Banff Environmental Impact Assessment Determination

Registration Information

Project Title:	ToB Marmot Crescent Dog Park
IA Number:	BNP-1754
Field Unit:	Banff
Park or NHS:	Banff National Park of Canada
IA Start Date:	01-May-24
Project Proposed End Date:	30-Jun-25
Policy Officer:	Norah Bonsteel
IA Officer:	Kelsey Tillapaugh
Development Review Number:	24-047
RAP Permit:	

Project Description

Project Description:	The Town of Banff has proposed to build a 0.61 hectare dog park in the Marmot/Whiskey Creek Public Parkland district. This area was selected due to proximity to registered dog owners, walkability, and relativity to other dog parks. Works to construct the new dog park include geotechnical and shovel testing, bridge demolition and culvert replacement, trail grading, fence and signage installation and wildfire risk reduction works.
Key Project Activities:	Building and Property Development
Proponent:	Town of Banff
Project Manager:	Brennan David
Project Manager Information:	brennan.david@banff.ca, 403-996-0723
Subject to other (Yes or No):	Yes
Subject to other Department:	
Subject to other Jurisdiction:	Town of Banff
Geographic Location:	Marmot Crescent, 51.186002, -115.562065

Latitude:	51.186002	**Longitude:**	-115.562065

Province or Territory:	Alberta
IA Pathway Decision Complete:	☑
Policy Screen Complete:	☑

Indigenous Engagement:	No			**Completion:**	☐
Public Engagement:	On Project	:	Registry Posting	**Completion:**	☑

Impact Assessment

Selected IA Pathway:	BIA
Applicable PRIA :	

Parks Canada Parcs Canada

Canada

Banff Environmental Impact Assessment Determination

Tracking List:	National BIA/DIA Tracking System
BIA Public Posting Start:	2024-06-20
BIA Public Posting End:	2024-07-20
Mitigation Applied:	As per Impact Assessment
Mitigation Categories:	Water, Fish, Wildlife, Birds, Migratory birds, Species at risk, Soil, Vegetati
Follow-up Monitoring Required:	No
Follow-up Monitoring Details:	
IA Determination:	Project not likely to cause significant adverse environmental effects
Project Status:	Assessed - Upcoming
Project Comments:	

Reviewed/recommended by (name, position):	Reviewed Date:
Maria Lynn, Manager of Integrated Land Use Planning	3 Jan 2025
Approved by (FUS, Director of a Waterway or delegate) (name, position):	IA Decision Date:
Daniella Rubeling, Acting Superintendent Banff Field Unit, Parks Canada Agency	8 Jan 2025

Parks Canada Parcs Canada

Canada

BASIC IMPACT ASSESSMENT (revised)

Marmot Crescent Neighbourhood Dog Park (BNP-1754)

November 8, 2024

Proponent Information

Amanda Arbuckle, Recreation Manager, Town of Banff, amanda.arbuckle@banff.ca, 403.762.1213

Brennan David, Engineering Coordinator, Town of Banff, brennan.david@banff.ca, 403.762.1225

Proposed Project Dates

Planned commencement: 2025-02-03

Planned completion: 2025-06-30

Notices on Registry/File Number

Title for Registry: Marmot Crescent Dog Park

Federal Impact Assessment Registry #: 88656

Posting Period: June 20th, 2024 through July 20th, 2024

TABLE OF CONTENTS

1. PROJECT TITLE AND LOCATION 3

2. PROJECT DESCRIPTION 3

2.1. JUSTIFICATION OF PROJECT 3

2.2. DESIGN 4

2.3. CONSTRUCTION 5

3. REGULATORY & POLICY CONTEXT 6

4. VALUED COMPONENTS & ENVIRONMENTAL BASELINE 7

4.1. AIR QUALITY/NOISE 8

4.2. SOIL 8

4.3. VEGETATION 9

4.4. WILDLIFE 9

4.5. AQUATICS 10

4.6. BIRDS & BATS 10

4.7. CULTURAL RESOURCES 11

5. EFFECTS ANALYSIS 11

5.1. AIR QUALITY/NOISE 11

5.2. SOIL 12

5.3. VEGETATION 13

5.4. WILDLIFE 14

5.5. AQUATICS 15

5.6. BIRD & BATS 16

5.7. CULTURAL RESOURCES 17

6. MITIGATIONS SUMMARY 17

7. OTHER CONSIDERATIONS 19

7.1. PUBLIC & STAKEHOLDER ENGAGEMENT 19

7.2. INDIGENOUS CONSULTATION 20

7.3. SURVEILLANCE/MONITORING 20

8. REFERENCES 21

APPENDIX A – FIGURES 22

APPENDIX B – SAMPLE FUEL REDUCTION PRESCRIPTION 32

APPENDIX C – BFU/LLYK WOODY/VEGETATIVE DEBRIS MANAGEMENT GUIDELINES 35

APPENDIX D – PARKS CANADA RESTORATION & RECLAMATION GUIDELINES, 2017 48

APPENDIX E – MODEL CLASS SCREENING REPORT SUB-CLASS 4: TRAILS AND PARKS 72

APPENDIX F – DIRECTION ON ACCIDENTAL FINDS PROTOCOL 80

1. PROJECT TITLE AND LOCATION

Marmot Crescent Neighbourhood Dog Park

The proposed Marmot Crescent Neighbourhood Dog Park is located on a forested land parcel west of Marmot Cr., east of the Whiskey Jack Cr. residential development and south the CPKC railroad right-of-way (Figure A1). The parcel is held by the Town of Banff under a Licence of Occupation and is currently designated as a Public Parkland (PP) district under the Town's Land Use Bylaw.

To the proponent's knowledge the parcel has not been previously developed, although one or more linear right of ways appear to have been cleared in the late 19th or early 20th century, based on aerial photographs (1922-present; Figure A3). These features have since become overgrown or have evolved over time into unofficial trails/desire lines because of human use.

Formal access to the proposed dog park site from Marmot Cr. is currently via a small wooden bridge (Figure A4) over a drainage that surrounds the parcel. Access from residential neighbourhoods to the south, west, and northeast is over land, including via several established desire lines that cross the typically dry drainage (Figure A5).

2. PROJECT DESCRIPTION

2.1. Justification of Project

Under the *Canada National Parks Act*, off-leash dogs are prohibited within unfenced areas anywhere in the national parks:

- "Every person who brings a domestic animal into a park or who keeps a domestic animal in a park shall have the animal under physical control at all times" (SOR/98-177; s.2)

The Town of Banff *Animal Care Bylaw 46-4* describes similar requirements:

- "i. restrained by a leash not exceeding three (3) meters in length, which is securely held by a competent and physically capable Guardian; or
- ii. kept in a container, an enclosure or a motor vehicle".

The purpose of the Town's off-leash facilities is to provide a safe space for dog owners to exercise and socialize their dogs within Banff, with the intention of reducing the frequency of off-leash activity in other areas. Dog parks also provide a point of public engagement on the importance of keeping dogs on-leash throughout the park. This supports the protection of wildlife and maintenance of ecological integrity in the broader park.

The Town's first dog park was built on Hawk Ave in 2013 (relocated nearby in 2021) and is very popular. Unfortunately, the Hawk Ave dog park is not walkable due to its location in the industrial compound and across the CP rail train tracks. There are also no trail systems connecting users from downtown to the site. The Hawk Ave dog park is also now only open in the winter months when the ground is frozen and covered with snow due to hazardous physical contamination (glass, metal, etc.) that the Town has been unable to completely resolve.

In 2022 a second off-leash dog park was built in the Banff Recreation Grounds, and it sees a high level of use by residents and visitors. Due to the park's small size and level of use, a second year-round park is recommended to allow for seasonal maintenance (i.e. close one for a period of time in spring to do maintenance but leave the other open) and to ensure overcrowding is avoided which can result in aggressive dog behaviours. Further, a second year-round park that is accessible by active modes is desirable for those that live on the north side of town to increase convenience and reduce traffic congestion by reducing the number of vehicles crossing town to access the dog park.

The proposed location is ideal for visitors, given its proximity to numerous large hotels, Rotary Park, and transit. It is also ideal for nearby residents who regularly use the proposed site to walk their dogs (see Figure

A6). Numerous dog walkers were observed during all 7 site visits during planning for the proposed project. Several illegal off-leash dogs were also observed during these visits.

As of September 2024, there are 432 licensed dogs in the town of Banff, a number that continues to increase. The distribution of the dog-owning population in Banff is shown in the heat map in Figure A6. In 2016, a Town Council report noted from 121 survey respondents that 48% used the dog park at least once a week, 26% used the park 2-3 times a week, and 13% used it once a day or more. The Canadian Animal Health Institute's 2022 survey (CAHI 2022) showed that there are over 7.9 million dogs owned in Canada and the 2023 Alberta Consumer Corner Pet Owner & Food Trends report indicates that 35% of surveyed households own a dog with another 48% desiring to (Alberta 2023).

2.2. Design

The planned locations of all project components are shown in Figure A5.

Access to the dog park will be via a new trail and culvert crossing that will replace the existing wooden bridge over the drainage that separates the dog park site from Marmot Cr. Recently the wooden bridge was seriously damaged by an overweight vehicle and therefore needs to be replaced (see Figure A4). The design of the new culvert and overlying trail will be based on the design of the nearby road culvert installed on Marmot Cr. in 2018 in the same drainage, and the two culverts built at the Recreation Grounds in spring 2024 to replace old, damaged trail bridges on that site (BNP-1726). However, the proposed culvert will utilize four 18" diameter pipes rather than a single large pipe, due to the shallow depth of the drainage ditch and the need for 600 mm of cover over the pipes.

The proposed dog park will have a fenced internal area of 0.61 hectares (6,070 m^2) – larger than the Recreation Grounds Dog Park (0.43 ha) and the Hawk Ave. Dog Park (0.49 ha). The fence design will be the same as the existing Hawk Ave dog park with 2.4 m (8') wooden fence posts, page wire game fencing, and metal swing access gates. User access will be via a double-gated 'air lock' to assist users in maintaining control of their dogs during ingress/egress. Garbage and recycling bins will be located inside the air lock. Dog waste bag dispensers will be installed at this gate, and in the dog park itself.

A wide metal maintenance access gate will be installed at the opposite/northwest end of the dog park to support wildlife management activities if required by Parks Canada Resource Conservation staff, though similar gates have not yet been used for this purpose at other Town dog parks (B. Fyten, pers. comm. 08/16/2024). This gate can also be used for maintenance or emergency access if needed. Light vehicle maintenance access to this gate will be via existing unimproved trails that are already in use by the Municipal Parks Dept.

The structural fill over the culvert will consist of imported 1" minus crushed gravel. Organics/topsoil at the bottom of the drainage will be removed down to 30 cm (depending on soil conditions) to ensure the culvert and trail do not settle/sink over time. The overlying trail surface will consist of unsorted fine gravel such as the "Graymont fines" product commonly used on other Town trail projects. The trail over the culvert will be 2.5 m wide to support safe construction and maintenance vehicle access. The slopes adjacent to the trail (50% grade) will be reclaimed with topsoil and an approved grass seed mix. Erosion control matting will be installed immediately adjacent to the trail surface to minimize damage by users. Topsoil removed from below the culvert will be screened (if necessary) and reused for this purpose, and blended with NutriLoam if required to achieve the necessary soil volume.

The location of the proposed dog park was chosen to minimize disruption/enclosure of the most well-used existing trails to preserve existing movement patterns through the parcel as much as possible and avoid trail proliferation. Unlike at Hawk Ave and the Recreation Grounds, no trails will be built on the interior of the Marmot Cr. dog park, and no benches or other features will be installed. The desire lines on either side of the culvert that link the dog park to Marmot Cr. will be resurfaced with gravel fines following construction but will not otherwise be improved.

No parking will be built as part of the project. Dog park users will be directed to use existing street parking along Cougar St. adjacent to Rotary Park. 'No Parking' signage will be installed along Marmot Cr. to discourage parking in undesignated areas.

The dog park will be open from dawn to dusk. Signage advising users of operating hours and terms of use will be posted at the entry gate.

2.3. Construction

Site Investigations

There do not appear to be any old middens, windblown garbage, or construction/demolition waste present at the Marmot Cr. site (whereas all were apparent at the Hawk Ave. dog park site before construction). Nonetheless, the Town will undertake a surface inspection and targeted shovel survey (~20 cm depth) ahead of construction to ensure that the area enclosed by the dog park fence does not contain any buried hazards.

Fuel reduction

The Marmot Cr. Public Parkland parcel is an established fuel treatment unit (#05-2) under the Town's FireSmart Vegetation Management Plan, which was updated in February 2023. Initial fuel reductions occurred in 2005, with maintenance occurring in 2019. The Plan recommends additional maintenance of this unit in the near future (ranked 'Priority A'), with this work currently planned for winter 2025/2026. If the dog park is approved, this work will be accelerated to occur in winter 2024-2025 (before dog park construction) for several reasons:

1. Unsafe trees will need to be removed to ensure public safety before the dog park opens. This work overlaps with the fuel reduction scope. It will be less disruptive and more cost effective to complete all forestry work simultaneously.
2. Fuel reduction work will be significantly more challenging and costly if it occurs after construction, in and around the completed dog park.
3. The dog park would need to be closed during fuel reduction work.

