

<b>Environmental Guide: Env. 303</b>	<b><u>Appendix 4</u></b> <b><u>Clearing and Brushing</u></b>
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<b>Purpose</b>	To ensure conservation and timely restoration of wildlife habitat is incorporated into the planning and implementation of Terasen Pipelines' clearing and brushing activities. Note: <i>Guideline</i> supports Terasen Pipelines' HS&E Policy Guiding Principles: 1, 3, 8
<b>Scope</b>	This <i>Guideline</i> applies to all Terasen Pipelines' construction projects and maintenance activities where removal of brush or treed vegetation is required.
<b>Environmental Issues Mitigated</b>	<ul style="list-style-type: none"> <li>❑ Removal of vegetative cover (tree and shrub layer) causing: <ul style="list-style-type: none"> <li>• Direct loss or alteration of wildlife habitat within the affected area;</li> <li>• Reduced habitat effectiveness adjacent to the affected area during actual brushing and clearing operations;</li> <li>• Habitat fragmentation from blockage of wildlife movements;</li> <li>• Introduction of slash into adjacent watercourses;</li> <li>• Aesthetic impacts from unsightly accumulations of slash;</li> <li>• Increased fire hazards from slash accumulations; and</li> <li>• Loss of or damage to merchantable timber</li> </ul> </li> </ul>

<b>Legislation &amp; Permits</b>	<b>Jurisdiction</b>	<b>Regulation</b>	<b>Permit Required</b>
	Federal	• <u>Onshore Pipeline Regulations, 1999</u>	No
		• <u>Fisheries Act</u>	No
		• <u>Migratory Birds Convention Act</u>	No
		• <u>Species at Risk Act</u>	No
	Alberta	• <u>Alberta Environmental Protection and Enhancement Act</u>	No
		• <u>Pipeline Agreements (PLAs)</u>	Yes
		• <u>Burning Permits</u>	Yes
		• <u>Forests Act</u>	Yes
	British Columbia	• <u>Open Burning Smoke Control Regulation (Waste Management Act)</u>	Yes
		• <u>Forest and Range Management Act</u>	TBD
		• <u>Fish Protection Act</u>	TBD
<b>Note</b>	Detailed information on the above legislation and regulation can be obtained directly from the Law Department or from the ' <u><a href="#">Environmental Law List Manual</a></u> '.		
<b>Associated Guidelines</b>	• <u>ENV 304 Pesticide Usage</u>	• <u>ENV 310 Work In-and-about a Wetland</u>	
	• <u>ENV 307 Work In-and-about a Stream</u>	• <u>ENV 313 Re-vegetation</u>	



Application Guidelines	
<p><b>Pre-Construction Planning</b></p> <p><i>Timing</i></p> <p><i>Note</i></p>	<p>A number of environmental constraints may be associated with brushing and clearing activities. Compliance with both government and company environmental policies pertaining to environmental and habitat protection is essential. Consequently, pre-construction planning is an important phase of construction and maintenance projects to ensure the timely completion of such activities.</p> <p>Approximately one month of lead-time should be allowed to obtain required government permits and approvals. The necessary landowner permission must also be acquired prior to any brushing or clearing activities.</p> <p>To avoid impacting wildlife during their reproductive period, brushing and clearing activities in non-agricultural lands should be scheduled outside of the April 15 to July 15 time period.</p> <div data-bbox="435 646 1417 926" style="border: 1px solid black; border-radius: 15px; padding: 10px;"> <p><b>Background:</b> While several pieces of legislation exist to protect wildlife, the federal Species at Risk Act (SARA) was specifically enacted to prevent wildlife from becoming extinct in Canada. It provides for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity, as well as manages species of special concern to prevent them from becoming endangered or threatened.</p> <p>SARA makes it an offence to kill, harm, harass, capture or take an individual of a listed species that is extirpated, endangered or threatened. In relation to the activity of clearing or brushing, it is an offence to damage or destroy the residence of one or more individuals of a listed endangered or threatened species.</p> </div> <p>The timing window may change or extend with particular wildlife species observed on or in proximity to Terasen Pipelines' ROWs and facilities</p> <p>Additional timing restrictions on activities may be imposed by government agencies, and should be reviewed with the appropriate agencies prior to commencement of activities.</p>
<p><b>Clearing</b></p> <p><i>Environmental Procedures</i></p>	<p>Clearing refers to the removal of previously undisturbed vegetation (including merchantable timber) for initial pipeline construction, extra workspace or minor facility expansion.</p> <p>All areas to be cleared must be clearly flagged prior to commencement of activities to avoid trespass infractions and needless clearing.</p> <p>Avoid the felling of obvious wildlife trees (e.g. snags with cavity nests, large trees with stick nests).</p> <p>Trees with a diameter at breast height of 15 cm or greater should be salvaged for either firewood or merchantable timber. A timber salvage plan may be required by some regulatory agencies for review of salvage criteria, deck site location, access, etc.</p> <p>During clearing, trees should be felled towards the existing ROW wherever possible. 'Leaners' or felled trees which inadvertently fall into adjacent undisturbed vegetation will be salvaged, or bucked into manageable lengths and removed onto the ROW for alternate uses (i.e. corduroy, rollback, etc.).</p> <p>The removal of vegetation can lead to an increased potential for erosion of sensitive soils. In particular restrict root grubbing on steep slopes, if feasible, to minimize surface erosion.</p> <p>Salvaged logs shall not be skidded through watercourses or wet areas.</p>

