 1-800-663-3456	(In the Event of a Spill)

APPENDIX 5

CONTINGENCY PLANS

TABLE OF CONTENTS

CONTINGENCY PLANS

Westcoast has a comprehensive emergency response program which includes procedures, inventory and maintenance of response equipment, and program development. The plan will be activated during construction in the event of an incident involving the Dawson Project. For construction-related spills, Section 7.0 below provides procedures to contain and clean-up the spill. Additional contingency measures for damage to soils and siltation of watercourses, as well as strategies that may be required in the event of flood or excessive flows, fire, release of instream drilling mud, wildlife encounters or discovery of plant species of concern, wildlife species of concern and heritage resources, are provided in the following subsections. Upon implementation of a contingency plan, the appropriate provincial and municipal authorities, and if necessary, the NEB will be notified as soon as practical by Westcoast that contingency measures have been implemented (for contact information see Appendix 4 of this EPP).

1.0 FLOOD AND EXCESSIVE FLOW CONTINGENCY PLAN

Notify Westcoast's Environmental Inspector that contingency measures have been initiated as a result of flooding or excessive streamflow along the pipeline route, so that a record of the location, timing and reason for implementation of the contingency plan is maintained. See also Siltation of Watercourses Contingency Plan (Section 6.0 of this Appendix).

The weather conditions will be monitored by the Environmental Inspector on a daily basis. If a major storm is predicted or occurs, qualified personnel will inspect the watercourse crossing where construction is in progress or has been completed, to determine whether any corrective actions need to be implemented.

If the potential for siltation of a watercourse due to Contractor activity is predicted, the contingency plans for Soil Erosion and for Siltation of Watercourses (Sections 5.0 and 6.0 of this Appendix) will be implemented.

Where an isolated crossing method is preferred, the proposed isolation crossing techniques may not be feasible during periods of excessive flow or unusually wet seasons. Excessive flows are flows that are greater than the seasonally expected normal range based on existing and predicted flow data.

The following contingency measures will be implemented progressively or individually, as warranted, if excessive flow or flood conditions are anticipated prior to commencing watercourse crossing construction.

1. Assess the capability to handle the forecasted flow rate with the proposed crossing method. If use of the proposed crossing method is determined by Westcoast to be still feasible, the crossing will proceed.

2. Defer water crossing construction to a later time when flows have subsided, if determined by Westcoast that the proposed crossing method is not feasible.

3. Alternatively, where the forecasted flow rates and window limitations combine to preclude the proposed primary crossing method, request the appropriate authority (*e.g.,* DFO and the BC Ministry of Environment) for exemption of the timing window or permission to use an alternative crossing method.

The following contingency measures will be implemented progressively or individually, where warranted, if excessive flow or flood conditions should occur during watercourse crossing construction.

1. Withdraw all equipment or tanks containing fuel, oil or other hazardous materials from potential flood areas.

2. Relocate all topsoil piles at the direction of the Environmental Inspector.

3. Relocate spoil piles, to the extent feasible, to a position above the anticipated high water level.

4. Remove all stationary and mobile equipment deployed at the crossing site to a safe area above the anticipated high water level.

5. Remove any instream flume or dam equipment that may impede streamflow, as safe work conditions allow.

6. Evaluate vehicle crossing structures to determine whether adequate free-board is present on the bridge and adequate capacity is available in culvert(s). Take corrective measures as appropriate to avoid flooding of adjacent lands.

2.0 FIRE CONTINGENCY PLAN

Fire Suppression Measures

The following standard measures will be adhered to during construction of the Dawson Project.

1. Prior to start of construction, the Contractor will complete Westcoast's (Spectra Energy's) Forest Fire Prevention Risk Assessment (included at the end of this section).

2. All activity project coordinators and Contractors' vehicles will carry fire-fighting equipment in accordance with the Forest Fire Prevention Risk Assessment.

3. All fires suppression measures outlined in Section 6.11.1 of the Environmental Manual will be implemented as warranted.

In the Event of a Wild Fire

In the event of a wild fire, Westcoast and the Contractor will contact the land owner and appropriate government representatives, as identified in the in the Project Emergency Contact List (Appendix 3 of this EPP) and the Forest Fire Prevention Risk Assessment. Fire suppression measures will be implemented immediately upon detection of the fire provided that fire conditions allow personnel to safely proceed, as described in Section 6.11.1 of the Environmental Manual.

FOREST FIRE PREVENTION
RISK ASSESSMENT*

Date: _____

Project / W.O#: _____

Team Leader/Project Lead:_____

Region: _____

1. **Is the work listed as a 'High Risk Activity'? (refer to Attachment A):**

   ☐ Yes (continue on with Risk Assessment)
   ☐ No (continue to work Fire-smart)

2. **Identify Forest Region work area;**
   (A) Select from http://www.for.gov.bc.ca/pscripts/protect/dgrcls/dgrcls.asp
   (B) Identify closest Danger Class Rating 'station' to work location

   _____

3. **For the above Danger Class Rating station, list the current day's Danger Class Rating, the previous days' rating and any forecasted ratings:**

Station:	Previous days:				Current Day:	Forecasted days:			

4. **Based on the above Danger Class Rating information, review Table 1 (on next page) for any work restrictions on 'High Risk' activities, AND LIST those restrictions:**

   _____

   _____

   _____

   _____

*** A copy of this Risk Assessment MUST be available at the worksite and available for an Official when requested.**

Table 1 (from Wildfire Regulations)

Column 1 Fire Danger Class (DGR)	Column 2 Restriction	Column 3 Duration
III (moderate)	After 3 consecutive days of DGR III or greater, maintain a fire watcher after work for a minimum of one hour	Until after the fire danger class falls below DGR III
IV (high)	Maintain a fire watcher after work for a minimum of 2 hours	Until after the fire danger class falls below DGR III
	After 3 consecutive days of DGR IV, cease activity between 1 p.m. PDT (Pacific Daylight Saving Time) and sunset each day	Until after the fire danger class falls to DGR III for 2 consecutive days, or falls below DGR III
V (extreme)	Cease activity between 1 p.m. PDT (Pacific Daylight Saving Time) and sunset each day and maintain a fire watcher after work for a minimum of 2 hours	Until after the fire danger class falls below DGR IV for 2 or more consecutive days
	After 3 consecutive days of DGR V, cease activity all day	Until after the danger class falls below DGR V for 3 or more consecutive days, or falls below DGR IV

5. **Determine the minimum Fire Fighting equipment needed on site and list: (refer to Attachment B; Fire Fighting Tools - General)**

_____

_____

_____

_____

_____

_____

_____

6. **Will there be any internal combustion engines working on site?**
   □ Yes
   □ No
   if 'Yes', ensure that:

   (a) You have the additional equipment on hand based on Attachment B
   (b) The engine is equipped with a safe and effective device for arresting sparks that is an integral part of the exhaust system and in good repair,
   (c) The engine is equipped with an exhaust system and muffler that are within the manufacturer's specifications.