A site-specific fuel reduction prescription for the proposed site will be prepared by a forestry professional in advance of the project, for review by Parks Canada Resource Conservation staff. A sample prescription for work completed in Middle Springs in 2023 is provided in Appendix B.

Additionally, a small number of additional trees within the dog park fence may be thinned/limbed to make it easier for users to access the full site.

The Town's plan is to use surplus wood for heating fuel in the Town's biomass heating facility, and for firewood at special events in the town site. Surplus logs may also be left near Marmot Cr. for Town residents to use for firewood/fuel. Parks Canada has first right to cleared wood under the Surplus Wood Directive (Appendix C) therefore would need to approve these uses. Otherwise, the Town will transport surplus logs to Peyto Pit as has been done for other projects.

Smaller limbs, tops, and branches will either be burned on site, or chipped and removed to a landfill outside the park, depending on what is recommended in the final fuel reduction prescription. Parks Canada's BFU/LLYK Woody/Vegetative Debris Management Guidelines (Appendix C) will be observed.

Construction

Standard light construction equipment will be used to build the culvert and dog park fence including bobcats, mini-excavators, backhoes, and compactors. The exact equipment will depend on the specific contractor selected for the work, but bidders will be advised that low impact construction techniques and equipment must be used, in part due to the narrow access culvert/trails.

The old bridge will be demolished/disassembled with all waste sent to landfill. Rotted/broken creosote piles will be cut 0.3 m below grade and capped and buried under the culvert/trail. Dog park fence posts will be

installed to a depth of 4' using a post hole auger or post driver/spike to minimize soil disturbance. Excavated and/or disturbed soil will be reused on site and reclaimed with soil and seed as required.

Construction staging will be on Cougar St. in the parking area adjacent to Rotary Park. Construction of the new culvert will be completed first to enable vehicle access to the dog park site. A small number of dump truck deliveries will be required to import gravel for culvert/trail construction. Once the culvert is built, construction activity will shift into the dog park footprint.

3. REGULATORY & POLICY CONTEXT

Town of Banff Land Use Bylaw

The Town of Banff is the development permitting authority for the proposed project site. A Town of Banff Development Permit will be required.

The proposed site has been designated as a Public Parkland (PP) district under the Town's Land Use Bylaw (LUB), and has had this, or similar zoning since the Town's incorporation in 1990. Prior to 1990 the parcel was zoned as residential land. The Land Use Bylaw states that the purpose of PP districts is to "protect the natural quality of the Bow River parklands and provide open space for recreational and cultural uses throughout the Town". Public Parkland (PP) parcels are therefore distinct from Environmental Protection (PE) districts in that human recreational uses are identified as a priority and there is no bylaw or policy direction to maintain PP parcels in their natural state.

The Town's intent is to utilize PP parcels for the uses identified in the Land Use Bylaw, while minimizing wildfire risk to the community, minimizing human-wildlife conflict, maintaining the permeability of these parcels to wildlife, and preserving essential ecosystem services such as stormwater retention and filtration, temperature regulation (re: heat island effect), and flood/erosion control. This implies a balance between human and natural uses of the landscape.

The following are designated as permitted uses in PP districts:

- Outdoor recreation services
- Public parks

Off-leash dog parks are consistent with the LUB definition of 'Public parks' and with the intended uses of the parcel described in the bylaw, subject to final review by a Town of Banff Development Officer.

Banff Community Plan

The following recreation and transportation goals are stated in the 2007 Banff Community Plan (p.20), and are relevant to the proposed project:

- Deliver high quality trails and open space amenities.
- Provide integrated recreation facilities to meet the evolving needs and interests of residents and visitors.
- Offer a wide range of quality recreation and active living programs.
- Build a system of open spaces, trails and parks that reinforce connections to the natural environment.
- Increase the use of Banff parks and trails.

Additionally, the following environmental goals are described (p.15):

- Reduce Banff 's ecological footprint.
- Reduce the Town's impact on the surrounding national park.
- Improve the level of protection for environmentally significant and sensitive areas within the Town boundaries and The Lands Adjacent to the Town of Banff.

Environmental Master Plan & Human-Wildlife Coexistence Report

The Town of Banff *Environmental Master Plan* (p.30) identifies off-leash dog parks as an essential tool in supporting the Town's efforts to minimize human-wildlife conflict, consistent with the recommendations of the Bow Valley Human-Wildlife Coexistence Roundtable:

- Increase the amount of safe, designated off-leash areas for dogs, and increase proactive enforcement of off-leash activity outside of designated areas.

The provision of off-leash areas in the town site supports the Town's efforts to enforce on-leash requirements on trails and in natural areas. Locating off-leash areas in visible, walkable locations (i.e. the Recreation Grounds as well as the proposed site) also reduces vehicle traffic in the town site and provides opportunities for resident and visitor education on responsible dog ownership and human-wildlife coexistence.

Banff National Park of Canada Management Plan

The Banff National Park of Canada Management Plan 2022 describes the importance of interagency collaboration on human-wildlife conflict/coexistence issues (p.23):

- Parks Canada's contribution to addressing landscape-level challenges and opportunities increases through collaboration and strategic participation in pan-boundary/interagency groups where the focus is on issues and regional initiatives concerned with: joint prescribed fire planning and fuel management, coordinated response to human-wildlife conflict, recovery of species-at-risk, watershed management, control of invasive species, tourism and visitor management, climate change, human-wildlife co-existence and bison conservation.

The Plan also sets out specific objectives for reducing human-wildlife conflict:

- Parks Canada's management efforts will concentrate on improving public awareness and minimizing human-wildlife conflict… (p.10)
- By 2024, human-wildlife conflict within the park is reduced from 2019… (p.13)

The Plan does not describe specific tactics for achieving these goals. The Plan also requires that development within the town site:

- …adheres to FireSmart principles; and
- respects natural processes to the highest degree possible. This includes but is not limited to remaining highly permeable to wildlife, and minimizing light pollution and the spread of non-native vegetation (p.31)

To ensure wildlife are able to access essential wildlife corridors surrounding the community, the Town of Banff and Parks Canada share the goal of keeping the town site permeable to wildlife, while at the same time maintaining and restoring natural predator/prey relationships – particularly between elk and their natural predators (wolves, cougars, and occasionally bears and coyotes).

4. VALUED COMPONENTS & ENVIRONMENTAL BASELINE

The valued components that have been selected for review in this report are summarized in Table 1:

Table 1 – Valued components for effects analysis

Valued Component	Rationale for Inclusion
Air Quality	• Potential for reduced local air quality for short periods. • Potential for construction noise. • Potential for noise impacts to residents during operations.
Soil	• Potential for erosion/loss of native topsoil/subsoil during construction.

	• Pollution/contamination from equipment leaks, garbage, etc. (hydraulic fluid, diesel, food waste).
Wildlife	• Potential for destruction or alteration of habitat. • Potential for sensory disturbance during operations. • Potential for impacts to wildlife movement and habitat security. • Potential for sensory disturbance and displacement due to increased human use.
Vegetation	• Potential for destruction of native vegetation during construction. • Potential for spread of invasive non-native vegetation. • Potential for damage to tree/shrub root systems.
Aquatics	• Potential for impacts to aquatic/wetland habitat. • Potential for releases into nearby surface waters.
Birds & Bats	• Potential for destruction or alteration of nesting/roosting habitat. • Potential for sensory disturbance during construction activities. • Potential for direct mortality during construction activities.
Cultural Resources	• Potential for buried archaeological or cultural artifacts.

4.1. Air Quality/Noise

There are no fixed/permanent sources of criteria air pollutant emissions near the proposed project site, and the only notable source of short-term emissions nearby is locomotive emissions at the adjacent CPKC railroad tracks. Air quality at the project site is therefore typical of ambient air quality in the town site overall.

The Town has operated a local ambient air quality monitoring device 300 m due south of the project site (Banff Ave. and Fox St.) since 2021. This device monitors ambient particulate matter levels (PM2.5, PM10) as well as humidity, dew point, and temperature. Monthly passive monitoring of sulphur dioxide (SO2), ozone (O3), and nitrogen dioxide (NO2) also took place between 2011 and 2016 at numerous sites throughout town. All current and historical data indicate that ambient air quality in the town site is well within provincial and federal targets, except during wildfire smoke events.

The project site is already well used by the public, and is a popular dog walking area, so there is some pre-existing background dog noise at the site. There is also significant engine and horn noise from the 18-24 freight trains that pass by the site each day.

4.2. Soil

Under the Ecological Land Classification (ELC) the proposed project lies within the VL4 ecosite. This ecosite is characterized by level to gently sloping 'apron and fan' landforms associated with floodplains along major and minor streams. Shallow calcareous sediments consist of layers of fine-stratified fluviolacustrine, and coarse-stratified fluvial material deposited by floodwaters (Holland and Coen 1983).

The proposed site is mostly level, with native soils likely consistent with the imperfectly to poorly drained and poorly developed Rego Gleysols associated with the high-water table common to the VL4 ecosite (Holland and Coen 1983).

Native soils and subsoils appear to be largely undisturbed on the project site, except around its perimeter where natural drainage patterns have been modified over the last century to support surrounding developments.

Numerous trails and desire lines also cross the parcel, but none appear to have been purpose-built by machinery and there has likely been minimal disturbance of natural soils. This is consistent with the evident lack of pre-existing development on the parcel itself.

4.3. Vegetation

The dominant vegetation found with the VL4 ecosite is the white spruce/prickly rose/horsetail ecosite phase, except where consistent sediment deposition results in active aggradation. In these area, balsam poplar/horsetail (C28) communities tend to establish. White spruce/shrubby cinquefoil/bearberry (O3) communities can be found in drier, non-aggrading areas (Holland and Coen 1983).

The project site hosts a nearly pure, climax white spruce canopy with a relatively sparse, shaded understory dominated by horsetail (*Equisetum arvense*; Figure A7). Native species such as purple aster (*Symphyotrichum puniceum*), fairy bells (*Disporum trachycarpum*), common snowberry (*Symphoricarpos albus*), strawberry blite (*Blitum capitatum*), tall larkspur (*Delphinium glaucum*), and wild raspberry (*Rubus idaeus*) were also observed. Grasses and mosses (unidentified) are also pervasive. Buffaloberry (*Shepherdia canadensis*) would likely be present in significant numbers, however Parks Canada and the Town have actively removed buffaloberry on this parcel (most recently in 2022) to reduce the risk of attracting bears into the town site. Buffaloberry are also removed as a standard practice during fuel reduction work.

Some dense patches of non-native vegetation are also present, dominated by creeping thistle (*Cirsium arvense*), common hemp nettle (*Galeopsis tetrahit*), and tall buttercup (*Ranunculus acris*). Non-native vegetation is most common near or within the CPKC right of way and along the edges of the parcel adjacent to residential properties and/or Marmot Cr. Cotoneaster (*cotoneaster spp.*) and broadleaf plantain (*Plantago major*) were also observed scattered across the site.

Overall, the biodiversity of flora at the project site appears to be low due to degradation of the understory from human use, impacts from fuel reduction and buffaloberry removals, displacement of native vegetation by weeds, and lack of sunlight. Tree thinning and improved weed management could help to increase biodiversity on the forest floor.

4.4. Wildlife

The VL4 ecosite is highly important to carnivores (especially to wolf, coyote, cougar and lynx), highly important to ungulates in winter, and moderately important to ungulates in summer (Holroyd and Van Tighem 1983). The dense spruce forest in this ecosite provides important cover for wintering ungulates, particularly near developed areas.

The VL4 ecosite is also associated with high densities of dusky shrew (*Sorex monticolus*), various hare species (*Lepus spp.*), red squirrel (*Tamiasciurus hudsonicus*), deer mouse (*Peromyscus maniculatus*), red-backed role (*Myodes gapperi*) and western jumping mouse (*Zapus princeps*) (Holroyd and Van Tighen 1983). Red-backed voles are typically found in coniferous or mixed wood forests, often near wetlands.

Overall faunal biodiversity on the project site appears to be low at ground level, apparently due to a combination of factors including moderate-high human use, micro-habitat loss through repeated fuel reduction and wildlife attractant removals, the relative isolation of the site from other natural areas, and low biodiversity of native flora. However, elk are commonly observed on the project site, which is adjacent to residential areas to the west and east, both of which have large grassy areas that are an attractive food source to elk. Elk may also use the site as a refuge from predators in the Fenlands-Indian Grounds Wildlife Corridor to the north, which is well used by wolves (*Canis lupus*), cougars (*Puma concolor*), bears (*Ursus americanus*), and coyotes (*Canis latrans*; Figures A1-A2).

The project site is separated from the Fenlands-Indian Grounds wildlife corridor by the CPKC railway right of way. The Town generally discourages bears, cougars, or wolves from using the project site given the high risk of conflict with adjacent residences, commuters, dog walkers, and passive recreationists, and the resulting risks to the animal. The Town and Parks Canada have worked to reduce the presence of wildlife attractants in and around the project site for this reason. Parks Canada wildlife tracking data from 1993-2020 (Figures A1-A2)

indicates no observed use of the project site by wolves, and very rare use by bears and cougars, although all three species frequently utilize the adjacent railroad tracks for east-west movement through the wildlife corridor.