<p><b>Brushing</b></p> <p><i>Environmental Procedures</i></p>	<p>Brushing is undertaken to facilitate access along existing ROW by maintenance and emergency response equipment, and to facilitate aerial surveillance. Vegetation growth in the vicinity of valve sites is to be cut or mowed to permit access and to minimize potential weed habitat.</p> <p>Flag ROW boundaries, where warranted, prior to brushing to identify sensitive areas and to avoid off ROW damages.</p> <p>Ensure the brushing contractor is aware and informed of any sensitive terrain, habitats, slopes, streams, etc. Where special measures may be required, inform contractor of Company policy and/or regulatory requirements (i.e. water crossing methods).</p> <p>Brushing activities should be scheduled when the ROW will generally be dry or frozen to minimize terrain damage.</p> <p>All brushing equipment should be fitted with spark arrestors to prevent fires.</p> <p>Cut brush as close to the ground level as possible (approximately 15 cm) but leave ground (surface) cover and roots in place. Unless through a landowner agreement, grubbing (removal of roots) should be avoided to prevent soil erosion. Cut stems or stumps can present a safety hazard to livestock, wildlife and humans. Blunt the sharp edges at locations where cattle are grazing or at sites intensively used by wildlife to minimize the risk of injury.</p> <p>Hand cut large diameter trees, which are too large for rotary or flail mowers.</p> <p>Hand cut brush in proximity to watercourses to minimize the introduction of woody debris in the channel. Unless directed as a site-specific habitat improvement initiative under a regulatory approval condition, remove any debris or branches inadvertently deposited within the high water mark of watercourses.</p>
<p><b>Slash Disposal</b></p> <p><i>Chipping</i></p> <p><i>Burning</i></p>	<p>Unless otherwise directed by regulatory agencies or landowners, all residual slash remaining after the salvage of timber for secondary processing, firewood or other purposes, will be disposed, of by either burning or chipping.</p> <p>The chipped material should be spread evenly, in a thin layer to prevent a solid blanket effect. Timing of the activity must take into account the seasonal fire hazard.</p> <p>The chipping or mulching of slash will not be permitted within the riparian zone of any stream. In particular, chipped cedar debris will not be used for erosion control within a riparian zone as it produces a leachate toxic to fish.</p> <p>All necessary burning permits will be obtained by Terasen Pipelines prior to burning activities.</p> <p>On non-agricultural lands, burn piles will be located on exposed mineral soils only, and will not be located on organic soils.</p> <p>On agricultural lands, burn piles will be located on burning skids or on soils stripped of topsoil. No burning will be conducted on topsoil.</p> <p>All crews involved with burning will be equipped with adequate fire suppression equipment.</p> <p>ROWs subjected to extensive slash disposal will be scanned with infrared equipment within 1 month of completion of activities to identify subsurface "hotspots" of smouldering material. Such sites, if located, will be immediately excavated and extinguished by Terasen Pipelines.</p>