7. **If open burning of materials is required, contact your local Land Resource Agent for;**
   (a) Burning Registration Number
   (b) Category of open fire
   (c) Additional fire suppression/water delivery systems needed based on category of open fire.

Important Contact Numbers

B.C. Forest Fire Reporting Number	1-800-663-5555 Or *5555 on most cellular networks
Vancouver Gas Control	1-604-691-5565
Fort St John Gas Control	1-250-262-3446
Pipeline Emergency Number	1-800-663-9931
B.C. MoF General or Burning Information	1-800-565-1557
B.C. MoF Wildfire Information	1-800-336-7878

Regional Fire Zone Centers

From April to October there is a duty officer on cal 24/7, for local questions contact the appropriate Regional Fire Centre. The duty officer will provide direction or will forward you on to the local standby personnel.

Prince George Region	1-250-565-6126
Cariboo Region	1-250-989-2608
Kamloops Region	1-250-554-7701
Coastal Region	1-250-951-4200

Attachment A

Forest Fire Risk Classification

Definition of "High Risk Activity" from the Wildfire Regulations:

"High Risk Activity" means each of the following:

(a) mechanical brushing;

(b) disk trenching;

(c) preparation or use of explosives;

(d) using fire- or spark-producing tools, including cutting tools;

(e) using or preparing fireworks or pyrotechnics;

(f) grinding, including rail grinding;

(g) mechanical land clearing;

(h) log forwarding other than by logging truck on a road;

(i) skidding logs;

(j) yarding logs using cable systems;

(k) using a vehicle with metal tracks, chains or studs other than such a vehicle while in use

  (i) in a stationary position,

  (ii) for road construction, road maintenance or road deactivation, or

  (iii) loading logs on a road or a landing or in a log sort area;

(l) operating a power saw other than while doing so on a road or a landing or in a log sort area;

(m) clearing or maintaining right of ways, including grass mowing;

(n) rock drilling;

(o) tree processing, including de-limbing;

(p) welding;

(q) portable wood chipping, milling, processing or manufacturing;

Attachment B

Fire fighting Tools:

General:
Three or less persons on site:

- One round nosed shovel
- One Pulaski or mattock
- One hand-tank pump containing 18 liters of water.

More than three persons on work site:

- One round nosed shovel / Pulaski or mattock per person split as close to a 50:50 ratio.
- One hand tank pump containing 18 liters of water per 3 persons to a maximum of 8 hand-tank pumps.

For every 4- 10 workers require Water Delivery Systems:

- portable pump unit (not affixed to another machine able to maintain 145psi while delivering 135 liters of water per minute from 30m of hose with 9.5mm opening nozzle)
- a suction hose
- at least 450 m of discharge hose (33mm unlined or 35mm diameter lined hose)
- tools and accessories to maintain pump and hose
- if a surface water supply is not available, a water source of at least 4500 liters (1000 gallons), can be substituted. It must be at the site, and readily available.

For 11 or more workers, two water delivery systems as above.

Large Engines:

- one round-nosed shovel
- one Pulaski tool or mattock
- one fire extinguisher with ULC rating of at least 1A 5BC
- one fire extinguisher with ULC rating of at least 3A 10BC or an integral vehicle fire suppression system

Hot Work:

- 2 fire extinguishers each with a ULC rating of at least 3A 10BC
- one round-nosed shovel
- 2 hand-tank pumps containing at least 18 liters of water each

Explosives:
In addition to any other requirements you must have on site:

- 2 round-nosed shovels
- 2 hand-tank pumps containing at least 18 liters of water each

Appendix !: Selected definitions and sections
of the Wildfire Act and Regulations

Selected definitions from the **Wildfire Act**

"Industrial activity" includes
a. land clearing, and
b. other activities included in this definition by regulation, but does not include activities excluded from this definition by regulation

"Official" means a person
a. employed in the ministry of the minister responsible for the administration of this Act, who is designated by name or title to be an official by the minister for the purpose of a provision of this Act or of the regulations that is specified in the designation
b. employed in the Oil and Gas Commission and designated, by the minister responsible for the *Oil and Gas Commission Act*, by name or title to be an official for the purpose of a provision of this Act or of the regulations that is specified in the designation, or
c. who is a conservation officer designated by the minister responsible for the *Environmental Management Act*, by name or title to be an official for the purpose of a provision of this Act or of the regulations that is specified in the designation

Wildfire Act Sections

PART 1 – Forest and Range Protection Requirements

General duty to report fire
2. A person, other than a person acting in accordance with section 5 (2) or 6 (3), who sees an open fire that is burning in forest land or grass land or within 1 km of forest land or grass land and that appears to be burning unattended or uncontrolled must immediately report the fire
(a) to an official employed in the ministry,
(b) to a peace officer, or
(c) by calling a fire emergency response telephone number

Mishandling burning substances
3. (1) Except for the purpose of starting a fire in accordance with this Act or another enactment, a person must not risk starting an open fire in forest land or grass land, or within 1 km of forest land or grass land, by dropping, releasing or mishandling
(a) a burning substance, or
(b) any other thing that the person reasonably ought to know is likely to cause a fire

(2) A person who does not comply with subsection (1) must immediately extinguish, if practicable
(a) the burning substance, and
(b) any fire that results from dropping, releasing or mishandling the burning substance or the other thing, as the case may be

