SCHEDULE “D"
ENVIRONMENTAL PROTECTION MEASURES

This section identifies technically and economically feasible measures that will mitigate the identified potential adverse effects on valued components associated with Mount Sir Donald Tree Removal Glacier National Park, Project Description MRG2018-08. Mitigation means the elimination, reduction or control of adverse effects of the Project.

General Mitigations

- All work must be performed in accordance with the ordinances and laws set out in the *Canada National Parks Act* and Regulations and other applicable legislation (e.g., *Species at Risk Act*, *Fisheries Act, Migratory Birds Convention Act, 1994*).
- All applicable mitigations outlined in the *Parks Canada – National Best Management Practices for Fire Management Operations BMP* (March 2017) will be followed.
- The designated Parks Canada Environmental Surveillance Officer (ESO) will be present at the start up meeting to review key mitigations with the Contractor. Modification to identified mitigations or additional mitigations may be required by the ESO in response to any unforeseen issues.
- Work will be completed in the shortest practical time frame possible.
- Work will be undertaken between **September 1, 2020, and November 30, 2020**, with all tree falling to occur between **September 1, 2020 and October 31, 2020,** as per *“Schedule B Operational Requirements”, section i. Schedule*. Work shall be planned to ensure the minimum possible amount of machine movement, ground tracking, and subsequent disturbance to surface vegetation.
- Staging areas, material/equipment drop sites, and parking areas must be identified, including duration of use, within an existing disturbed footprint (e.g., roadway, gravel surface, previously disturbed area with high resiliency) or as approved by Parks Canada.
- Non-traditional clearing techniques and equipment will be selected that meet or exceed environmental standards to avoid disturbance to soil and vegetation.
- Heavy equipment will arrive onsite in a clean condition (power washed) and free of invasive species, noxious weeds and soils from off site.
- Equipment must be properly tuned, clean and free of contaminants, in good

operating order, free of leaks (e.g., fuel, oil or grease), and fitted with standard air emission control devices and spark arrestors prior to arrival on site.

- Vegetable-based oils will be used where possible, and in particular when machinery will be used near water bodies. Machinery must be stored, maintained and refueled on a hardened flat surface, outside the dripline of trees and a minimum of 30m from waterbodies, as measured from the High Water Mark. Increase the buffer zone depending on level of risk and site specific conditions.
- Leaks and spills during refueling must be cleaned up and contaminated materials must be disposed of appropriately.
- Fuels, lubricants, petro-gels or oils will not be stored within 100 m of streams, wetlands, or sensitive sites unless absolutely required for operational capacity. Fuel cans for pump sites should be secured to avoid spills; use a mini-berm where possible.
- Gas generators must be secured to prevent movement during operation and set up on an impermeable fuel mat with a berm or within a containment that can contain 110% of the volume of fuel in the generator.
- Spill containment equipment must be present on-site. A spill contingency response kit including sorbent material and berms to contain 110% of the largest possible spill related to the work must be available on site at each location of potential spills (sites where equipment is working, and at re-fuelling, lubrication, and repair locations). Spills in water or any spill of > 5 liters must be reported immediately to the ESO and the Parks Canada Project Manager.
- All spills must be contained and cleaned-up as soon as it is possible to safely do so.
- Contaminants must be recovered at source and disposed of according to applicable laws, policies and regulations. The site will be inspected by the ESO to ensure completion to expected standards.
- No on-site disposal or storage of garbage is permitted.
- Parks Canada shall ensure that the cutting area is flagged with yellow flagging tape, with knots showing to the inside of the treatment areas.

Soils and Landforms

- Use protective barriers (e.g., floatation mats or mat of tree limbs) on harvesting trails, wet, moist areas, and areas with sensitive vegetation, to reduce soil compaction and disturbance.
- During periods of soft soil (i.e. post spring melt) equipment and vehicle access will

be restricted to dry or frozen soils.

