

West Sulphur Mountain Wildfire Risk Reduction Project – Basic Impact Analysis Mitigations

7. MITIGATION MEASURES

Project thinning work, debris management, and restoration efforts will be guided by Parks Canada's Banff Field Unit Interim Fire Management Plan 2016, BFU/LLYK Woody/Vegetative Debris Management Guidelines, and the Banff Field Unit: Vegetation and Restoration/Reclamation Guidelines (2017d), respectively.

It is expected that all staff and contractors will understand and comply with all National Parks Regulations. Pre-work briefings/meetings will be held to address environmental sensitivities within the project area, such as erosion and sedimentation, wildlife interaction and equipment spills, leaks and clean ups. It is recommended that an Environmental Protection Plan (EPP) be prepared by the project Contractor in accordance with the mitigation measures outlined in this report. To ensure mitigation of potential adverse effects identified, the EPP shall be available to all staff during project activities and will include, at a minimum:

- An access plan that outlines the proposed access route(s), types of equipment to be used and locations/sizes of lay down areas in order to prevent/minimize disturbance to vegetation and soils. This will include details on how the work limits will be marked out and what procedures will be employed to ensure work outside these limits does not occur and to ensure that the environment is not impacted or damaged by works or construction equipment beyond the work limits.
 - In order to minimise soil disturbance, all equipment/machinery on site must use low-impact rubber tires or track systems.
 - Skidding trails and landing sites will be utilized in logging operations to reduce the extent of machinery use and minimise the risk of non-native vegetation establishment in the project area due to excessive residual debris being left on-site.
- An Emergency Response Plan that outlines procedures to follow in the case of a medical/injury incident, including emergency response contacts.
- A Spill Response Plan will detail the containment and storage, security, handling, use and disposal of all hazardous materials, including empty containers, surplus product or waste generated in the application of these products, to the satisfaction of the Departmental Representative and the Environmental Surveillance Officer (ESO) and in accordance with all applicable federal and provincial legislation. The EPP shall include a list of products and materials to be used or brought to the project site that are considered or defined as hazardous or toxic to the environment, including fuel, lubricants, and antifreeze.
- A Fire Response Plan that outlines procedures to follow in the case of a fire, including a list of adequate fire-fighting equipment located on site, and emergency response contacts.
- Provisions to reduce human-wildlife interactions, including a waste management plan.

All contractors employed at the project site shall be instructed by the ESO during an Environmental Briefing regarding their individual and collective responsibilities to ensure avoidable adverse environmental impact does not arise from their activities and personal choices.

Air Quality

The negative effects on air quality caused by smoke will be minimised by allowing green slash piles to dry over at least one drying season. Burning will be conducted during periods when the conditions for smoke dispersal are most favourable. Air quality will be monitored during burning operations to ensure air quality stays below 30 µg/m³, the Alberta ambient air quality objective for 24 hour PM_{2.5} measurements (Government of Alberta, 2017) (atmospheric particulate matter that have a diameter of less than 2.5 micrometers). PM_{2.5} will be measured since it

is the air pollutant of concern when dealing with public health and smoke emissions.

Soil & Landforms

Fueling and lubrication of equipment/machinery will be completed at designated fuel/lubrication stations. Stations will be located 100m from water bodies on a hardened surface, will include secondary containment systems, and adequate spill response equipment.

Mechanical work will be completed when ground is frozen to avoid soil disturbance. If soil becomes wet and rutting is occurring/likely to occur, work will cease. If rutting occurs, ruts will be restored as per standards set out in the Vegetation Removal and Restoration/Reclamation Guidelines (Parks Canada, 2017d). All machinery/equipment on site must use low-impact rubber tires or track systems to minimise soil disturbance.

Aquatic Resources

Mitigation measures outlined in the AB Timber Harvest Planning & Operational Ground Rules (Government of Alberta, 1994) will be utilized for protection of the identified ephemeral drainage within the project area. Because this fuel management project is occurring within conservation-focused management of a national park versus a commercial forestry operation, mitigation measures will be enhanced above the industry standards set out in the provincial ground rules. Mitigation measures for this project will follow buffer zone standards outlined for intermittent watercourses, which includes more stringent guidelines than those for ephemeral watercourses. Mitigations will include:

Ground Conditions

- Machine logging operations will only take place when ground is frozen, to reduce ground disturbance.