Industrial activities

6. (1) Except in prescribed circumstances, a person carrying out an industrial activity must not light, fuel or use an open fire in forest land or grass land or within 1 km of forest land or grass land

(2) A person who carries out an industrial activity must do so

(a) at a time, and

(b) in a manner that can reasonably be expected to prevent fires from starting because of the industrial activity

(3) If, except in the prescribed circumstances referred to in section 5 (1) or subsection (1) of this section, a fire starts at, or within 1 km of, the site of the industrial activity, the person carrying out the industrial activity must

(a) immediately carry out fire control and extinguish the fire, if practicable

(b) continue with fire control for the fire until

(i) the fire is extinguished

(ii) it becomes impracticable to continue with fire control, or

(iii) an official relieves the person in writing from continuing

(c) as soon as practicable, report the fire as described in section 2, and

(d) in accordance with prescribed requirements, rehabilitate the land damaged by fire control carried out by the person.

Hazard assessment and abatement

7. (1) In prescribed circumstances and at prescribed intervals, a person carrying out an industrial activity or a prescribed activity on forest land or grass land or within 1 km of forest land or grass land must conduct fire hazard assessments

(2) A person carrying out an industrial activity or a prescribed activity must abate within a prescribed period a fire hazard of which the person is aware or ought reasonably to be aware

(3) Despite subsection (2), if an official identifies circumstances that the official considers constitute a fire hazard in relation to

(a) an industrial activity, or

(b) a prescribed activity referred to in subsection (2), the official by written order may require the person to abate the fire hazard by a specified date

(4) A person who is the subject of an order under subsection (3) and to whom written notice of the order has been given must comply with the order.

Applicable **Regulation** definitions:

“engine” means an internal combustion engine but does not include:

(a) an engine on or in a water craft that is in the water,

(b) an engine in or on a vehicle primarily used for the transportation of people, or

(c) an engine in an aircraft;

"fire suppression system" means a system that is used for the purpose of suppressing a fire and is appropriate for the type of fire, including:

(a) a water delivery system,

(b) a suppressant or surfactant delivery system, or

(c) a fire extinguisher

"sufficient fire fighting tools" means hand tools in a combination and type and of an appropriate number to properly equip all persons taking fire control action, including but not limited to shovels, axes, pulaskis, hand tank pumps, and fire extinguishers;

"utility transmission operation" means the operation, transmission, construction, establishment, maintenance and repair of electrical, oil, gas, radio, microwave, and telephone service;

"water delivery system" means a system that can:

(a) deliver a sufficient volume of water to effectively fight a fire of a reasonably foreseeable size, taking all factors into consideration, including the conditions of any area where the water delivery system may need to be used, and

(b) deliver water to any place

(i) at the site of an industrial activity,

(ii) on the burn area or site of the high risk activity, or

(iii) reasonably adjacent to the burn area or the site of a high risk activity.

Selected Regulations:
Wildfire Regulations, Part 2, Division 1—Precautions

Sufficient fire-fighting tools for an industrial activity
5. At all times while there is a risk of a fire starting and spreading on an area that is forest land or grass land or is within 300 m of forest land or grass land, a person who carries out an industrial activity at a site in that area must ensure that sufficient fire fighting tools are available at that site

High risk activities
6. **(1)** A person carrying out a high risk activity on or within 300 m of forest land or grass land must determine the Fire Danger Class for the location of the activity

(2) A person carrying out a high risk activity on or within 300 m of forest land or grass land must
a. do so in accordance with the applicable restriction and duration set out in Schedule 3 for the Fire Danger Class, and
b. if there is a risk of a fire starting and spreading, keep at the activity site sufficient fire fighting tools and an adequate fire suppression system.

(3) A person who, in accordance with subsection (2) (a) and Schedule 3, is required to maintain a fire watcher, must ensure that the fire watcher
a. can reasonably see the site of the high risk activity during the time the fire watcher is required,
b. has sufficient fire fighting tools to carry out fire control,
c. actively watches and patrols for sparks and fires on the site of the high risk activity,
d. immediately carries out fire control and extinguishes the fire, if practicable, and has the means on site to report the fire.
.

Engines
8. A person carrying out an industrial activity or high risk activity
a. on forest land or grass land or within 300 m of forest land or grass land, and
b. at a time when there is a risk of a fire starting and spreading,
must not operate an engine on that forest land or grass land, unless
c. the necessary precautions are taken to ensure that the operation of the engine does not cause a fire,
d. the engine is equipped with a safe and effective device for arresting sparks that is an integral part of the exhaust system and in good repair
e. the engine is equipped with an exhaust system and muffler that are within the manufacturer's specifications, and
f. if the engine is over 7.5 kw (10 hp) and is stationary or semi-permanent, the engine is surrounded by a fuel break

Utility transmission operations

10. A person carrying out an industrial activity that is a utility transmission operation, on or within 300 m of forest land or grass land, must

a. maintain utility transmission equipment, apparatus and materials in a manner that reduces the likelihood of producing an ignition source capable of starting a fire on or adjacent to the site of the utility transmission operation, and

b. maintain the site in a manner that prevents any fire from spreading from the site.

3.0 WET/THAWED SOILS CONTINGENCY PLAN

Westcoast will assign an Environmental Inspector(s) with sufficient training and soils-related experience to be able to identify soils that are too wet for a particular activity and when the soils are sufficiently dry to allow the activity to resume. The decision to continue or suspend particular pipeline construction activities on lands with excessively wet/thawed soils will be made by the Chief Inspector in consultation with the Environmental Inspector. A record of the location, timing and reason for implementation of the Wet/Thawed Soils Contingency Plan will be maintained by the Environmental Inspector. In the event that activities are suspended during pipeline or facility construction, the landowner (or an appropriate representative) will be notified as soon as practical by the Environmental Inspector.

Soils are considered to be excessively wet when the planned activity could cause damage to soils either due to rutting by traffic through the topsoil layer into the subsoil; soil structure damage during soil handling; or compaction and associated pulverization of topsoil structure damage due to heavy traffic.