Bears, cougars, and wolves that enter the proposed project site from the north in an effort to move east/west through the town site quickly encounter roads, buildings, fences, and other obstacles, with high potential for human-wildlife conflict. The potential for becoming habituated to unnatural food rewards/attractants in these areas is also high. From a management perspective, it is preferable for these species to use more secure habitat to the north, which is why these individuals are often encouraged/hazed into these areas when they are sighted. Although the proposed project site is not secure, safe, or high-quality habitat for these species, the area should ideally be left permeable to wildlife given the importance of supporting egress into more secure habitat nearby.

There is a known coyote den approximately 600 m to the northeast behind the Roam Transit Garage, and likely other dens in the area. Coyotes are very active in the Fenlands-Indian Grounds Wildlife Corridor north of the CPKC tracks, but conversations with site users (dog walkers) indicate that coyotes are not commonly seen at the proposed project site. One reason for this may be the apparent absence of Columbian ground squirrels (*Urocitellus columbianus*) and/or other food sources from the site, whereas they are abundant north of the tracks. Coyotes may also avoid the area due to the scents left behind by dogs. Coyotes are mostly (though not entirely) nocturnal, and their peak periods of activity may not overlap with periods of high human use in the area.

Dog walkers were observed during all eight (8) site visits conducted as part of planning for the proposed project in summer/fall 2024. Illegal off-leash dog activity was also observed during multiple visits. Undesirable human/dog-wildlife interactions are likely already occurring on the site to some degree.

4.5. Aquatics

The south and east sides of the Marmot Cr. Public Parkland parcel are marked by a drainage that roughly follows the course of an old tributary of Whiskey Creek. The natural course of this tributary was heavily altered by the construction of the railroad in the 19th century, and during residential developments in the 1970s and now serves as a stormwater drainage and infiltration area. The drainage is no longer connected to Whiskey Creek by flowing water even during periods of high groundwater or heavy rainfall. It is almost completely dry throughout the year, does not constitute fish habitat, and has not been designated as critical habitat for westslope cutthroat trout (*Oncorhynchus clarkii lewisi*) or bull trout (*Salvelinus confluentus*).

A few small, shallow, isolated pools still exist in this drainage immediately east/northeast of the proposed dog park site (see Figures A8, A9). These wet areas appear to be groundwater expressions that persist through the year, and may provide marginal habitat for amphibians or other semi-aquatic species. They may also be a minor water source for wildlife.

4.6. Birds & Bats

Migratory Birds & Raptors

The VL4 ecosite is associated with a high number of bird species at high densities especially for the following: ruffed grouse (*Bonasa umbellus*), alder flycatcher (*Empidonax alnorum*), American crow (*Corvus brachyrhynchos*), mountain chickadee (*Poecile gambeli*), boreal chickadee (*Poecile hudsonicus*), American robin (*Turdus migratorius*), Swainson's thrush (*Catharus ustulatus*), golden-crowned kinglet (*Regulus satrapa*), solitary vireo (*Vireo cassinii*), Townsend's warbler (*Setophaga townsendi*), northern waterthrush (*Parkesia noveboracensis*) and Wilson's warbler (*Cardellina pusilla*) (Holroyd and Van Tighen 1983).

It is likely that migratory bird, raptor, and/or pileated woodpecker habitat exists on the proposed project site given the large number of mature and standing dead spruce trees, and the close proximity to the Fenlands wetland area to the north. Fuel reduction prescriptions typically include removal of all standing dead trees, unless there is evidence of active cavity nesting (or protected cavity nests e.g. by pileated woodpeckers).

Bats

Northern myotis (*Myotis septentrionalis*) and little brown myotis (*Myotis lucifugus*) are SARA Schedule 1 Endangered species and are provincially listed as May Be at Risk and Secure, respectively. Northern and little brown myotis require winter hibernacula and summer foraging/roosting habitat (Lauson 2009; COSEWIC 2013). Winter hibernacula typically consist of caves and mines with stable temperatures from 2-10 degrees Celsius. There are very few known hibernacula sites in western Canada (COSEWIC 2013). Mature mixed-wood forest is preferred as roosting and foraging habitat, and within this habitat bats generally select large diameter deciduous tree species (Sasse and Pekins 1996; Owen et al. 2001, Broders et al. 2005, Olson and Flach 2016). Natural roosting sites are located under flaking bark, within tree cavities and in rock crevices.

Roosting can also occur under bridges and inside of buildings if available (COSEWIC 2013, Macbeth 2018). Both bat species forage along trails, rivers, interior forest gaps and forest edges (COSEWIC 2013). Some of these settings exist in/around the proposed project site.

4.7. Cultural Resources

Based on aerial photographs as early as 1922, the site does not appear to have been developed, so the likelihood of historical cultural artifacts appears to be low. However, the site is close to the extreme east end of archaeological site 2070R (railway, station), and to the old tributaries/channels of Whiskey Creek where indigenous activity may have occurred in the past.

5. EFFECTS ANALYSIS

Definitions:

Magnitude of Impact refers to the percentage of a population or resource that may be affected. Where possible, the population or resource base should be defined in quantitative or ordinal terms. High, medium, low, or negligible are the terms identified.

Duration refers to the time it takes a population or resource to recover from the impact. It can be identified as short-term (< 3 to 6 months), moderate-term (6 months to 2 years) and long-term (> 3 years).

Degree of Reversibility refers to the extent an adverse effect is reversible or irreversible over a 5 year period.

Geographical Extent refers to the geographical area potentially affected by the impact and may be rated as local (within CSA), or regional (within Banff National Park) or Provincial.

5.1. Air Quality/Noise

Potential Effects

The duration of dog park construction is expected to be approximately 3 weeks, with construction noise occurring near residential properties on Marmot Cr. and Cougar St. Noise will be caused primarily by light construction equipment such as bobcats and mini excavators. Air quality impacts related to vehicle emissions and dust may also occur. Most of the project site is sheltered in mature forest, so significant impacts from wind-blown dust are unlikely.

No potential effects to air quality/noise are anticipated during operations other than the increase in noise from dog walkers and their pets, which could impact nearby residents.

Mitigations/Effects Analysis (see Table 3, below)

The construction contractor will be required to implement all standard mitigations described in Table 3 below, and in the Town of Banff Model Class Screening Report Sub-Class 4: Trails and Parks (Appendix B) as they pertain to air and noise quality. Air and noise quality impacts from construction in the town of Banff are mitigated through adherence to the Town's Community Standards Bylaw (Schedule B) which limits construction activity to 7:30 am through 9:00 pm (10 am – 9 pm on weekends).

The project involves very little ground disturbance or earthworks therefore the potential for dust generation is small. Soil and gravel piles will be tarped as required to prevent erosion from rain and wind and will be wetted if conditions require it.

The site is expected to be less busy than the Recreation Grounds Dog Park, where there have been no complaints to date about noise from other users of the recreation grounds, or nearby residents. The dog park will be open from dawn to dusk, which will eliminate most potential for noise at night. The Town does not anticipate any noise complaints, but additional mitigations may be implemented if needed such as 1) locking access gates during closure hours, 2) increased signage and public communications, and/or 3) increased enforcement.

The dog park will also be offset >50 m from nearby residences, consistent with dog park design guidelines from other municipalities such as Edmonton and Vancouver. Nearby residences are partially screened from the proposed off-leash area by trees/forest, which should mitigate noise transmission to an extent.

Residual Effects

With application of mitigations, no residual effects to air quality are expected from the proposed project.

Following implementation of mitigations, some residual effects to noise are anticipated. Residual impacts to noise levels are expected to be long-duration, reversible (if the dog park was closed), localized to the immediate vicinity of the dog park, and overall negligible in magnitude. The project is therefore unlikely to cause significant adverse effects to noise levels.

Cumulative Effects

No residual effects to air quality have been identified therefore no contribution to cumulative effects is predicted. Minor residual effects to noise levels are predicted, due to the presence of the off-leash area, however these effects are negligible and are not expected to contribute to cumulative effects.

5.2. Soil

Potential Effects

Culvert construction will require the removal of surface organics/topsoil, and the import of aggregate material to build up the structure of the new culvert/trail. There is potential for direct loss of native topsoil from construction, and the potential for contamination of native topsoil through accidental spills. There is also potential for erosion of the completed trail over time, potentially causing impacts to adjacent vegetation or proliferation of shortcut trails.

Mitigations/Effects Analysis (see Table 3, below)

Although the culvert requires removal of topsoil and organics, all suitable topsoil will be retained for reclamation of the slopes above the culvert, and of other disturbed areas as required. Aside from these small, sloped areas the project is located in a relatively flat area, therefore there is no significant potential for erosion or loss of topsoil.

Approximately 0.61 ha of native topsoil at the new dog park site is likely to be disturbed/degraded for the long-term (compaction, digging by dogs), as at the Town's other dog parks. This does not normally cause mobilization and loss of topsoil; however, it is possible that some topsoil could be mobilized during wet/muddy periods in gently sloping areas. The Town will monitor the state of these areas and enact localized closures to allow native vegetation and/or soil compaction to establish, or potentially install semi-permanent erosion and sediment control measures if the need arises. However, these effects will be localized to the fenced area of the parcel, and are largely reversible. The relatively large size of the proposed off-leash area (compared to the Town's other dog parks) will also mitigate against soil impacts by reducing the intensity of ground disturbance in any one area.

The construction contractor will be required to implement all standard mitigations described in Table 3 below, and in the Town of Banff Model Class Screening Report Sub-Class 4: Trails and Parks (Appendix E) including an erosion and sediment control (ESC) plan and spill response plan.

Residual Effects

Following implementation of these mitigations, some residual effects to native soils are still anticipated. Residual impacts to native soils are expected to be long-duration, reversible, localized to the vicinity of the project, and overall negligible in magnitude. These residual effects are unlikely to cause significant adverse effects to native soils.

Cumulative Effects

Residual effects to soil are expected to be negligible and highly localized. No significant contribution to cumulative effects is expected.

5.3. Vegetation

Potential Effects

Fuel reduction activity in the area prior to construction will result in significant thinning of the mature spruce canopy, and damage to understory vegetation. Introduction of off-leash dogs will likely result in the loss of most horsetail, grasses, wildflowers, and mosses within the dog park fence line.

Construction equipment has the potential to introduce new invasive vegetation, or spread existing species further across the parcel. Thinning of the spruce canopy outside the dog park fence (from fuel reduction work) may also result in increased growth (i.e. succession) in the understory due to greater access to sunlight.

Management of weeds at the Town's Hawk Ave dog parks has been straightforward given that 1) human and dog activity disturbs the soil, inhibiting the establishment of understory vegetation, 2) some users actively pull weeds, and 3) the Town actively manages weeds with mechanical and chemical removal. In contrast, the management of weeds at the Recreation Grounds off-leash area has been more challenging due to its small size and heavy use, combined with the desire to maintain a turf surface across the site. This requires occasional closures to re-establish the grass, which also gives weeds a chance to re-establish. The design intent of the proposed project is to be comparable to the Hawk Ave site rather than the Recreation Grounds, therefore management of weeds is expected to be straightforward (see mitigations below). Additionally, one of the secondary goals of the proposed project is to relieve some pressure on the dog park at the Recreation Grounds to reduce the frequency of closures required to maintain that site, which should help with weed management there.

Mitigations/Effects Analysis (see Table 3, below)

The loss of understory native plant communities inside the dog park fence cannot be mitigated, however thinning of the entire parcel (fuel reduction) should stimulate understory growth across the rest of the parcel by increasing the amount of sunlight reaching the forest floor. The understory would also naturally recover over time if the dog park was ever decommissioned. The mature spruce canopy will be retained.

The fuel reduction contractor will follow the approved fuel reduction prescription after review and approval by Parks Canada. Parks Canada's BFU/LLYK Woody/Vegetative Debris Management Guidelines (Appendix C) will be followed where applicable.

The construction contractor will be required to implement all standard mitigations described in Table 3 below, and in the Town of Banff Model Class Screening Report Sub-Class 4: Trails and Parks (Appendix E) with respect to preventing proliferation of non-native vegetation. All planting/reclamation activities will be conducted according to the 2021 Parks Canada Reclamation Guidelines - BFU/LLYKFU (Appendix D).

The design intent is to avoid the need to import non-native topsoil (other than Nutri-Loam where necessary), which eliminates a key potential source of invasive weeds. The Town will monitor the area after construction to ensure weeds have not been introduced to the site. The Town will proactively manage invasive vegetation on

the site using approved herbicides and mechanical treatment techniques under Restricted Activity Permits/the Town's Integrated Pest Management Plan (2024). The Marmot Cr. parkland parcel has also been identified as an area for long-term NNV treatment and monitoring by the Town.

Residual Effects

With application of mitigations, impacts to native vegetation should be consistent with vegetation impacts observed on other Public Parkland parcels that are well-used by humans, and parcels that are subject to regular fuel reduction treatments. The existing mature spruce canopy will be preserved. Although non-native invasive species exist on site, application of mitigations should result in reduced abundance over time.