Watercourse Protective Buffers

- Buffer of brush and lesser vegetation to be left undisturbed along the channel (minimum 5 metres, as outlined in the prescription).
- Width of buffer will vary according to soils, topography, and water-source areas.
- Treed buffers not required unless requested.

Operations – Tree Felling

- Trees will be felled so they do not enter the watercourse (unless otherwise approved).
- Large accumulations of slash or debris accumulations will be removed progressively.

Operations – Equipment Operation

- Heavy equipment may operate within 20m of the high water mark only during frozen periods.
- No random skidding through watercourse channels.
- Crossings must be planned with adequate crossing structures. Crossings are to be removed on completion of operations.

Vegetation

Machine logging will occur during the late fall/winter months when ground is frozen. This will greatly reduce the disturbance to desirable vegetation. Any significant disturbance to soil and/or vegetation will be subject to reclamation methods outlined in the Banff Field Unit: Vegetation and Restoration/Reclamation Guidelines (Parks Canada, 2017d). A detailed restoration plan will be required for skidding trails, landings, and burn piles.

Debris management (burning) must follow the guidelines set out in both the Banff Field Unit/Lake Louise, Yoho & Kootenay Field Unit Woody/Vegetative Debris Management Guidelines (2017) and the 2016 Banff Field Unit Interim Fire Management Plan.

All Whitebark pine existing in the project area will be identified and flagged prior to work start-up. Hand thinning

crews and mechanical thinning equipment operators will be briefed on Whitebark pine, including its general location within the subunits and species identification.

In respect to non-native vegetation, all equipment/machinery must be cleaned (power washed) and free of foreign soil and plant material before starting work. Failure to meeting this standard will result in the inability of the specific machine to begin work until it has been cleaned to the satisfaction of the ESO. Furthermore, tree harvesting methods including whole tree harvesting, skidding, and landing processing, will greatly reduce both coarse and fine woody debris, and will prevent non-native vegetation establishment.

Following implementation of this project, the project area will be monitored for the need for non-native vegetation management, particularly adjacent to the known polygon of Tall Buttercup and in areas with significant ground disturbance such as skid trails, landings, burn piles and roads. A full reclamation plan will be put in place prior to completion of the project to address re-vegetation of roads, skid trails and landings as well as non-native vegetation management concerns.

Restricted Activity Permits (RAP) for vegetation removal will include all of the listed tree retention requirements in the conditions.

Wildlife and Wildlife Habitat

The following mitigations will be implemented to reduce the extent of possible wildlife impacts from project work operations:

- During the Environmental Briefing, all personnel shall be instructed by the ESO on procedures to follow in the event of wildlife appearance (e.g. alerting dispatch of carnivore sightings) near or within the work site and any other wildlife concerns.
- Mechanical logging work will occur in daylight hours only (1 hour before sunrise and 1 hour after sunset), avoiding the sensitive dawn and dusk times that are particularly important for wildlife. However, log hauling can occur throughout the 24 hour period (J. Whittington, pers. comms. 2018).
- All staff employed at the work site will avoid or terminate activities on site that attract or disturb wildlife and vacate the area and stay away from the immediate location of bears, cougars, wolves, elk or moose that display aggressive behaviour or persistent intrusion. Extra care to control materials that might attract wildlife (e.g. lunches and food scraps) must be exercised at all times.
- Staff employed at the work site will notify the ESO and Departmental Representative immediately about dens, litters, nests, carcasses, bear activity or encounters on or around the site. Other wildlife related encounters are to be reported within 24 hours. If the ESO or Departmental Representative are not available, Banff Dispatch will be contacted at (403)762-1470.
- Proper animal proof waste-disposal containers must be provided on site to prevent animal access to food waste. Food and food waste will not be left unattended at any time or deposited in trade waste bins.

Bat Maternity Roosts

In addition to the tree removal guidelines set out in the thinning prescription, trees with a DBH of >25 and with cavities or loose bark suitable for cavity nesting/roosting will be retained from thinning operations. Thinning crews (both hand and mechanical) will be briefed on identifying potential maternity roost trees, and will flag trees meeting the criteria for retention.

Amphibians

There are no known amphibian breeding sites within the vicinity of the project (Figure 7) (Parks Canada, unpublished data). The closest site is approximately 670m from the fuel management unit and there are no wetlands located within the unit boundary.