Contingency measures will be implemented, if warranted, once one of the following indicators occurs:

- rutting of topsoil or root zone material to the extent that mixing of soil horizons may occur;
- excessive wheelslip;
- excessive build-up of mud on tires and cleats;
- formation of puddles; or
- tracking of mud on to roads as vehicles leave the right-of-way.

In order to minimize terrain disturbance and soil structure damage through rutting or compaction due to wet soil conditions, construction alternatives will be employed, as necessary, in the event of thawed soils during frozen conditions or an excessively wet surface during nonfrozen conditions. The contingency measures listed below will be implemented individually or in combination, as necessary, based on site-specific conditions.

1. Restrict construction traffic, where feasible, to equipment with low-ground pressure tires or wide pad tracks.
2. Work only in nonproblem areas, such as frozen or well-drained soils, until conditions improve.
3. Postpone construction until evening or early morning when the ground is frozen.
4. Install geotextiles, swamp mats or corduroy constructed from nonsalvageable timber in problem areas.
5. Employ frost inducement measures such as snow packing or plowing to increase the load-bearing capacity of thawed ground.
6. Consider stripping an additional width of topsoil in problem areas.
7. Suspend construction until soils dry out or freeze.

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

4.0 SOIL HANDLING CONTINGENCY PLAN

While soils handling criteria presented in EPP addresses the key soils handling questions that could occur during pipeline, powerline and facility construction, the following minor problems may arise during construction which may result in loss of soil capability if not addressed. Mitigative measures are provided to lessen the potential impacts associated with construction.

Condition/Concern	Mitigative Options
Little or no topsoil on cultivated, seeded pasture and hay lands	1. Follow direction provided in the Soil Survey.
Poor colour separation between topsoils and subsoils	2. Identify subsoil by texture and structure for any site-specific adjustments to depth. 3. Use topsoil depths indicated in the soil assessment and the Environmental Alignment Sheets as a guide.
Stony subsoils or topsoils	4. Attempt to use conventional equipment to strip topsoil. 5. Employ backhoe, if above measures are ineffective. 6. Pick rocks after backfilling and after grade restoration. 7. Pick rocks after replacement of topsoil.
Shallow bedrock	8. Ripping is preferred over blasting where rock trenching is encountered. 9. Bedrock is not to be backfilled into the upper 0.5 m of the trench. 10. Excess bedrock will be disposed of at locations approved by the landowner and appropriate government representative. 11. Import additional or replacement backfill if warranted from locations approved by the appropriate government representative.
Alternate soil handling measure or no topsoil stripping requested by landowner	12. Discuss benefits of proposed soil handling with landowner. 13. Notify BC Agricultural Land Commission if landowner maintains the request. 14. If the landowner maintains the request following discussions with BC Agricultural Land Commission, conduct topsoil handling operations in compliance with the landowner's request.
Uneven boundary between topsoil and subsoil	15. Utilize equipment capable of fine depth adjustments when salvaging topsoil.
Soil pulverization	16. Minimize traffic on right-of-way.
High winds	17. Suspend topsoil handling during high wind conditions.

5.0 SOIL EROSION CONTINGENCY PLAN

In the event that spoil erosion is identified during construction, Westcoast's Environmental Inspector will recommend to the Chief Inspector that contingency measures be initiated. A record of the location, timing and reason for implementation of the contingency plan will be maintained by the Environmental Inspector. In the event that soils are impacted to an extent that reclamation may be impeded, the Environmental Inspector or Chief Inspector will notify the landowner.

Contractor equipment and personnel will be made available to control the erosion. During the construction phase of the pipeline, the Chief Inspector, in consultation with the Environmental Inspector, will determine appropriate procedures to be implemented to control soil erosion and other soil handling problems encountered. One or more of the following contingency measures listed below will be implemented as appropriate. Similar procedures should be followed during the operational phase of the pipeline.

Concern	Mitigative Options
Water Erosion - Cultivated, Hay Land, Pasture and Bush Pasture	1. Shut down construction until the risk of erosion has been reduced or the conditions improve. 2. Construct temporary berms of subsoil, sandbags or bales during construction activities. 3. Salvage remaining topsoil and store away from area to be regraded. 4. Construct temporary cross ditches if approved by landowner.
Water Erosion - Bush/forested	5. Install temporary berms of subsoil, logs, timbers, sandbags or bales during construction activities. 6. Install silt fences near the base of slopes. 7. Salvage remaining topsoil and store away from area to be regraded. 8. Regrade rills and gullies. 9. Replace salvaged topsoil. 10. Implement one or a combination of the following mitigative techniques: • construct cross ditches and berms decreasing the spacing on steeper slopes or on more erodible soils; • armour the upslope face of berms with geotextile, logs or sandbags; • import small diameter slash then spread and walk down; • apply netting, mulch or tackifier to hold soil; • reseed and hand rake an annual cover crop, hydroseed or apply seed impregnated mats; • transplant native shrubs, plant willow stakes or use other bioengineering techniques; and • install slope indicators at locations where the risk of slope failure, or creep exists; consult a geotechnical engineer.
Wind Erosion - Topsoil	11. Shut down or relocate construction activities until winds dissipate and conditions improve. 12. Consider using the following techniques if wind erosion of the topsoil windrow is of concern: • apply water to the topsoil windrow; • windrow snow over the topsoil windrow; • tackify (at rate recommended by the distributor) the topsoil windrow; or

Concern	Mitigative Options
Wind Erosion - Topsoil (cont'd)	• pack the topsoil windrow with a sheepsfoot packer or other suitable equipment. 13. Consider using the following techniques if wind erosion is of concern after topsoil replacement: • request the landowner to seed cereal or sterile hybrid cover crop; • employ straw crimping at 2-2.5 tonnes/ha; • apply hydromulch or tackifier; • import small diameter slash for use as rollback - walk down slash; • add locally available manure and cultivate; and/or • install wind fences.
Erosion of or Failure of Streambanks	14. Implement one or a combination of the following mitigative techniques: • plant willow stakes in the spring; • transplant willow clumps, install willow wattles, or brush layering; • apply netting or netting with straw mulch complete with seed mix; • install log cribwall bank protection; • armour bank with rock riprap; • install vegetated geogrid; • install rock gabions; or • reconstruct stream profile to remove scour holes or instream obstructions.