Residual impacts to vegetation are expected to be long-duration, reversible, localized to the vicinity of the project, and overall low in magnitude. These residual effects are unlikely to cause significant adverse environmental effects to vegetation.

Cumulative Effects

Residual effects to birds and bats are expected to be negligible, and highly localized, therefore no significant contribution to cumulative effects is expected.

5.4. Wildlife

Potential Effects

The planned construction activities are very limited in duration and scale, and in overall level of disruption. Construction activities are therefore unlikely to result in any environmental effects to wildlife.

The presence of the proposed off-leash area will exclude large terrestrial wildlife (mainly elk) from a fenced area of approximately 0.61 hectares, and cause effective loss of most ground level habitat for smaller wildlife inside that perimeter. This may decrease the likelihood of large numbers of elk lingering in the area, and may affect wildlife movement patterns through the parcel and potentially in nearby residential areas. The project is also expected to result in increased human use of the area, potentially increasing the likelihood of human-wildlife conflict and sensory impacts to some species.

Mitigations/Effects Analysis (see Table 3, below)

At its widest, the Marmot parkland area is just over 200 m wide from north to south. The proposed dog park fence will block approximately 100 m of this span, with vegetated buffers remaining between the dog park and the CPKC tracks to the north, and the nearest residences to the south. This may result in elk choosing to use the Fenlands-Indian Grounds Wildlife Corridor to the north as a more secure and open route past/through the town site. This may place elk more directly in the path of predator species that favour more secure habitat in the wildlife corridor, thereby reinforcing natural predator-prey interactions.

Notwithstanding the above, the 50 m buffers are still relatively wide (e.g. compare to the 15-30 m wildlife buffers applicable to the Recreation Grounds redevelopment) and wildlife will still use them. This could bring elk or other species more directly into conflict with humans and their pets, especially considering that there are well-used trails inside these buffer areas that will likely become busier with the presence of the dog park. There are other areas in the town site that are much busier, with similar bottlenecks. For example, the Recreation Grounds regularly hosts large herds of elk on the site (including in very close proximity to the off-leash area), but the Town has not received any reports of conflicts between dog owners and elk at that location.

The 58 m setback from the CPKC railroad tracks is important given that bears, cougars, and wolves regularly use the railroad tracks as an east-west route around/past the town (as an alternative to the corridor north of the Commercial Services District), and occasionally use existing trails immediately to the south of the tracks (see trails and wildlife data in Figures A1-A2). These existing trails will not be altered or enclosed by the proposed project.

The proposed 58 m setback is greater than the railroad setbacks of residential buildings immediately southwest and northeast of the proposed project (42 m & 50 m, respectively). Similarly, the distance between the

proposed dog park fence and the closest fence/structure on the south edge of the Commercial Services District is 163 m, whereas the houses/fences immediately to the east of the project define a narrower corridor 141 m wide. The proposed project will therefore not contribute to the narrowing of this movement corridor.

Considering the above, use of the proposed project site by bears, cougars, and wolves is expected to remain low, but with no significant impacts to their movements in/through the nearby wildlife corridors.

Although it is possible that omnivores/carnivores may be attracted to the presence of dogs by the scent of their feces/urine, since 2013 this has not been observed at any of the Town's dog parks. These scents are also already present at the site given that it is well-used by dog walkers, therefore any potential impacts of this kind are likely already occurring.

Regular maintenance of the site by the Town's Operations Dept. will ensure that animal waste does not remain on the site, and that garbage/recycling bins are emptied regularly.

Residual Effects

Minor residual effects to the permeability of the townsite to wildlife (mainly elk) are expected due to the presence of the proposed dog park. Small/negligible residual impacts on bears, cougars, and wolves that occasionally use the project site are also likely, but are confined to the immediate vicinity of the project and are not likely to extend into secure habitat in the adjacent Fenlands-Indian Grounds Wildlife Corridor.

With the application of design and operational mitigations, residual effects to wildlife are likely to be low in magnitude, long-term in duration, reversible (if the dog park were decommissioned), and localized to the immediate vicinity of the project. It is therefore unlikely that the project will result in significant adverse environmental effects to wildlife.

Cumulative Effects

The proposed project is separated from secure habitat in the Fenlands-Indian Grounds Wildlife Corridors by the CPKC railway tracks plus a 58 m buffer, sees continuous human use as a wooded public park prior to construction, and is immediately adjacent to residential properties where the presence of keystone carnivores (bears, cougars, wolves) is a concern for the safety of both humans and wildlife. Although the proposed project will occasionally impact the movement patterns of these species when they elect to cross the railroad tracks and enter developed areas of the town site (a behaviour that is strongly discouraged), it will also reduce the likelihood of them coming into dangerous conflict with dog owners, while having no impact on the functionality of the adjacent Fenlands-Indian Grounds Wildlife Corridor.

Considering the low/negligible magnitude of residual effects, and the potential for benefits to human-wildlife coexistence (i.e. living *near* wildlife, rather than living *with* wildlife) outcomes, it is unlikely that the proposed project will contribute significantly to adverse cumulative effects on wildlife.

5.5. Aquatics

Potential Effects

There will be no direct construction impacts to the small ponds near the proposed project site. During operation, run-off from the proposed dog park could contain nutrient-rich organics or suspended sediment which could potentially impair water and habitat quality in the small ponds adjacent to the project.

Mitigations/Effects Analysis (see Table 3, below)

The dog park fence will be set back from the edge of drainage/ponds by a minimum of 15 meters to establish a vegetated buffer that can retain and filter any run-off from the dog park itself. Daily maintenance of the site by the Town's Operations Dept. will ensure that animal waste does not remain on the site.

Residual Effects

With the implementation of the listed mitigation measures, there are not anticipated to be any residual adverse effects to aquatic habitat as a result of the project.

Cumulative Effects

No residual effects to aquatics have been identified therefore no contribution to cumulative effects is anticipated.

5.6. Bird & Bats

Potential Effects

Tree removal has the potential to cause sensory disturbance to birds and bats, or destroy/damage migratory bird nests, raptor nests, and/or bat roosts if not properly planned/scheduled.

Additionally, pileated woodpecker nests are protected under Schedule 1 of the federal Migratory Birds Regulations, 2022 (SOR/2022-105) for a period of 36 months following discovery to ensure they are not in use. A pileated woodpecker nest was discovered in August 2024 during tree removals at the nearby Rotary Park redevelopment, so it is possible that pileated woodpecker nests are present at the proposed site as well.

Mitigations/Effects Analysis (see Table 3, below)

All fuel reduction and tree removal work for the proposed project will occur in fall/winter 2024/2025 outside of applicable migratory bird nesting and bat roosting windows (see Table 2 below) to avoid disturbance or damage to active nesting or roosting sites.

If pileated woodpecker nests are encountered, host trees will not be removed during the required observation period unless they present a serious public safety risk, in which case the Town will apply for a removal permit under the advice of Parks Canada. The destruction of a nest may be permitted under section 70(2) of the federal Migratory Birds Regulations, 2022 (SOR/2022-105).

The trees that will be removed for the proposed project are mostly smaller diameter coniferous trees, and the likelihood of finding bat roosting sites in these trees is low (Sasse and Pekins 1996; Owen et al. 2001, Broders et al. 2005, Olson and Flach 2016).

Table 2 – Bird and bat windows (excl. SARA Schedule 1 species)

<table>
<tr><th></th><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th>Jun</th><th>Jul</th><th>Aug</th><th>Sep</th><th>Oct</th><th>Nov</th><th>Dec</th></tr>
<tr><td>Birds</td><td colspan="3">Reduced risk for harm to migratory birds</td><td colspan="5">AVOID VEGETATION REMOVAL Bird Nesting Period: mid-April - Late August</td><td colspan="4">Reduced risk for harm to migratory birds</td></tr>
<tr><td>Raptors</td><td colspan="2">Reduced risk for harm to raptors</td><td colspan="5">AVOID VEGETATION REMOVAL Raptor Nesting Period: March 1 – end July</td><td colspan="5">Reduced risk for harm to raptors</td></tr>
<tr><td>Bats</td><td colspan="4">Reduced risk for harm to bats</td><td colspan="5">AVOID VEGETATION REMOVAL Bat Roosting Period: April 15 – September 30</td><td colspan="3">Reduced risk for harm to bats</td></tr>
</table>

Residual Effects

Residual effects to birds/bats may arise if hazard trees are identified for removal that contain evidence of protected nesting cavities. However, with the implementation of the listed mitigation measures, residual effects are anticipated to be negligible in magnitude, long-term in duration, permanent, localized to the project site, and are therefore not anticipated to be any residual adverse effects to migratory birds & raptors as a result of the project.

Cumulative Effects

Residual effects to birds and bats are expected to be negligible, and highly localized, and are not predicted to interact or accumulate with residual effects from any future projects, therefore no significant contribution to cumulative effects is expected.

5.7. Cultural Resources

Potential Effects

There are no known archaeological or cultural sites inside the project area, however, construction of the proposed trail requires some excavation therefore there is potential for impacts to unknown buried indigenous/archaeological artifacts.

Mitigations/Effects Analysis (see Table 3, below)

PCA Accidental Finds Protocol (Table 3; Appendix F) should be applied for the duration of construction if unknown cultural or archaeological finds are uncovered during construction. The project design and construction methods have been developed to minimize ground disturbance and therefore minimize the likelihood of damaging cultural/archaeological artifacts.

Residual Effects

With the implementation of the listed mitigation measures, there are not anticipated to be any residual adverse effects to cultural resources as a result of the project.

Cumulative Effects

No residual effects on cultural resources have been identified therefore no contribution to cumulative effects is anticipated.

6. MITIGATIONS SUMMARY

Table 3 - Mitigations applicable to the project

Pre-Project Planning
1) Prepare a project-specific Environmental Protection Plan (EPP) for Parks Canada review and approval prior to construction start. Include an erosion and sediment control (ESC) plan and emergency/spill response plan (SRP). 2) Identify key project contacts and their respective roles and responsibilities prior to work starting and communicate to all on-site workers. 3) Complete construction kick-off meeting with Parks Canada Environmental Surveillance Officer (ESO), contractor, and Town of Banff project manager prior to construction start. 4) Schedule work to avoid wet, windy and rainy periods or very dry periods that may increase erosion and sedimentation. 5) Clearly identify and avoid sensitive environmental features and habitats in the work area and schedule work to avoid critical wildlife life stages such as the breeding bird window or the bat activity period (re: Table 2, above). 6) Ensure all equipment is in good working order and clean of all dirt, vegetative debris and excess grease prior to arrival at work site. 7) Clearly mark work site and restricted areas with stakes, biodegradable flagging tape or other means to minimize the disturbance footprint; remove when project is completed. 8) Staging areas, material/equipment drop sites and parking areas must be identified within an existing disturbed footprint (e.g., roadways, pathways, gravel surfaces, previously disturbed areas with high resiliency) or approved by ESO.

9) Use existing roadways, trails, disturbed areas or other areas as approved by ESO for site access, travel within site and other construction activities.
Air/Noise
10) Construction timing to comply with Schedule B of the Town of Banff Community Standards Bylaw. 11) Soil piles to be tarped when not in use to minimize erosion from wind/rain and to minimize dust. 12) Soil piles to be wetted when necessary to minimize dust during working hours, as required.
Soil/Land Resources
13) Implement construction erosion and sediment control (ESC) plan as described in EPP. 14) Install all permanent and temporary erosion control features as described in project drawings. 15) Promptly seed/plant reclaimed areas following completion of construction and installation of topsoil.
Wildlife
16) When possible, conduct construction activities outside the breeding bird window and the bat activity window. If construction must occur within critical wildlife timing windows, additional mitigations will apply. 17) Confine "noise" activities to hours set out in the Town of Banff Community Standards Bylaw and avoid work during dusk and dawn. 18) Ensure wildlife attractants (e.g., food, garbage, petroleum products) are stored in a wildlife proof container or removed from site daily. 19) Never approach or harass wildlife (e.g., feeding, luring, baiting). If wildlife is observed at or near the work site, allow the animal(s) the opportunity to leave the work area on their own accord. 20) Contact Banff Dispatch (403-762-1470) in the event of potential wildlife conflict (e.g., aggressive behaviour, persistent intrusion), distress or mortality.
Migratory Birds & Raptors
21) If active nests, dens or roosts are discovered, stop work and contact Parks Canada ESO immediately for direction. 22) Avoid activities resulting in the harm and/or destruction of migratory birds, their nests and eggs/young. This can be done by scheduling project activities (water line relocation) outside of the nesting bird window of April 1th to August 31st. If project activities must occur inside those dates, a nesting bird survey may be requested at the discretion of the Parks Canada ESO. The ESO will confirm if a survey must be completed by a third-party qualified Environmental Professional (QEP).
Vegetation
23) Conduct vegetation removal and restoration/reclamation activities in accordance to the Banff National Park Vegetation Removal and Restoration/Reclamation Guidelines 2017 (Appendix D). 24) All clearing activities must be flagged and plans pre-approved by Parks Canada ESO. 25) Clear minimum areas necessary; trees should be removed only if necessary for project completion or visitor/work crew safety.