<p><i>Timber Salvage on Crown Land</i></p>	<p>Prior to clearing in Crown Land, regional Forestry officials will be contacted for direction on requirements for the salvage of merchantable timber.</p>
<p><b>Timber Salvage</b></p>	<p>Where required by Forestry, a timber salvage plan will be developed and submitted for review. The plan will outline salvage criteria, deck site locations, access requirements and final mill destination.</p> <p>Timber salvage operations will utilize cut-off type saw equipment, and falling will be undertaken in a manner that minimizes butt shatter, breakage and off-right-of-way disturbance. Skidders will be used to transport salvaged logs to deck sites.</p> <p>Salvaged logs will not be skidded through watercourses, wet areas or thawed muddy ground on the ROW.</p> <p>Decking sites will be located on approved extra workspace in existing cleared areas, in non-merchantable stands of timber or, if no other options are available, in merchantable timber stands.</p> <p>At selected decking sites, salvaged logs will be limbed, topped and decked with butt ends facing the same direction. Log decks will be oriented to best facilitate loading by picker trucks.</p> <p>All decked timber will be removed from the ROW prior to the completion of clean up.</p> <p>Some timber may be salvaged for use as reinforcement for surface diversion berms or for corduroy for stabilizing soft sections of the ROW. Preferred timber sources for such purposes are large diameter aspen and balsam poplar cleared from the ROW, if available; and non-merchantable timber cleared from the ROW. Prior to commencement of corduroy construction, any use of merchantable conifers, for localized corduroy construction, must be approved by District Forestry officials.</p>
<p><i>Timber Salvage on Private Lands</i></p>	<p>Requirements for timber salvage on private lands will be discussed with landowners prior to commencement of activities.</p>
<p><i>Timber/Slash Salvage for Access Management</i></p>	<p>At the request of the landowner, Terasen Pipelines will undertake firewood salvage to reasonable specifications agreed upon by the Company and the landowner.</p>
<p><i>Timber/Slash Salvage for Access Management</i></p>	<p>At the direction of regional Wildlife officials, timber and larger diameter slash will be salvaged for use as rollback or obstruction berms for access control.</p>
<p><b>Brushing Near Streams and Wetlands</b></p>	<p>Riparian zones, located next to streams, rivers, lakes and wetlands, have direct influence on aquatic habitat quality. They can broadly be defined as the zone of vegetation immediately adjacent to and including the banks of an active stream channel, which provides shading, cover, erosion protection and nutrient sources for the stream. Reduction of stream bank vegetation due to construction and maintenance of stream crossings, through brushing, spraying or the use of heavy machinery, can harm fish habitat.</p> <div data-bbox="389 1486 1442 1535" style="background-color: yellow; border: 1px solid black; padding: 5px;"> <p><b>Note: Brushing crews may require regulatory approval to ford streams along the ROW.</b></p> </div>

<b>Environmental Procedures</b>	<p>Brushing of riparian vegetation may require government authorization. Brushing within the riparian zone must be reviewed with the Environmental Coordinator.</p> <p>Keep brushing of ROW through the riparian zone as narrow as possible. Brush only what is necessary for safety and maintenance requirements (see Figure 303-2 'Brushing Activities Through Riparian Zones') for the recommended "hourglass" shaped brushing technique within the riparian zone.</p> <p>When it is permitted within the riparian zone, brushing should be completed by hand.</p> <p>Avoid root grubbing near watercourses. Maintain an undisturbed organic mat to minimize the potential for introduction of sediment into the watercourse.</p> <p>Slash inadvertently introduced into a water body should be removed immediately.</p> <p>The chipping, mulching or burning of slash will not be permitted within the riparian zone of any stream.</p> <p>Use of herbicides is strictly regulated within the riparian zone and often requires a specific permit. Where possible non-herbicide methods of control should be considered first.</p>
<b>Documentation &amp; Records</b>	<p>Records of all areas brushed should be maintained by the Operating and Pipeline Maintenance Supervisors to facilitate effective vegetation management planning.</p>

## Glossary

<i>Brushing</i>	Refers to the removal of re-growth on existing ROWs, roads and other facilities.
<i>Clearing</i>	Refers to removal of shrub or tree-dominated communities on sites previously undisturbed by Terasen developments. Clearing may be associated with the expansion of existing facility sites, or with the development of temporary extra workspace required adjacent to existing facilities for maintenance activities ( <i>i.e.</i> , extra workspace at a cut-out site).
<i>Corduroy</i>	The use of parallel logs in road construction through soft terrain to improve surface bearing capacity.
<i>Habitat</i>	The general place or physical environment in which a wildlife population lives.
<i>Habitat Fragmentation</i>	Habitat disruption where natural habitat is broken by human activities or physical structures into small and relatively isolated sections, affecting the life cycle of a particular specie or group of species.
<i>Merchantable Timber</i>	Refers to trees of a size and species, which must be harvested during clearing activities for secondary processing ( <i>i.e.</i> , fence post production, lumber production). Criteria for merchantable timber are provided by regional offices of the regulatory forestry agencies.

**For further information please contact your local Regional Environmental Coordinator.**