6.0 SILTATION OF WATERCOURSES CONTINGENCY PLAN

Westcoast's Environmental Inspector will notify the Chief Inspector that contingency measures have been initiated and will maintain a record of the location, timing and reason for implementation of the contingency plan. See also the Flood and Excessive Flow Contingency Plan (Section 1.0 of this Appendix).

Should an extreme precipitation/streamflow event threaten, or other circumstances occur which may render the existing sediment control measures inadequate, the procedures outlined below will be implemented progressively or individually as warranted.

1. Prohibit the operation of construction equipment close to the banks of watercourses where there is a risk of bank sloughing, failure of the vehicle crossing or flooding of the work area.

2. Install additional silt fencing to prevent silt-laden water from entering watercourse.

3. Excavate cross ditches to divert runoff away from watercourses.

4. Construct berms of subsoil, sandbags, rock, timber, straw bales or hay bales on approach slopes and/or banks to divert runoff from the right-of-way and onto well-vegetated lands. The location and material of the sediment control structures will be determined by the Environmental Inspector.

5. Import sand bags and place strategically to help stabilize and add height to banks to prevent flooding of nearby areas, especially where vegetation has been removed.

7.0 SPILL CONTINGENCY PLAN

The Chief Inspector and Environmental Inspector will immediately notify the applicable provincial and federal government agencies and the NEB of the spill as required by law when a reportable event occurs during the construction of any component of the Project (for contact information see Appendix 4 of this EPP). If this is not possible, notification will be made as soon as practical. Reporting requirements for BC are provided on the Spill/Leak Response Card, included in this section.

Contaminated sites will be assessed, remediation designed and disposal sites identified in accordance with documents from the Canadian Council of Ministers of the Environment as applicable. These documents will be provided to the Chief Inspector and Environmental Inspectors as part of the Environmental Education Program. Emergency contacts are presented in Appendix 3 of this EPP.

Spill Prevention
Guidelines for the safe handling, storage, use and disposal of potentially hazardous materials as well as spill prevention measures and guidelines for the refuelling and servicing of equipment are provided in Section 4 of this EPP.

Spill Response
The Contractor shall provide Westcoast with a spill response plan, as described in 6.11.2, item 1 of the Environmental Manual. Standard measures for the handling of spills on the Dawson Project are described in Section 6.11.2 of the Environmental Manual.

SET - BC Pipeline and Field Services
SPILL/LEAK REPORTING REQUIREMENTS AND REPORTABLE QUANTITIES

RESPONSE AND REPORTING

ALL spills or releases to the environment of any substance in a class listed on this card *may* be harmful to the environment and must be reported **IMMEDIATELY** *following reasonable and practical action to contain and minimize the effects of the spill*:

- **First Witness** - Reports spill to On-Site/immediate Supervisor and initiates emergency response plan if required.
- **On-Site Supervisor** – Calls Field Services Gas Control number: **1-800-663-9931**
- **Notification Centre** – Documents caller information/contact number and contacts On-Call Incident Supervisor.
- **On-Call Incident Supervisor** – Contacts On-Site Supervisor and evaluates incident for regulatory reporting requirements. This may include communication with subject matter experts (EHS, etc.)
- **On-Call Incident Supervisor –** If incident deemed reportable, reports IMMEDIATELY to:
  Provincial Emergency Program **(PEP)**: **1-800-663-3456**
  Transportation Safety Board **(TSB/NEB)**: **1-819-997-7887**
- **On-Site Supervisor** - Submits incident report (via EHS website). Informs Incident Management Program (John Martin 250-960-2087 or johnmartin@spectraenergy.com) regarding the incident.
- **Area Team Leader** - Completes **NEB Preliminary** and **Detailed** incident reports.

TSB/NEB REPORTABLE SPILLS/LEAKS

"significant adverse effect on environment" includes any spill:	Any spill that results or could result in a significant adverse effect on property, the environment or the safety of persons. • any spill where the public is affected; or • a PEP reportable substance (liquid) > 1.5m3; or • a PEP reportable substance (liquid) of any volume i. If the release extends beyond gas plant boundaries or ii. If the release causes a significant adverse effect on the environment (i.e.: spill in water course)
"unintended or uncontrolled release of gas or high vapour pressure (HVP) hydrocarbons"	*A release:* (i) endangering the public; (including 3rd party odour complaints due to leaks from our facilities) (ii) on the right-of-way that has been leaking for an undetermined period of time; or (iii) that cannot be isolated without affecting the business

PEP REPORTABLE SPILLS/LEAKS

TDG Class.	SUBSTANCE SPILLED ***NOTE:*** This list is not all-inclusive. Refer to the TDG Regulations, MSDS, or check with Environment, Health and Safety (EHS) Dept	MINIMUM REPORTABLE QUANTITY (THRESHOLD) (also see note*)
2	**NATURAL GAS (SWEET)** — ONLY reportable IF the release results from pipeline breakages on lines operated above 100 psi and the release is sudden and uncontrolled.	500 scf (equals 10kg)
2.1 & 2.2	**FLAMMABLE AND NON-FLAMMABLE GASES** — Ethane, Butane, Propane, Acetylene, Unplanned CO2 (fire suppression) release	≥10 (kg or L)
2.3	**TOXIC GASES** — Sour Gas (H2S), Sulphur Dioxide	5 (kg or L)
3	**FLAMMABLE LIQUID** (to 61ºC Flashpoint) — Condensate, Fuel (diesel, gasoline, jet fuel, kerosene), Mercaptan, Methanol, Paint, Pigging Liquid, Scrubber Fluids, Solvents	100 L
4	**FLAMMABLE SOLIDS** —Pyroforics e.g. Iron Sulphide, Sulphur	25 kg
5.1 & 5.2	**OXIDIZING SUBSTANCES AND ORGANIC PEROXIDES** — e.g. Hydrogen peroxide, Nitric acid	50 (kg or L)
6.1 & 6.2	**TOXIC AND INFECTIOUS SUBSTANCES** — Some cleaners, Resin, Biocides	5 (kg or L)
8	**CORROSIVE SUBSTANCE** — Acids (includes Battery fluid), pure Amine (e.g. pure MEA), Caustic (e.g. NaOH, KOH), Lime (may include sludges), Mercury	5 (kg or L)
9	**MISCELLANEOUS (Environmentally Hazardous)** — includes asbestos, heavy metals >100ppm in waste, BTEX	25 (kg or L)
other	**LEACHABLE WASTE** — includes leachable heavy metals in soil or filter media, oily sludge	25 (kg or L)
other	**WASTE OIL** — includes wastes with greater than 3% oil (e.g. hydrocarbon contaminated soil, oily rags), Filters (oil & gas production filters), Lube oil	100 (kg or L)
other	ANY **OTHER SUBSTANCE** not captured above that has potential to cause pollution, e.g. dilute solutions such as glycol (EG, TEG), amine solutions (DEA, MEA, MDEA, Sulphinol, Morphysorb)	200 (kg or L)