26) The felling of trees with obvious wildlife uses (e.g., snags with cavity nests, large trees with stick nests) must be avoided wherever possible; if unavoidable, consult with Parks Canada ESO for additional mitigations. 27) Protect the roots of trees to drip line to prevent disturbance or damage. Avoid traffic, dumping and material storage over the root zone.
Invasive Species
28) Where re-vegetation is required, the use native plants/soils/seed mix approved by the Parks Canada ESO is recommended. The importation of any soil requires additional testing/approvals from the Parks Canada ESO. 29) All construction equipment must be washed outside of the site prior to arrival at the site to minimize the risk of introducing invasive weed species. Proof that this mitigation was applies may be requested by the Parks Canada ESO before equipment is permitted onto the site. 30) Plan to complete work in uninfested sites before moving into infested sites. Equipment must be cleaned if moving from an infested site to any other site (as it related to non-native vegetation). 31) All soil, gravel, untreated lumber, erosion and sediment control products or other applicable materials from outside of the national park must be approved by the Parks Canada ESO. Imported soils may be subject to additional testing requirements as per the Parks Canada Topsoil Movement and Sourcing Guidelines. 32) Organic materials (e.g., topsoil, borrow and fill material) taken from the construction site will not be used in other parts of the national park unless approved by the ESO. 33) Minimize ground disturbance, vegetation removal and bare soil exposure (e.g., cover stockpiles material with tarps, plant native species, cover with natural mulch/ground coverings). 34) Stabilize and re-vegetate disturbed areas as soon as possible. If there is insufficient time remaining in the growing season, stabilize the site against erosion and vegetate as soon as possible the following spring. 35) Monitor disturbed areas and re-vegetated areas until native vegetation is growing successfully and invasive alien species spread is prevented.
Cultural Resources
36) If in-situ cultural resources are encountered during project activities, work must cease in the immediate area and the Parks Canada Cultural Resources Advisor, Steve Malins (403-763-8956), must be contacted for further direction. Ensure all on-site workers are made aware of this requirement. Examples of cultural resources could include, but are not limited to, any historic materials of interest, historic structural features, Indigenous artifacts, and/or large mammal bones.

7. OTHER CONSIDERATIONS

7.1. Public & Stakeholder Engagement

Parks Canada received one (1) public comment regarding the project during the Impact Assessment Registry posting period in July 2024. This comment was a request to receive a copy of this Basic Impact Assessment report upon completion.

Banff residents are aware of the proposed project, and several have submitted input directly to the Town of Banff and Parks Canada since the required 30-day posting period was completed. Banff Council has not yet

made a final decision on the project, and will not do so until Parks Canada has made an Impact Assessment determination on the project. At that time, the Town will undertake a public information session to discuss the project with residents. The outcomes of this session will be considered by Council in a subsequent, public Regular Meeting of Council when it makes a final decision on the proposed project.

7.2. Indigenous Consultation

Given that the location of the proposed project is in an existing Town of Banff Public Parkland parcel, inside the Town boundary, surrounded by existing residential development, the Town has not identified a section 35 duty to consult. The area in question was taken up for settlement purposes and presents no new or novel adverse impacts that are likely to impact the exercise of Treaty or Aboriginal rights.

7.3. Surveillance/Monitoring

It is expected that Parks Canada will assign an Environmental Surveillance Officer (ESO) to the project to undertake regular surveillance during and following construction. Town of Banff Environmental, Engineering, and Municipal Parks staff will also conduct monitoring during and following construction to ensure that any new non-native plant species are identified and managed, and to monitor overall site conditions.

8. References

Broders, H., Forbes, G., Woodley, S., & Thompson, I. (2006). Range Extent and Stand Selection.

CAHI ICSA (2022). Biennial pet population survey shines a light on how pet population statistics changed over the course of the COVID-19 pandemic, and pet owner habits. 22 Sept 2022. https://cahi-icsa.ca/press-releases/2022-latest-canadian-pet-population-figures-released

Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (2013). COSEWIC assessment and status report on the Little Brown Myotis lucifugus, Northern Myotis septentrionalis and Tri-colored Bat Perimyotis subflavus in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa.

Government of Alberta (2023). Pet owner and pet food trends. Consumer corner, Issue 67. https://open.alberta.ca/dataset/3b09eacb-15ac-462e-80d0-fd0582d5eb15/resource/f75eb350-194c-481c-8cb2-8b198c475d08/download/agi-itrb-consumer-corner-pet-owner-and-pet-food-trends-issue67.pdf

Holland, W.D. and G.M. Coen (Eds.) (1983). Ecological (Biophysical) land classification of Banff and Jasper National Parks of Banff and Jasper National Parks. Volume I: Summary. Alberta Institute of Pedology, Environment Canada, and Agriculture Canada.

Holroyd, G.L. and K.J. Van Tighem (1983). Ecological (Biophysical) land classification of Banff and Jasper National Parks. Vol. III: The Wildlife Inventory. Prepared by Canadian Wildlife Service, Edmonton for Parks Canada, Western Region.

Kats, L. B., & Dill, L. M. (1998). The scent of death: Chemosensory assessment of predation risk by prey animals. Écoscience, 5(3), 361–394. https://doi.org/10.1080/11956860.1998.11682468

Lenth, Benjamin & Knight, Richard & Brennan, Mark. (2008). The Effects of Dogs on Wildlife Communities. Natural Areas Journal. 28. 218-227.

Macbeth, B. 2018. Species at Risk – Little Brown Myotis and Northern Myotis. In Hunt, W.A. [Editor] 2018. Banff National Park State of the Park Report- Resource Conservation Technical Summaries 2008 to 2017. Parks Canada, Unpublished Technical Report.

Olson, C. R. and T. L. Flach (2016). Deneficial Management Practices for Bats – for the Milk River and the South Saskatchewan Watershed in Alberta.

Owen, S.F., M.A. Menzel, W.M. Ford, J.W. Edwards, B.R. Chapman, K.V. Miller and P.B. Wood (2001). Roost Tree Selection by Maternal Colonies of Northern Long-eared Myotis in an intensively Managed Forest. United States Department of Agriculture. Forest Service. General Technical Report NE-292.

Sasse, D. and P. Pekins (1996). Summer roosting ecology of northern long-eared bats (Myotis septentrionalis) in the White Mountain National Forest. Pp. 91-101 in Bats and Forests Symposium. R. Barclay and M. Brigham (eds.). Research Branch, British Columbia Ministry of Forests Working Paper 23/1996. 291 pp.

APPENDIX A – Figures

Figure A1 – Context map with winter wolf/cougar tracking data



Figure A2 – Context map with wildlife GPS collar data

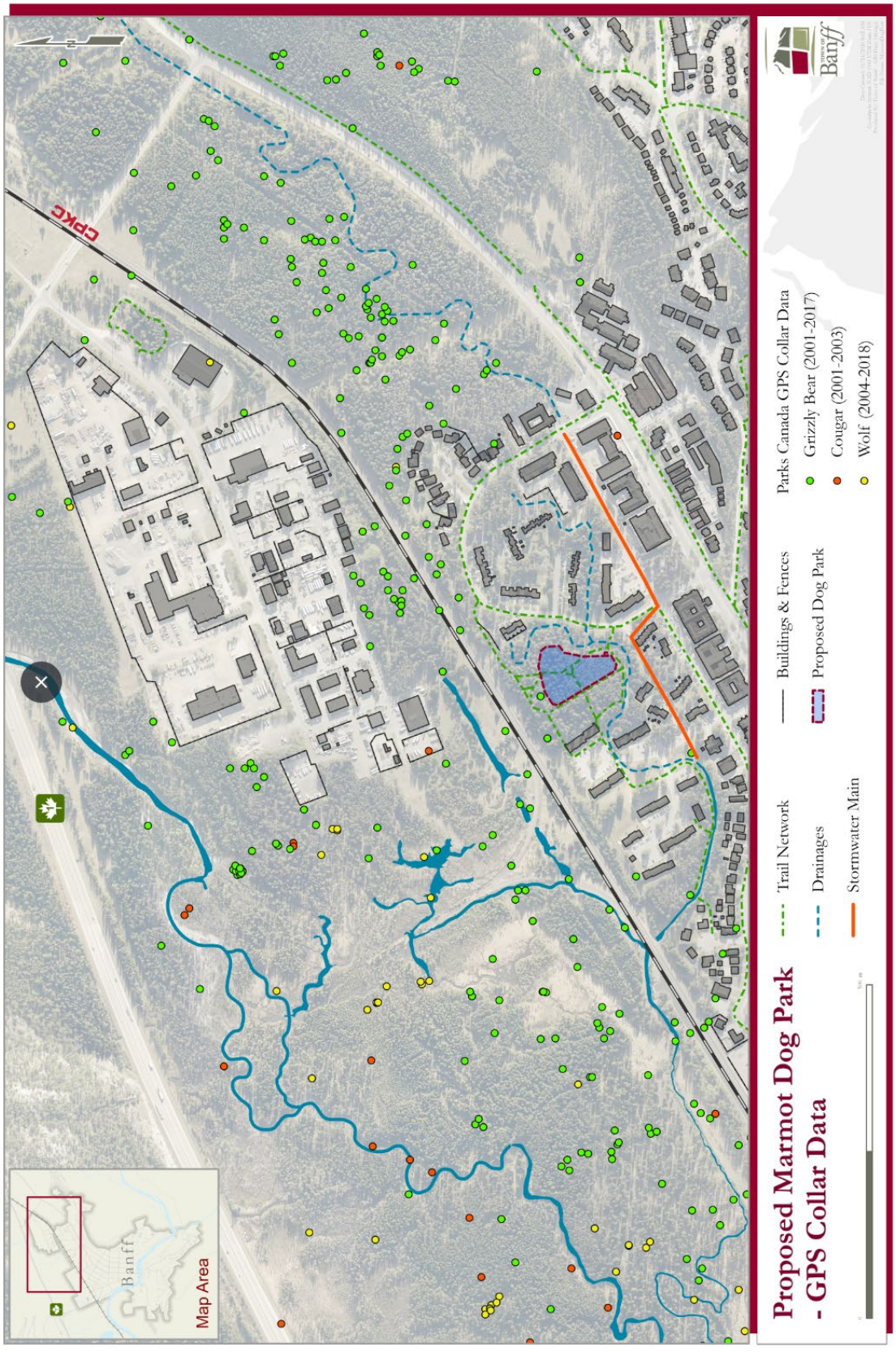


Figure A3 – Aerial photo comparison of Marmot Cr. park lands – 1922 vs. 2024

w/original Whiskey Cr. tributary alignment (blue) vs. current drainage (yellow)