Vegetation

- Treatment boundaries, riparian zone buffers (15m from high-water mark), as well as the locations of sensitive ecological features will be clearly marked by the contractor and communicated to fallers as per the project briefing and site visits.
- Felling breakage will be minimized where possible, but not at the expense of the remaining stand and site ecology. For example, a tree should not be felled into an ecologically sensitive area or into the residual stand simply to avoid breakage.
- Prior to commencing any works, conduct a wildlife/danger tree assessment as per BC Wildlife/Danger Tree (WDT) Assessors guidelines. Contact the Parks Canada Ecologist prior to removing any trees classified as high wildlife value (see Parks Canada Vegetation Removal BMP for more detail). Fallers must be especially cautious to fall trees in a direction which causes the least impact to the understory plant community, standing trees and other sensitive ecosystem components, such as streams, riparian areas and site infrastructure.
- All tree species other than spruce (i.e. hemlock and cedar) are to be retained unless identified as danger trees. If danger tree is identified, follow the Vegetation Removal BMP for exceptions.
- All live or dead deciduous trees shall be retained, with the exception of danger trees (See Vegetation Removal BMP for exceptions).
- All danger tree removal will adhere to the Vegetation Removal BMP with special considerations give to trees assessed with high wildlife values.
- Salvageable trees will be limbed, topped and cut to length on-site rather than at landing sites using “at the stump” wood processors with low ground pressure tires or tracks. Contractor is responsible for cutting trees accordingly to retain highest merchantable value possible. Stump heights will not exceed 30cm and will be as short as possible given limitations of equipment used. Stumps will not be removed from skid trails, landings or other areas of the block.
- Salvageable portions of the stem will be transported to the nearest landing with forwarders rather than conventional skidders, similarly equipped with low pressure tires or tracks. Forwarding trails will not be placed closer than 25m apart and will meander as much as possible to reduce potential for future trail development.
- Landings will be located strategically in the treatment area in existing disturbed areas,

along existing right-of-ways and existing forest openings. Logs will be cycled within 7 days from landing to mill to minimize the number of landings.

- All spruce trees and spruce woody debris must be removed from site and either milled for merchantable timber or disposed of in a manner that will not result in further spread of spruce beetle. This may involve burning of woody debris and/or non-merchantable timber, or removal off-site.

Burning:

- Additional mitigation measures may be required for burning as determined in consultation with the Parks Canada Fire Management Officer. Any burning will be authorized through a separate Restricted Activity Permit. See *Appendix A – Schedule B Operational Requirements, section iv. Debris Management / Burning Activities* for acceptable methods of burning.
- The Contractor will comply with safety and communication protocols defined by Parks Canada to ensure minimal smoke production, safe burning practices and prevent fire escapes or unacceptable holdover fires. The Contractor will also communicate with the Parks Canada Project Manager and/or Fire Management Officer to obtain daily burning approvals and instructions.
- Burn sites shall be located and built to prevent loose-rolling embers and damage to standing trees and vegetation.
- Burning will ONLY be permitted on days when fire danger and smoke dispersal conditions are suitable. Work may be temporarily suspended by the Parks Canada Project Manager or Fire Management Officer, when inversions, other weather conditions, or location do not allow for proper smoke dispersal.
- Proper burning methods and practices are required to reduce smoke production, encourage complete consumption and hasten vegetation recovery. This can be accomplished in the following ways:
    - Placing dead, drier material at the base/core of trench pits;
    - Adding other materials only after trench pits are fully ignited and at peak heat production;
    - Using portable air blowers;
    - Igniting trench pits during the time of day when venting is most probable and avoiding early morning and late afternoon periods (peak burning during peak venting)
    - Frequent tending of trench pits; this is a requirement before leaving site at end of

the day;

- Re-rolling smoldering material in trenches that survive the night as a first task each day;
- Chipping and hauling green foliage or using other innovative burning methods to reduce smoke in areas immediately adjacent to the highway is encouraged.

Ground-based Yarding:

- Log transport from harvest areas should be completed with flexible multi-terrain tracks or eco-tracks log forwarders.
- Forwarder trail layout and design will:
  - follow natural contours to reduce soil erosion;
  - minimize overall length, straight lines, sharp turns, identified sensitive areas and damage to the residual stand;
  - be at grades less than 15%, to the extent possible;
  - where steep grades are unavoidable, break the grade, install drainage structures and use soil-stabilization practices to minimize runoff and erosion;
  - be at least 15m away from streams, ponds and marshes;
  - include construction of temporary crossings for all stream channels, springs, seeps, and sinkholes;
  - avoid back spar and bladed trails; if necessary, these will only be constructed in approved locations.
- General forwarder (forwarders must be used) operation will:
  - restrict operation on slopes greater than 35%, away from the tops and toes of banks and slopes;
  - cover skid trails with logging slash and organic debris (wood chips) to minimize site degradation, particularly at the landing site and in areas where machinery must turn around;
  - use floatation mats where debris does not provide adequate protection;
  - avoid repeated use of the same forwarder trail to prevent rutting and soil compaction;
  - not operate in identified sensitive areas; aerial or skyline systems will be used in these areas if necessary.
- All site impacts caused by ground-based transportation will be rehabilitated according to the tree removal prescription including:
  - closing obvious site-lines and possible access with placement of woody

debris, with special consideration given to visible sight lines from visitor sites and facilities;

- replacing salvaged vegetation (sods, top organic layer);
- Large cleared or disturbed areas must be re-seeded as soon as is practical with a Mount Revelstoke and Glacier National Parks-approved native seed mix. Seed certificates must be provided to the Parks Canada Impact Assessment Officer for approval *before* seed mixes are ordered or applied to site.
- Some areas might be mulched to prevent vegetation regrowth.