****Any spill to water body/ watercourse must be reported to PEP***

(Pursuant to the B.C. Spill Reporting Regulation (under the Environmental Management Act) and the National Energy Board Onshore Pipeline Regulation and Processing Plant Regulation)

8.0 PLANT SPECIES AND ECOLOGICAL COMMUNITIES OF CONCERN DISCOVERY CONTINGENCY PLAN

In the event that rare vascular plants or ecological communities are discovered during future vegetation studies scheduled for 2010 along the pipeline route, the plant or community will be assessed and appropriate mitigative measures will be determined prior to construction of the pipeline. The appropriate mitigative measures will be determined following an assessment, which will include the following:

- the position of the plant or community on the right-of-way;
- the relative rarity of the plant or community (regionally, nationally etc.);
- the local abundance of the plant or community;
- the growth habit and propagation strategy of the plant or community; and
- the habitat preferences of the plant or community.

The suite of mitigative options (*i.e.,* staged mitigation) that may be implemented is outlined in Detail 9-1 of the EPP and includes the following:

- narrow down the proposed area of disturbance and protect the site using fencing or clearly mark the site using flagging;
- inform all users of access restrictions along native vegetation segments and in the vicinity of flagged or fenced sites;
- temporarily cover the site with geotextile pads, flex net, or swamp mats;
- extend road or watercourse bores to avoid or minimize impact on the site;
- realign the route to avoid the site; or
- propagate rare plants or specific portions of sensitive communities, via vegetative or reproductive means (*e.g.,* harvesting of seed from the right-of-way or adjacent area, salvaging and transplanting portions of sod and surrounding vegetation or collecting of cuttings).

The Rare Vascular Plant Survey report will outline appropriate mitigation to be implemented at each site. The Environmental Alignment Sheets will be amended, if warranted, to incorporate these mitigative measures.

CRITERIA FOR IMPLEMENTATION

Protection measures and environmental management techniques for rare plants and rare ecological communities will be based on site-specific conditions and species sensitivity criteria. Final decisions on mitigative measures will be made by Westcoast in consultation with botanical experts, and where appropriate, the land authority. Mitigative measures generally fall into categories of avoidance, minimizing disturbance and alternative reclamation techniques. The following mitigative measures and options will be considered in the order presented.

1. Preliminary assessment and protection will include the following steps in all cases.
   - Expand field survey of the area to identify whether the species or community is found within the footprint of disturbance or extends beyond it.
   - Consult with the BC CDC and vegetation experts to verify the status ranking, known distribution, plant species requirements, etc., and to discuss the type of terrain and the construction constraints.
   - Stake and fence off individuals or populations located within the footprint of disturbance or adjacent areas. This will be done as soon after identification as feasible, to protect rare plants during the preconstruction phase as well as during the construction and reclamation phases.
2. For S1 or S1S2 ranked rare plant species or species that are listed Provincially or Federally, complete protection is preferred. The mitigation strategy includes the following options in order of preference. One or more options may be used at a site.
   - Consider relocation of required workspace and narrowing down the planned area of disturbance to avoid individuals or populations occurring on the Project Footprint if the species can be fully protected during and after construction, or if a viable, self-sustaining population occurs beyond the footprint.
   - Consider a minor realignment of the pipeline or a change in the work side in the immediate area of the vegetation to be protected.
   - Consider boring beneath the site and providing alternative measures for equipment to travel past the area of concern (*e.g.,* protection matting or snow during the winter, drive around).
   - Consider employing appropriate salvage, propagation and transplant techniques (including transplanting the target species surrounded by an island of native vegetation), as directed by Westcoast's Vegetation Resource Specialist.
3. For S2, S2S3, S1S3, S3, SH and SU ranked rare plant species, the mitigation strategy includes the following options in order of preference. One or more options may be used at a site.
   - Consider relocation of required workspace and narrowing down the planned area of disturbance to avoid individuals or populations occurring on the Project footprint if the species can be fully protected during construction, or if a viable, self-sustaining population occurs beyond the right-of-way.
   - Consider employing appropriate salvage, propagation and transplant techniques, as directed by Westcoast's Vegetation Resource Specialist.
   - Consider leaving gaps in the spoil pile to avoid individuals or populations.
   - Consider using geotextiles/protective matting and/or snow during the winter to protect populations or habitats from scraping and compacting.
   - Consider not clearing before necessary to allow seed set and limit drying of the soils.
   - Where shade cover is expected to affect the viability of the population, maintain height of shrubs during brushing.
   - Consider traffic restrictions to minimize the amount and type of traffic disturbance.
4. For S1 or S2 ranked rare ecological communities the mitigation strategy includes the following options in order of preference. One or more options may be used at a site.
   - Consider a minor realignment of the pipeline or access road or change in the work side in the immediate area of the community to be protected.
   - Consider narrowing down the planned area of disturbance to avoid the community occurring on the Project footprint. Limit the number of trees that are cut as much as practical.
   - Consider using geotextiles/protective matting and/or snow during the winter to protect habitats from scalping and compacting.
5. For S2, S2S3, S3, SH and SU ranked rare ecological communities, the mitigation strategy includes the following options in order of preference. One or more options may be used at a site.
   - Consider narrowing down the planned area of disturbance to avoid the community occurring on the Project footprint. Limit the number of trees that are cut as much as practical.
   - Consider using geotextiles/protective matting and/or snow during the winter over the travel lane and spoil pile area to protect habitats from scalping and compacting.
   - Consider leaving gaps in the spoil pile to avoid disturbance to as much as the community as possible.
   - In treed or shrubby communities, maintain height of shrubs during brushing.
   - Consider not clearing before necessary to allow seed set and limit drying of the soils.
   - Consider traffic restrictions to minimize the amount and type of traffic disturbance.
6. Post-construction monitoring of rare plants or rare ecological communities may be recommended based on site-specific conditions and mitigation recommendations as well as species sensitivity criteria in order to assess mitigation success.