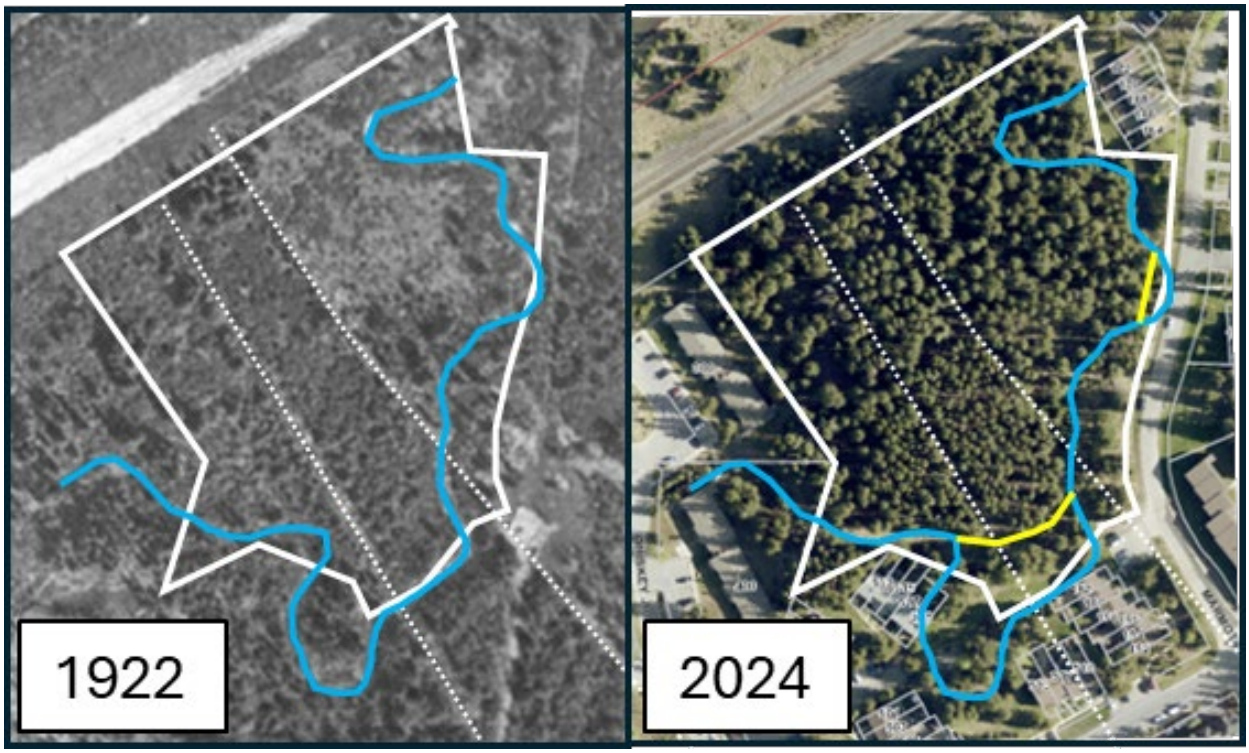


Figure A4 – Damaged culvert



Figure A5 – Detailed project map

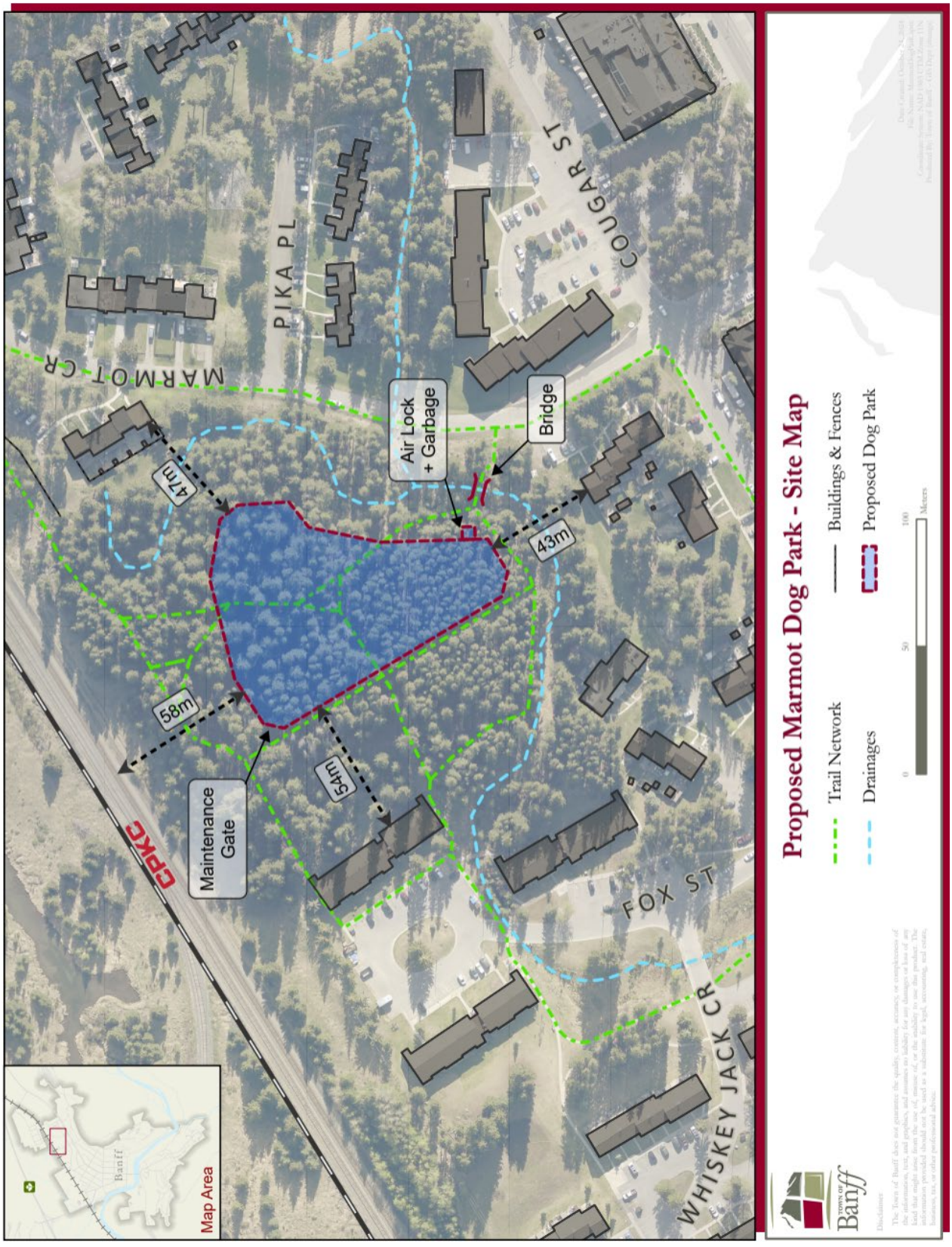


Figure A6 – Heat map showing distribution of registered dog owners in town of Banff

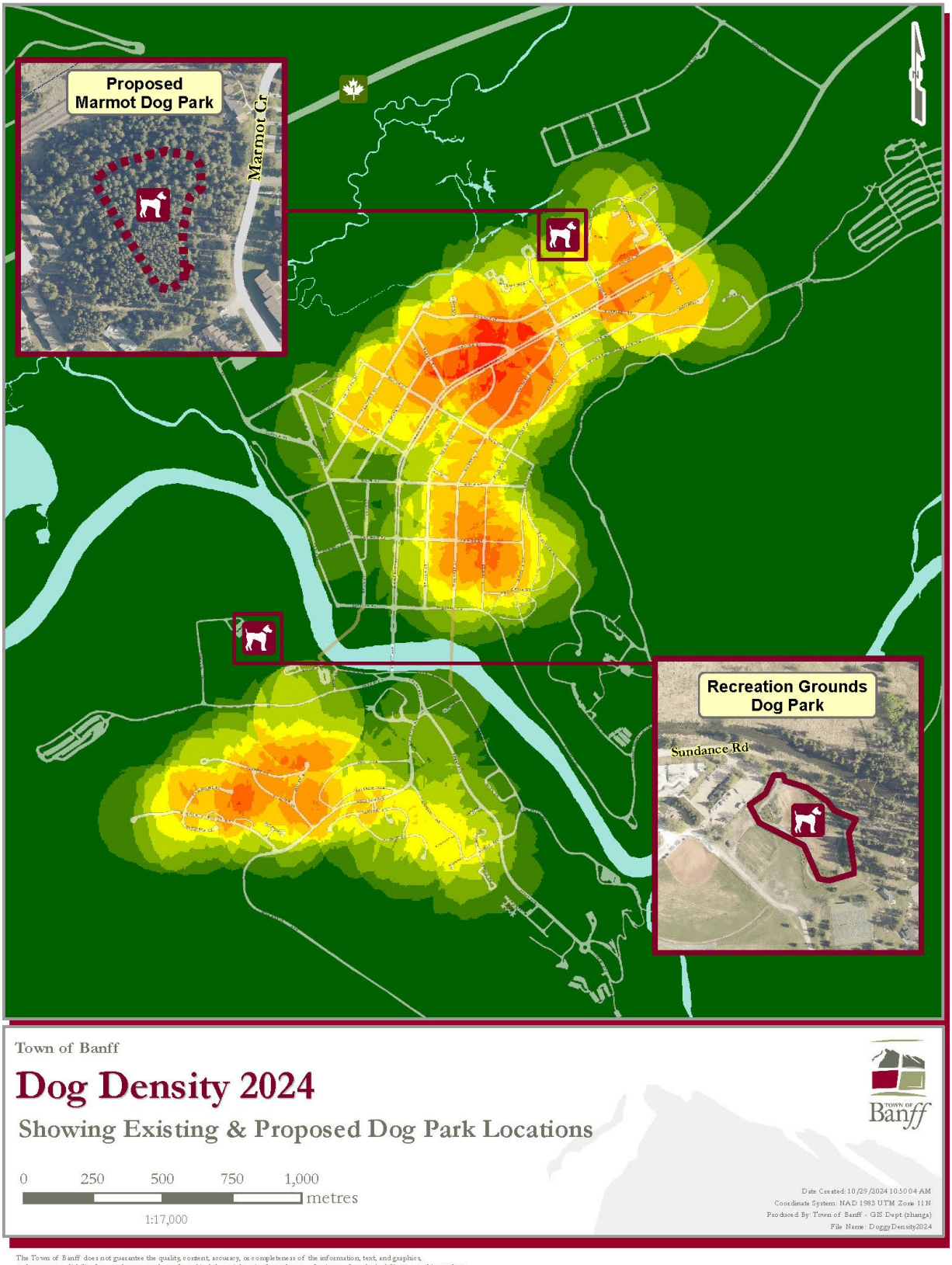


Figure A7 – Typical spruce forest/understory at proposed project site



Figure A8 – Shallow pond #1 ~15 m northeast of proposed dog park



Figure A9 – Shallow pond #2 ~15 m northeast of proposed dog park



APPENDIX B – Sample Fuel Reduction Prescription

A2 - 2023 Banff FireSmart Fuel Modification Prescription

Block Summary Table:

Priority	Approximate Area (Ha)	DBH (cm)	Debris Disposal Method(s)	Special Operating Conditions
A	8.78	**<=19**	Pile/Burn and/or Chip/Remove	▪ Small LGP equipment permitted ▪ Remove pink/black flagged trees (>19cm DBH and/or planted coniferous) along and behind Town trail strip on north-side of Jasper Way
B	0.09	**<=19**	Chip/Remove	▪ Small LGP equipment permitted ▪ Remove pink/black flagged trees (>19cm DBH) around Mountain Ave water pumphouse
C	1.76	**<=19**	Pile/Burn and/or Chip/Remove	▪ Small LGP equipment permitted ▪ Remove pink/black flagged trees (>19cm DBH and/or planted coniferous) along Town trail strip on south-side of Jasper Way
D	1.05	**<=19**	Chip/Remove	▪ Small LGP equipment permitted

Retain:

- All planted/landscaped coniferous and deciduous trees and shrubs except where noted in Special Operating Conditions above
- All green Deciduous stems unless damaged or unhealthy
- All flagged trees identifying Unit boundaries

Remove/Thin:

- **Thin green Coniferous stems <=19cm** to 3m crown-spacing from other coniferous stems. **Select stems for removal** based on the following priorities:
  - Thin advanced-growth understory (>3m height) before regeneration (<=3m height)
  - Thin Pine or Spruce before Douglas fir
- **Thin green Coniferous regeneration patches** to 2m crown-spacing from other coniferous regeneration stems
- **Remove all dead standing trees** unless showing signs of significant cavity nesting activity
- **Remove all leaning and dead & down** trees and bolts - logs in an advanced state of decay and not contributing to wildfire fuel load may be left for ecological purposes
- **Prune live and dead limbs on all residual coniferous trees greater than 6m in height** to 2m above ground level at the lowest point of the branch - trees less than 6m in height to be pruned to a maximum of 30% of live crown removal
- **Flush-cut all new and existing stumps** to ground level (<10cm height)
- **Remove** all Shepherdia (Buffalo-berry) bushes

Debris Disposal:

- **All debris** created from fuel modification operations and existing surface debris and piles to be disposed of - Contractor may need to return after snow-melt to dispose of debris hidden by snow-cover. Debris to be disposed of as per the method(s) in the Block Summary Table
- Existing resident firewood and debris piles within block perimeters NOT to be treated
- Sound logs >= 25cm diameter may be bucked into firewood a maximum of 45cm in length and piled at roadside for resident removal where operationally feasible - Service Provider is responsible for disposal of any firewood not removed by residents within 5 days of piling
- All debris from fuel modification operations to be removed from trails daily to pre-treatment conditions

Chip/Remove:

- Chips to be hauled to the Town of Banff Operations yard (Hawk Ave)
- All debris from chipping operations to be swept and removed daily

Pile/Burn:

- Debris piles may be burned onsite during favourable conditions with snow on the ground
- Parks Canada is the fire authority and reserve the right to set any burning conditions they feel are appropriate (Restricted Activity Permit) and to discontinue burning at any time due to hazardous or poor smoke venting conditions
- Piles to be located to minimize scorch damage to residual trees - trees scorched by burn piles that will not survive must be removed and disposed of
- No burn piles allowed within 20m of structures or 3 metres of trails without prior approval
- Exposed mineral soil and all burn pile scars will be seeded with native species (provided by the Service Provider) or covered by raking nearby native and uncontaminated forest floor materials over the disturbed area

Public Safety & Environment:

- Contractor must post adequate signage and use lookouts when required to ensure that public are not at risk to workplace operations

APPENDIX C – BFU/LLYK Woody/Vegetative Debris Management Guidelines



BFU/LLYK Woody/Vegetative Debris Management Guidelines

June 2017

Parks Canada Parcs Canada

Canada

Approval Page

RECOMMENDED BY: _____ DATE: 01/06/2017
(Fire and Vegetation Specialist - BFU)

RECOMMENDED BY: _____ DATE: _____
(Fire and Vegetation Specialist - LLYK)

APPROVED BY: _____ DATE: _____
(Resource Conservation Manager – BFU)

APPROVED BY: _____ DATE: _____
(Resource Conservation Manager – LLYK)

Topic Addressed: Disposal of woody/vegetative debris

Scope of Application:

This document provides guidance to staff and stakeholders for the disposal of woody and vegetative debris generated through various methods (chipping/mulching, transport out of park and burning). Debris disposal can result in significant ecological and operational impacts. Safety, environmental and visitor impacts must be mitigated during the disposal of woody and vegetative debris.