Log Loading and Transportation:

- Landings will be:
  - chosen and marked by Parks Canada in consultation with the Contractor, and will avoid all ecologically and culturally sensitive sites;
  - use the minimum number possible and be located in disturbed areas, preferably along roads or rights-of-ways, existing forest openings or openings created as part of thinning;
  - as small as possible while accommodating forwarding activity and truck loading;
  - managed carefully and efficiently to minimize disturbance footprint;
  - be rehabilitated to ensure re-establishment of native vegetation and control of non-native vegetation.
  - Parks Canada may require that landing and loading areas be protected with rig mats or similar material to reduce environmental impacts and facilitate future site restoration.
- Log sorting locations will be chosen to minimize long term impact on the site and will avoid undisturbed sites to the greatest extent possible.
- Equipment for loading and hauling will be chosen primarily to ensure logs can be safely removed while decreasing the area impacted. Swing loaders are recommended because they can operate on smaller landings than front-end loaders.
- Loaders with rubber tires will be used as appropriate for the site.
- Loading from landings adjacent to highways will require cautionary traffic signs and/or flag person(s) as per provincial highway regulations.

Wildlife

- Critical wildlife timing windows will be respected and communicated to the Contractor prior to work commencing (e.g., denning, calving, nesting, roosting, spawning seasons). Site-specific protection measures will be employed as appropriate.
- The least risk period for vegetation cutting at this site is September 1 – November 15; schedule all vegetation cutting during this time.
- If active dens are disturbed, stop work and contact the ESO immediately for direction.
- Never approach or harass wildlife (e.g., feeding, baiting, luring).
- If wildlife is observed at or near the work site, allow the animal(s) the opportunity to leave the area. Alert the ESO immediately to any potential wildlife conflict (e.g., aggressive behaviour, persistent intrusion), distress or mortality. In the case of aggressive behaviour or persistent intrusion, stop work and evacuate the area.
- All wildlife attractants must be secured (e.g., petroleum products, human food, recyclable drink containers and garbage) in wildlife-proof containers or secure vehicle, and removed from site at the end of each day.

Aquatic Resources

- All work and activities will comply with the *Fisheries Act* and the *Measures to Avoid Causing Harm to Fish and Fish Habitat* (Fisheries and Oceans Canada).
- Tree removal is required along the Illecillewaet River, and the following are additional requirements for tree removal in these areas:
    - All species except spruce must remain unless identified and formally documented as a wildlife or danger tree (as per BC Wildlife/Danger Tree (WDT) Assessors guidelines);
    - Trees within 15m of the high-water mark of the Illecillewaet River or any pools of standing water must be removed by hand falling only;
    - All tree falling within riparian areas must be away from the water and efforts made to avoid any damage to stream/channel banks;
    - For any trees removed from within the 15m riparian buffer, at least 40% of the woody debris must be retained. Fallen trees can be left intact or bucked and scattered to avoid fuel loading.
- Machinery will not cross water bodies or operate below the high water mark.

Cultural Resources

- There are no known archaeological, cultural or significant sites to Indigenous people located within the project site.
- If cultural or historical resources are encountered at any time, the Accidental Finds Procedure shall be followed (i.e. stop work and contact the Environmental Surveillance Officer (ESO) or Cultural Resource Management (CRM) Advisor immediately for direction), or call Jasper Dispatch 1-877-852-3100 if after 4:00 p.m. PST or on weekends.
- Contractor will be provided reference material for the correct identification of a Culturally Modified Tree (CMT) [provided by the Cultural Resource Management (CRM) Advisor] and will follow the Accidental Finds Protocol throughout the project duration.

Air Quality

- Trench or air curtain burners will be constructed and tended in a manner to limit smoke production and ensure full consumption of materials.
- Burning will cease during unfavourable venting or fire danger conditions.

Public Safety / Visitor Experience

- A full closure of the project site (Parks Canada Superintendent's Order) to the public and unauthorized personnel will be in place for the duration of the project. Parks Canada will provide copies of the Order and accompanying site map to the Contractor for posting at entrance road into the site.
- Large vehicle and heavy equipment access to highways will require cautionary traffic signs and/or flag person(s) as per provincial highway regulations.
- All traffic signage and/or cautionary signage used to inform the public must be bilingual or symbolic in nature.
- There is risk of avalanche hazard on the project site during the late fall and winter seasons. **After October 31, Contractor will be required to contact the Duty Forecaster, Avalanche Control Services, Mount Revelstoke and Glacier national parks at 250-814-5208, on a daily basis to be informed about avalanche conditions and artillery control *before* accessing the site, or phone Jasper Dispatch at 1-877-852- 3100**. After October 31, Contractor will not be permitted to enter the site unless granted approval on a daily basis by Avalanche Control Services. Such approval will be based on daily avalanche conditions and artillery control, and approval will not be granted in advance.