9.0 WILDLIFE SPECIES OF CONCERN DISCOVERY CONTINGENCY PLAN

Wildlife Species of Concern Discovery Prior to Construction

In the event that wildlife species of concern or their site-specific habitat is discovered during future wildlife studies or sweeps along the pipeline route, the discovery will be assessed and appropriate mitigation measures will be determined. The wildlife or habitat will be assessed based on the following criteria:

- the position of the wildlife or habitat feature with respect to the proposed area of development;
- the presence of topographic features or vegetation to effectively screen the wildlife or habitat from construction activities;
- the timing of construction versus the critical timing constraints for the species; and
- the potential for an alteration of construction activities to minimize or avoid sensory disturbance.

The mitigative measures that may be implemented will be determined in consultation with Canadian Wildlife Service and the BC MOE and may include the following:

- abide by federal timing constraints within the recommended set back distances;
- abide by daily timing restrictions on construction activities;
- narrow down the proposed area of disturbance and protect the site using fencing or clearly mark the site using flagging;
- alter or delay construction activities to avoid sensory disturbance (*e.g.,* no burning);
- extend road or watercourse bores to avoid or minimize effects on the site;
- inform all users of access restrictions in the vicinity of flagged or fenced sites;
- realign the route to avoid the site;
- salvage and transplant vegetation or native seed of critical importance to wildlife species of concern where the habitat could not be avoided;
- install nest boxes or platforms or otherwise replace or enhance habitat during reclamation or restoration; and
- relocate nests or other habitat features or individuals if practical and monitor post-construction response.

The Wildlife and Wildlife Habitat Surveys for Species of Concern report will outline the appropriate mitigation to be implemented at each site. If warranted, the Environmental Alignment Sheets will be amended to incorporate these mitigative measures.

Wildlife Species of Concern Discovery During Pipeline Construction

In the event that wildlife species of concern or their site-specific habitat are discovered during construction of the pipeline, follow the measures outlined below.

1. Suspend work immediately in the vicinity of any newly discovered wildlife species of concern. Work at that location may not resume until the measures below are undertaken.
2. Notify the Environmental Inspector who will notify the Chief Inspector.

3. The Environmental Inspector will assess the discovery and either allow construction to be resumed or, in the event of a confirmed or potential discovery, proceed by notifying:
    - applicable government agencies (*e.g.,* BC MOE, NEB, BC CDC, and Environment Canada) as required (for contact information, see Appendix 4 of this EPP); and
    - Westcoast's Wildlife Resource Specialist.

4. Westcoast's Wildlife Resource Specialist may deem it necessary to visit the site and will, regardless of whether a site visit is warranted, develop an appropriate mitigation plan in consultation with Westcoast's Environment, Health and Safety staff. The mitigative measures available include those listed above.

10.0 WILDLIFE ENCOUNTER CONTINGENCY PLAN

In the event of an encounter or vehicle collision with wildlife during the construction phase of the pipeline, either at the construction site or on the commute to and from the construction site, follow the measures outlined below.

1. Report any incidents (*e.g.*, aggressive behaviour, nuisance behaviour) with wildlife to the Environmental Inspector who will immediately notify the applicable provincial agency (*i.e.*, BC MOE) and, if warranted, the local police detachment (for contact information, see Appendix 4 of this EPP).
2. Report any trapped, injured, or dead animals on the site to the Environmental Inspector. The Environmental Inspector will contact the applicable provincial agency to consult on appropriate action.
3. Report location and details of collisions with wildlife to the Environmental Inspector. The Environmental Inspector will notify the applicable provincial authorities and, if warranted, the local police detachment (for contact information see Appendix 4 of this EPP).
4. Once the preceding contacts have been made, the Environmental Inspector will also contact the Westcoast's Environment, Health and Safety staff.

11.0 HERITAGE RESOURCE DISCOVERY CONTINGENCY PLAN

In the event that heritage resources are discovered during construction, follow the measures outlined below.

1. Suspend work immediately in the vicinity of any newly discovered archaeological, palaeontological, historical or traditional land use site. Work at that location may not resume until the measures below are undertaken.
2. Notify the Environmental Inspector who will notify the Chief Inspector and the Archaeological Resource Specialist.
3. The Archaeological Resource Specialist will develop an appropriate mitigation plan in consultation with the Environmental and Chief Inspectors and the BC Ministry of Tourism, Sport and the Arts - Archaeological Branch. The mitigative measures available include those listed below.

    - Site avoidance - may include amending the development footprint or temporarily covering the site using geotextile pads, swamp mat(s), or subsoil ramps.
    - Systematic data recovery - ranging from artefact collection and site documentation to salvage excavations.
    - Surveillance/monitoring - this involves assigning a qualified archaeologist or palaeontologist to monitor the trenching operations.

12.0 REFERENCES

Spectra Energy Transmission. 2010. Environmental Manual for Construction Projects in Canada, 2nd Edition. May 2010. Submitted to the NEB on May 28, 2010.