The method of woody/vegetative debris disposal depends on specific project details. The best method will be determined through direct consultation with the Fire and Vegetation Management Section (FVS).

Disposal of Timber

All projects that involve the removal of timber from a site must follow the Parks Canada Alberta Region Directive on Surplus Timber (appendix 1).

For projects where timber is not merchantable (i.e. the quality or quantity of timber is too small to offset costs associated with harvesting) or in instances where there is a benefit from the use of timber as firewood, limbed timbers will be transported to a firewood storage/processing facility for use within the field unit. Use, transport, storage and processing of timber for firewood will be approved by the Visitor Experience Manager (or designate) prior to transport.

Chipping/Mulching/Spreading Debris On-Site

Due to the dry climate in many locations within Banff, Yoho, and Kootenay national parks, chipped/mulched fuel does not decompose rapidly, instead remaining on the ground for extended period of time. Over time, this dry, fine fuel layer represents a significant fire hazard and inhibits natural forest succession processes. As such, chipping/mulching must be spread in an area at a very low application rate.

- Mulching will be limited to as small an area as possible – wherever possible, existing small trees and shrub cover should be left in place.
- Mulch will be spread to a depth of no more than 3 cm.
- Rough mulching (i.e. removing branches but leaving logs intact) is preferable to fine mulch in areas with larger stems (i.e. where small trees are being mulched).
- The distribution of mulch chips will be non-uniform so that native vegetation is not completely covered by mulched material.
- Mulching of Aspen stands has the potential for acid leachate to negatively affect aquatic ecosystems. Mulching of aspen should not occur within 30 m of riparian areas, bogs, lakes, streams or wetlands. This includes ephemeral water features.
- If mulch inadvertently occurs in depths greater than 3 cm or in areas where concerns exist with leaving mulch in place (such as areas with large infestations of non-native vegetation, or where native plants will not regrow within 1 growing season) further restoration efforts will be required during the reclamation.
- Restoration efforts may include additional raking of mulch or combining mulch with topsoil and seeding areas.
- Large diameter Douglas-fir (>20cm) must be chipped, mulched or destroyed before April 15th.
- No mulching will occur within 30 m of a water body or wetland (i.e. streams, rivers, lakes, wetlands) or riparian areas. This includes ephemeral water features.
- No mulching will occur in Zone 1, Special Preservation areas, as per the Park Management Plan

- Areas where mulching is not permitted (i.e. 30 m buffer for hydro features, aspen stands, etc.) will be mapped and monitored during the design stage of the project.
- Parks Canada representatives may assess areas of non-native vegetation infestation to determine appropriate debris management or reclamation to promote native plant growth and discourage further spread or establishment of non-native vegetation.



Debris/Mulch/Chipping acceptable volume this photo shows rough mulching (1-2 pass) treatment

Coarse Woody Debris

Spreading of medium/coarse woody debris (CWD) on site is allowable at the following specifications:

1. CWD should not be distributed in areas where it would not naturally be present (e.g., shrub and grassland meadows and wetlands where there are no trees being removed do not need to be included). This does not mean that all areas mapped as wetlands would be excluded, as many of these areas are forested. Ground truthing and/or knowledge of on-the-ground conditions is necessary.
2. CWD should not be re-distributed where this would result in damage to sensitive soils/vegetation and/or where extensive mitigation work, (e.g. construction of snow roads), would be required for the sole purpose of CWD re-distribution.
3. CWD should be distributed at an abundance that is in line with the prescription in the table below (Woodley and Forbes,1997), with abundance and distribution reflective of the surrounding habitat:

Cover Type	CWD abundance/ha
Hardwood	40
Mixedwood	60
Softwood	110

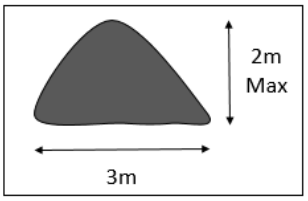
4. To improve aesthetics and promote diversity, the "pieces" of CWD should comprise a wide range of sizes (average diameter at least 10 cm and average length at least 2 m) and tree species reflective of what is naturally present. It should also be patchily distributed within the natural range of variation in surrounding habitat.

5. Where feasible, the CWD scatter should be done as early as possible in the project.

Debris Pile Burning

Dimensions and Placement

1. Pile construction should occur in close proximity to tree falling location (unless landing is being used).
2. Maximum pile size is 3 m in diameter and 2 m in height, except on a landing where maximum pile size is 7 m in diameter and 5 m in height.
3. Ensure surrounding live trees will not be scorched or incur stem damage (girdling or burning of bark).
4. Utilize existing or old pile burning locations whenever possible.
5. Limit the number of piles created.



Approval and Notifications

1. All brush pile burning must be pre-approved by Parks Canada's Fire and Vegetation Management Section.
2. 48hr prior to burning, contact Fire Duty Officer or pre-determined designate for approval.
3. The Fire Duty Officer may specify a call to the local fire department before ignition.
4. Immediately prior to ignition, contact Banff Dispatch (403-762-1470).
5. When the fire is determine to be extinguished, contact Banff Dispatch (403-762-1470).
6. If conditions do not allow for piles to be burned in a timely manner, proponents will be asked to GPS all pile locations for monitoring during the fire season, and/or to remove debris off site if the project has a defined end date. Provide all information to the Fire Duty Officer:

Conditions:

1. All pile burning operations, including those conducted by parks staff, require a Restricted Activity Permit.
2. Any Parks Canada staff, students, or volunteers conducting pile burning must be properly trained, supervised, and wear appropriate PPE in accordance with the national Safe Work Practice for this activity.
3. Piles will only be burned once curing of green fuels has occurred (at least 1-2 seasons), unless adequate amounts of dead wood/limbs are in each pile to ensure full consumption of materials or a forced air or air curtain system is being used effectively to achieve full consumption.
4. Field unit fire personnel (Fire Duty Officer or designate) will monitoring local venting conditions in order to ensure conditions are conducive to atmospheric venting and smoke dispersal from populated areas. . Exceptions to this may be considered but are dependent on burning methods and location. Parks Canada will use the most representative venting information available to make the decision regarding open air burning for each project.

5. Pile burning after snow melt has occurred will only be completed with the recommendation of the Fire Duty Officer. Areas with exposed mineral soil may reduce risk. Specific conditions may also need to be met in order to for the Fire Duty Officer to recommend burning:
    a. No adjacent cured fine fuels;
    b. On days with winds <15 km/h – and at the discretion of FDO depending on forecast wind/weather conditions;
    c. Low/Moderate fire hazard;
    d. With the use of forced air burning in gravel areas;
    e. With the use of air curtain burners in lower risk areas.
6. Once a pile is ignited it must be supervised at all times to prevent escape. Piles may be allowed to smolder at the ground level overnight (in consultation with the Fire Duty Officer), but additional debris must not be added unless the pile is supervised.
7. A method of extinguishment (i.e. water, hand tools or fire extinguisher – depending on pile size) must be on hand at all times.
8. Only woody/vegetative debris may be burned in piles. All other waste materials including painted/treated wood, metals, plastics, and liquids must be disposed of at a proper waste disposal facility. Mixed fuels and hazardous waste cannot be burned, but disposed in accordance with national waste handling and disposal procedures.
9. Only clean fuel will be used to ignite piles. Unknown mixes or 'slag' fuel will not be used to ignite debris piles.
10. Where burn piles are located close to a road or highway, the fire duty officer will determine the need for highway signage indicating the potential for smoke in area with reduced visibility, and that the smoke need not be reported.
11. Where burn piles are located close to communities, the fire duty officer will determine the need to notify the public in general and especially people who are sensitive to smoke of the potential for reduced air quality.
12. In the event of an escaped pile burning fire – contact Banff Park Dispatch immediately.

Contacts

Banff Field Unit:

Fire Duty Officer: 403-763-8025

Fire and Vegetation Management Section: 403-762-1417

Lake Louise, Yoho, Kootenay Field Unit

Fire Duty Officer: 250-342-1059

Fire and Vegetation Management Section: 250-347-6173

Effects Assessment and Mitigation

Potential Key Effects:

Wildlife
- Temporary displacement from habitat/movement corridors

Vegetation and Soils
- Vegetation trampling/compaction
- Collection of plants/wood
- Soil compaction
- Wildfire

Aquatic Resources
- Erosion/sedimentation into Creeks/Rivers

Cultural Resources
- Potential impacts on underground resources

Visitor Experience/External Relations
- Smoke, reduced visibility
- Smoke, odor
- Wildfire risk/safety

Mitigations Measures for Wildlife

1. Ensure site housekeeping is maintained.
2. No garbage or other wildlife attractants on site.
3. Work will only be conducted during daylight hours to minimize impact on wildlife.
4. Wildlife mitigations related to the removal of vegetation are addressed in the Vegetation Removal Guidelines for the Banff Field Unit.

Mitigation Measures for Vegetation and Soils

1. Project area will be surveyed for any major non-native vegetation issues prior to the start of the project. The Field Unit Fire and Vegetation Management section (FUFVS) will assess the need for pre-project treatment or special measures to prevent the establishment or spread of non-native vegetation.
2. Disturbed areas must be raked and seeded at a recommended seeding rate (as per recommendation by FUFVS) with an approved native seed mix in spring under snow-free conditions.
3. In certain areas, existing vegetation will be raked into the site for vegetation establishment, or native vegetation will be planted depending on site specific ecosystem requirements.
4. If the project area has deep organic soil layers, piles will only be burned when soil moisture is adequate to prevent the fire from burning deeply into the ground resulting in extensive smouldering and holdover potential.
    a. An option for sites with deep organic layers is to use machinery or hand tool to remove top soil and to burn material directly on the mineral soil. Once pile burning is complete, preserved top soil can be laid over top of the mineral soil again, raked and seeded with approved seed mixes.
5. If organic soil has been sterilized by high intensity fire, it may be necessary to rake adjacent top soil and vegetation onto the site for reseeding.

6. Care will be taken to keep piles as small as possible and to limit the number of piles in an area. If needed, larger piles can be made to feed material into smaller piles in order to limit the area needed for reclamation.
7. If a nearby graveled area is available and there is adequate separation from adjacent forested/vegetated areas, a landing with a larger pile can be used. Doing so will minimize impacts to organic soils and limit the need for restoration activities.

Mitigation Measures for Aquatic Resources

1. Project manager will consult with Field Unit Aquatics Specialist (or designate) during planning process to determine is any aquatics concerns are present
2. If project area is adjacent to or contains a wetland or water body, the FU Aquatics specialist will be consulted with regards to proximity of burn piles to water features. Typically, pile burning operations will not occur closer than 30 m to a water body, but site specific requirements will be determined by the aquatics specialist.

Mitigation Measures for Cultural Resources

1. A cultural resource impact assessment (CRIA) will be conducted for every project requiring pile burning operations. The Banff Field Unit Cultural Resource Specialist will determine if any underground cultural resources are in the area and whether mitigation measures are required.

Mitigation Measures for Visitor Experience and External Relations

1. Ensure Banff Park Dispatch (Banff.dispatch@pc.gc.ca/403-762-1470) has been notified on ignition days – prior to ignition and at completion of operation.
2. Ensure "GOOD" Venting Conditions (as per Environment Canada's ventilation index forecast)
3. Ensure that all adjacent major (TransCanada Hwy) and secondary (local roads or 1A) have adequate signage warning motorists of smoke in area and potential impacts on visibility.
4. For Parks Canada pile burning activities, following the established Fire Information Officer Protocols will be followed. These protocols include, but are not limited to, stakeholder and staff updates, and notification of ignition for the smoke sensitive list.
    a. For projects with external proponents, project lead agency/contractor will be responsible for disseminating smoke related info following established fire information officer protocols. PCA will assist agencies with messaging if needed.
5. If project is being conducted in high visitation areas (e.g. day use areas, trails, campgrounds) all activities will be done during periods of low visitation (i.e. fall/winter, weekdays).

Appendix I

ALBERTA REGION
DIRECTIVE

CANADIAN HERITAGE **PARKS OPERATIONS**

DATE: April 28, 1994

SUBJECT: Disposal of Surplus Timber from Approved Developments

RELATED DIRECTIVES: None

1. DEFINITION

"Surplus Timber" is defined as timber that is cleared as part of an approved development.

"Timber" means timber as defined in the National Parks Timber Regulations.

2. BACKGROUND

Parks Canada does not have a policy on the disposal of surplus timber from approved developments. Neither the National Parks Act nor the National Park Timber Regulations provide any direction on this issue.

Development proposals within the National Parks are dealt with on a case by case basis. Each proposal must undergo an Environmental Assessment and Review Process (EARP) before being approved. It is during EARP that the fate of the timber to be cleared is determined. In the past, surplus timber has been disposed of in one of three ways:

1) Cut into firewood and provided free in Park campgrounds;
2) Used for construction purposes in the Parks to build such things as signs and backcountry bridges; and,

... 2

3) Dragged into the backcountry and left to decay.