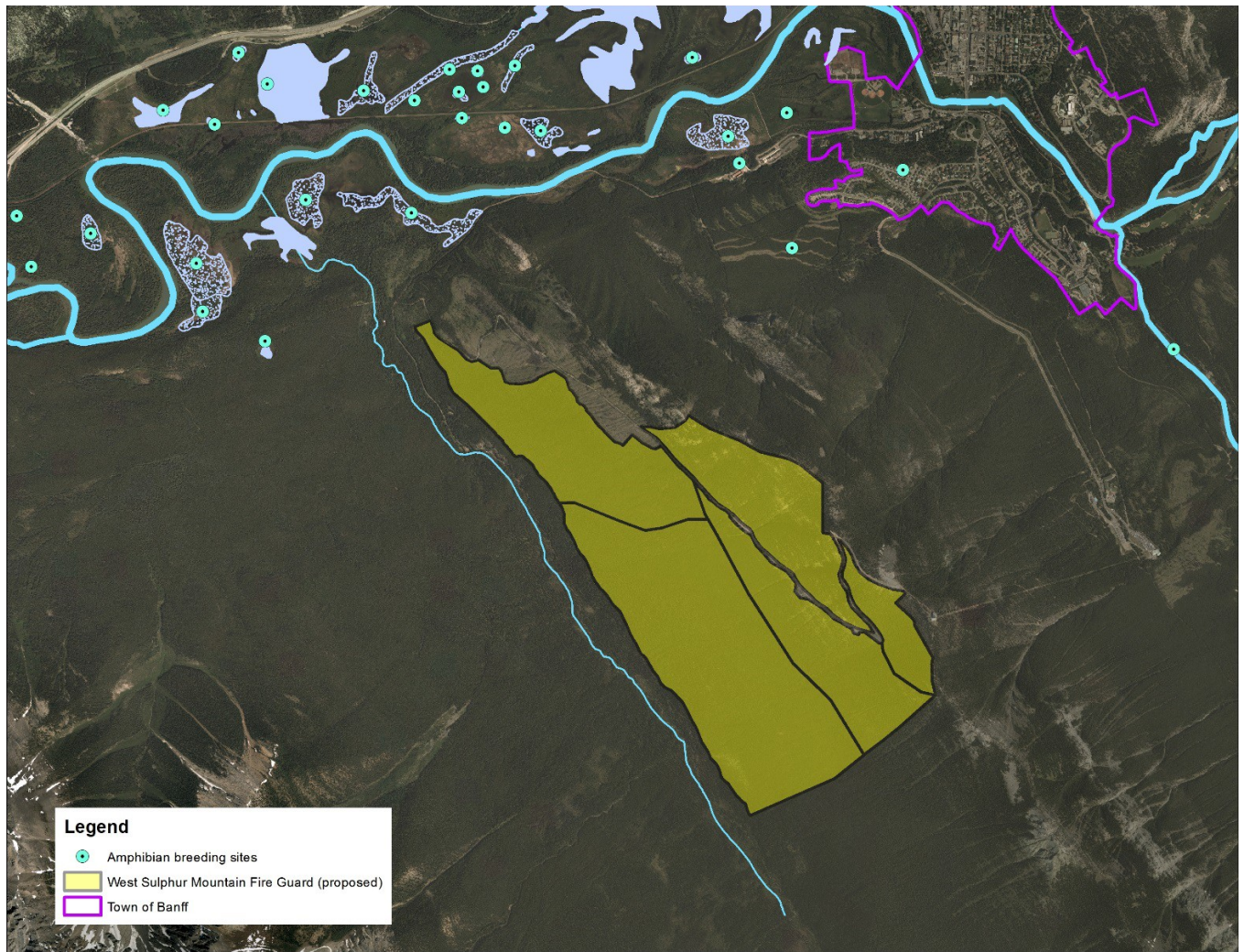


Figure 7. Amphibian breeding sites known to Parks Canada in the vicinity of the proposed West Sulphur wildfire risk reduction project

Public Facilities and Services / Public Safety

To ensure public safety on equipment access routes, temporary trail closures for Sundance Trail will be made for machine/equipment access to the project area. Longer term closures for the Sulphur fire road will be required to restrict the public from traveling near tree thinning operations. In addition, an area closure for the entire project area will be implemented to further restrict public access.