APPENDIX 6

WESTCOAST RECOMMENDED SOIL AND WATER HANDLING PROCEDURES DURING EXCAVATION OF POTENTIAL CONTAMINATION

RECOMMENDED SOIL AND WATER HANDLING PROCEDURES DURING EXCAVATION OF POTENTIAL CONTAMINATION

(Addendum to Contaminated Sites Policy & Procedure)

Introduction:

During excavation of soil and water suspected to be contaminated, procedures must be followed which are in accordance with the B.C. Ministry of Environment technical guidance document entitled "Site Characterization and Confirmation Testing". This guidance document describes the procedures for the proper handling and disposal of contaminated soils as per the requirements of the B.C. *Contaminated Sites Regulation* (BC Reg. 375/96) and the B.C. *Hazardous Waste Regulation* (BC SBC 2003). The following recommended procedures are an abbreviation of this guidance document.

Further, it should be noted that during the management of a contaminated site issue, this document should be considered in conjunction with the following:

- *section 47 of the B.C. Environmental Management Act* (outlining the requirements of independent remediation);
- Part 8 of the *B.C. Contaminated Sites Regulation* (outlining the conditions under which a soil relocation agreement is needed);
- Pipeline & Field Services Policies and Procedures Manual, Section 2.06 – "Contaminated Sites Management";
- Pipeline & Field Services Policies and Procedures Manual, Section 2.05 – "Site Decommissioning"; and
- Pipeline & Field Services Policies and Procedures Manual, Section 2.01 – "Waste Management".

The recommended soil and water handling procedures are triggered for use when potentially contaminated soils or groundwater are going to be taken off site, or remediated on-site. However, the determination must first be made as to whether or not there is a potential that the soil and/or groundwater is contaminated. This potential is considered to exist if one of the following are true:

- historical activities suggest a high likelihood of contamination;
- when the site has been used for certain specific industrial or commercial land uses
- results of previous investigations indicate the presence of contamination;
- strong visual indication of contamination (i.e. – dark staining of the soil, free product present, noticeable sheen on ponded water, presence of debris);
- strong olfactory indication of contamination (i.e. – distinct odours noticeable, soil vapour readings high)

If a determination of the presence or absence of potential contamination is unclear, an Environmental Specialist from the Pipeline & Field Services Division should be consulted (contact 250-262-3458).

Please Note:

1. It is expected that adequate personal protective equipment will be utilized by personnel working in and around the trench and soils during excavation.

2. Reporting on the procedures carried out, and all results of sampling and analyses must be reported to the Environment, Health and Safety ("EHS") Department of the Pipeline and Field Services Division (contact 250-262-3458).

3. In the case where work with the contaminated soil and/or water is being undertaken adjacent to fish-bearing water, measures must be taken to ensure that there is no deposit of deleterious substances near or to the water body, as per the *Fisheries Act*.

4. Where contaminated soil and/or groundwater are to be remediated or relocated off site, notification to the Ministry of the Environment may be required. The Pipeline and Field Services Division EHS Department should co-ordinate this contact and reporting - not the on-site excavation team.

Recommended Procedures:

<u>IF the soil and/or groundwater to be excavated are considered to have the potential to be contaminated, it is recommended that the following procedures be followed:</u>

<u>Prior to Hydrovacing/Excavation:</u>

1. Definition of approximate areas of contamination in situ should be conducted (classifying as either Industrial Land soils (i.e. – soils within the CSR limits for Industrial Land), Waste soils (i.e. – soils exceeding CSR limits for Industrial Land), or Hazardous Waste soils (i.e. – soils exceeding the CSR criteria)). For a preliminary investigation (to confirm or refute suspect contamination) sampling should be carried out using a coarse grid, with 25 – 50m spacing between sample locations. Samples should be analyzed by an accredited laboratory for the potential contaminants of concern.

2. Construction of separate lined slurry deposition ponds for suspect Hazardous Waste, Waste and Industrial Land quality slurry, respectively, should be completed.

<u>During Hydrovacing:</u>

3. Slurry collected from suspected Hazardous Waste areas should be deposited in the Hazardous Waste slurry deposition pond. The remaining slurry should be deposited in the Waste and Industrial Land slurry deposition ponds upon assessment. Visual and olfactory assessment, along with vapour meter readings should be used to control the extent of this process.

4. Treatment of all wastewater from the slurry deposition ponds must be conducted in accordance with the CSR prior to discharge to a receiving body. Mobile treatment systems can be utilized in many cases.

Prior to Excavation:

5. Preparation of stockpile areas for each of suspected Industrial Land soils, Waste soils and Hazardous Waste soils should be completed. All stockpiles should be trenched around the perimeter to collect seepage. Tarps should be available for use in covering stockpiles to minimize infiltration. The suspect Hazardous Waste stockpiles should be underlain with a non-permeable liner.

During Excavation:

6. Excavation should begin in the area of suspected Hazardous Waste contaminated soils. Excavation should then proceed outwards to areas with suspected lower levels of contamination.

7. During trench excavation, soils should be deposited in stockpile areas specific to each soil's suspected classification (Industrial Lands, Waste or Hazardous Waste). Organic vapour monitoring of the soils would aid in this classification. Stockpile sizes must not exceed $50m^3$ for suspect Hazardous Waste, $150m^3$ for suspect Waste and $250m^3$ for suspect Industrial Lands quality soils. Additional stockpiles must be formed in the event that the excavated material exceeds the maximum volume allowable for each type specific stockpile.

8. Sampling of exposed soils in the walls of the excavated trench should be conducted in order to verify chemical concentrations of the soils remaining in-place. This in situ sampling should be conducted in a manner consistent with the B.C. Ministry of Environment's guideline document entitled "Guidance on Contaminated Sites, Site Characterization and Confirmation Testing".

Stockpile Management:

9. All seepage from the suspect Hazardous Waste stockpiles must be collected and treated in accordance with the CSR prior to discharge to a receiving body. Mobile treatment systems can be utilized in many cases.

10. Soils stockpiled in the suspect Industrial Lands and Waste quality stockpiles should be sampled in accordance with the ex-situ soil classification guidelines contained within the "Guidance on Contaminated Sites, Site Characterization and Confirmation Testing".

Soil Disposal:

11. The Industrial Lands classified soils can be re-used on-site. The Waste and Hazardous Waste classified soils will need to be disposed of in an appropriately licensed facility. **Please consult your EHS Contact (i.e – EHS Advisor/Specialist) for the recommended facilities in each location.**