These solutions were fine when there was a minimal amount of surplus timber but they are no longer sufficient for large developments that produce an excessive amount of surplus timber.

3. SCOPE

This Directive applies to all National Parks and National Historic Parks within the Alberta Region.

This directive is intended to guide park managers in situations where it is necessary for timber to be removed as a result of an approved development. The disposal of such timber shall be done in a manner that will best serve the park environment.

This directive does not apply to timber that has fallen due to natural processes.

4. TWO-TIERED POLICY

TIER ONE - Sites altered through crown initiated projects (highways, buildings, fireguards etc...)

Timber cleared from crown initiated projects will be disposed of in the following order:

1) Examine park needs.

   a) Firewood supply
   b) New signs
   c) Backcountry bridges
   d) Have timber cut into rough sawwood and use the lumber for park facility repair or replacement.
   e) Scientific research considerations (ex. Tree ring analysis)
   e) Cut the timber into firewood and ship the surplus amounts to other parks.
      - A cost/benefit analysis, on a park by park basis is required to be completed before the next priority may be considered.

2) Reduce the Crown contract costs by allowing the contractor to dispose of the timber in lieu of payment.

   A professional appraiser can establish a mutually agreed upon appraisal value for the timber or a unit price format could be used with a credit rather than a charge.

3) Declare the timber surplus and let the Department of Public Works and Government Services Canada dispose of it.

   Revenue generated shall be used to reduce the costs of mitigation, rehabilitation and environmental research required for the crown project. Where revenue generated is in excess of these costs, the funds shall be used to finance projects that directly benefit the park environment, such as the rehabilitation of sensitive areas or support resource management studies. Overall, the environment should receive a net benefit.

TIER TWO - Sites altered through privately initiated projects (buildings, etc...)

Timber cleared from privately initiated projects will be disposed of in the following order:

1) Examine park needs.

   a) Firewood supply
   b) New signs
   c) Backcountry bridges
   d) Have timber cut into rough sawwood and use the lumber for park facility repair or replacement.
   e) Scientific research considerations (ex. Tree ring analysis)
   f) Cut the timber into firewood and ship the surplus amounts to other parks.
      - A cost/benefit analysis, on a park by park basis is required before the next priority may be considered.

2) Parks Canada declare the timber surplus and let the Department of Public Works and Government Services Canada dispose of it.

   All revenue generated from the surplus timber must be used to finance projects that directly benefit the park environment, such as the rehabilitation of sensitive areas or support resource management studies. Where revenue generated is in excess of these costs, the funds shall be used to finance projects that directly benefit the park environment, such as the rehabilitation of sensitive areas or support resource management studies. Overall, the environment should receive a net benefit.

   It is important to stress that never at any time, whatsoever, should costs related to private development be subsidized by the revenue generated from the surplus timber. Mitigation, rehabilitation or any research costs relevant to the private development must be borne by the outside agency whose development has deemed these measures necessary.

Approved by:

(Gail Harrison for)

_____

Sandra B. M. Davis
Regional Executive Director
Alberta Region

Prepared by:

Sandra Kam
Programme Affairs
Policy, Planning and Corporate Services
(403) 292-4070

APPENDIX D – Parks Canada Restoration & Reclamation Guidelines, 2017

Parks Canada Parcs Canada



RECLAMATION GUIDELINES

BFU/LLYK

Table of Contents

Approvals 1
Scope 2
Section 1: Reclamation Planning 4
Section 2: Non-Native Vegetation Surveying and Management 5
Section 3: Sod Salvage 7
Section 4: Earthworks – excavation, storage and surface preparation 8
Section 5: Revegetation - species selection, seeding, planting 12
Section 6: Soil Amendments 14
Section 7: Hydraulically applied mulch and tank mix additions 15
Section 8: Monitoring, Maintenance and Site Closure 16
Appendix A: Qualified Environmental Professional (QEP) – External 17
Appendix B: Reclamation Template for Developed Areas (BFU ONLY) 18
Developed Area Seed Mix and Common Plantings (BFU2020) 19
Appendix C: Non Native Vegetation Management Plan Template (BFU ONLY) 20

Approvals

RECOMMENDED BY: _____ DATE: 2021/03/30
(Fire and Vegetation Specialist - BFU)

RECOMMENDED BY: _____ DATE: 2021/04/12
(Fire and Vegetation Specialist - LLYK)

APPROVED BY: _____ DATE: _____
(Resource Conservation Manager – BFU)

APPROVED BY: _____ DATE: _____
(Resource Conservation Manager – LLYK)

Scope

The intent of these guidelines are to help proponents (internal and external) better plan successful terrestrial reclamation actions within Banff, Yoho and Kootenay National Parks. As these parks are managed in two distinct field units (Lake-Louise-Yoho-Kootenay (LLYK) and Banff (BFU)) there are field unit specific guidance and resources provided throughout this document (Figure 1).

Reclamation and restoration are often used interchangeably but are two distinct activities.

The goal of **reclamation** is generally to return lands to equivalent land use through stabilization of the site and establishing vegetation that is suitable for the project location (invasiveness, aesthetics, Wildsmart and FireSmart are considered). Reclamation planning is a process that requires site-specific considerations. These guidelines provide options for projects and are not prescriptive in nature. Proponents should include the vegetation specialists in early project conceptual discussions (including Project Description development).

Restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed. Restoration projects (with the end goal of establishing functional habitat) are more dynamic in nature, and while the majority of the following guidelines apply, each project will be reviewed as a stand-alone to ensure restoration success (restoring ecological integrity).

These guidelines are not to be mistaken with "approved" actions; they are to be used to properly scope reclamation components of a project and give a general idea of our preferred methods. They should not be considered the only methods that would be approved if proven alternatives are desired. These guidelines are not a Best Management Practice nor in any way do they eliminate the need for proponents to follow normal approval processes, however if these guidelines are applied well, such approvals should proceed more quickly and with fewer revisions.

In Scope	Out Of Scope
Reclamation planning (disturbed sites)	Restoration planning (impacted ecosystems)
Non-native vegetation management	Soil import See *BFU Soil Movement and Sourcing Guidelines (under development)*
Earthworks (as related to topsoil and vegetation establishment)	Vegetation and woody debris management See *BFU LLYK Woody and Vegetative Debris Management Guidelines 2019*
Revegetation Methods	Erosion and sediment control planning
Soil amendments and hydro mulch	Contaminated soil management
Monitoring and maintenance of reclamation projects	Species at Risk planning considerations and details See Impact Assessment Process
Definitions of qualified environmental professionals	Aquatic restoration, riparian specific considerations

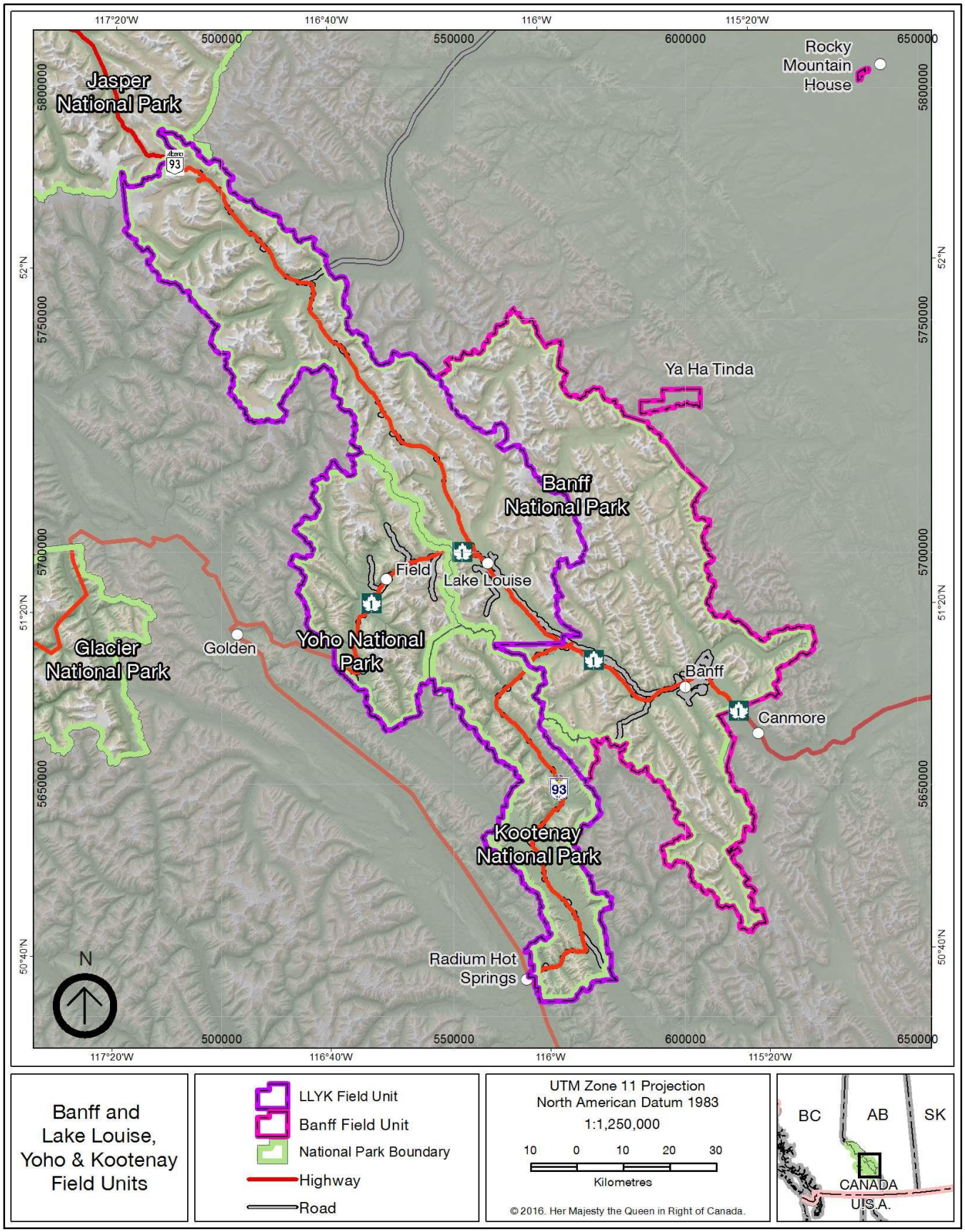


Figure 1: Banff and Lake Louise, Yoho & Kootenay Field Units

Section 1: Reclamation Planning

Principles

1. Any ground disturbing project requires a reclamation plan with components of the minimum standard listed below. Additional sections may be required depending on the complexity of the project.
2. It is understood that reclamation plans may be built into other project documents (project descriptions, environmental assessments, environmental protection plans) or as stand-alone documents depending on project size and complexity.
    - The environmental surveillance officer (ESO)/vegetation specialist may request a standalone plan if essential reclamation activities are unclear in project documents or if the project is large in scope.
3. Regional migratory bird windows, bats windows and other Species-At-Risk consideration will be assessed and documented through the Environmental Assessment review process.
4. These guidelines **do not** supersede any requirements of Environmental Assessment, permits, area closures, restricted activity orders, etc.

Considerations

Disturbance: In all cases, minimal disturbance is desired where disturbance cannot be avoided. In order to achieve minimal disturbance rig mats, low pressure tires, low impact machinery and frozen or snow covered conditions may be required for project delivery.

Timing: Reclamation needs to be considered early in project development to ensure its success. Reclamation has distinct windows where activities are successful and projects should plan accordingly. Planting and seeding should only occur in spring/fall (see Section 5), earthworks must occur in non-saturated conditions (typically after June) and off-road access should occur under frozen ground conditions.

Sensitive Sites, Riparian and Undisturbed Sites: Non-ubiquitous ecotypes require additional assessment (directed through the impact assessment process) this may include Rare Plant Surveys completed by a qualified environmental professional (see Appendix A: QEP), aquatic receptor monitoring and erosion mitigations.

Vegetation of Special Concern in BNP

- Whitebark pine (*Pinus albicaulis*) is a SARA (Species at Risk Act) listed Category I species. Removal or destruction of critical habitat requires SARA authorization in accordance with the Species at Risk Act
- Limber pine (*Pinus flexilis*) is a COSEWIC and provincially (AB/BC) listed endangered species. For the purpose of this document, Limber pine should be dealt with in the same manner as Whitebark pine.
- Mature, large diameter Douglas-fir and Rocky Mountain Juniper removal requires approval from the Vegetation Specialist as they are considered special resources in the Banff Field Unit.
- Foothills rough fescue and Bluebunch wheatgrass grasslands are sensitive features and work in or adjacent to them requires consultation with vegetation specialists.
- Rare plants can be found at any location within the Park (including roadside, disturbed areas).

Resources: Reclamation planning and implementation should be undertaken by qualified environmental professionals (see Appendix A: QEP) when the project is large or complex. For small disturbance areas these guidelines and resources below should be used to properly engage the review process.

- Reclamation consultants and contractors, including landscapers and nurseries.
- City of Calgary Habitat Restoration Framework
    - https://www.calgary.ca/content/dam/www/csps/parks/documents/construction/habitat-restoration-framework.pdf
- Grassland Restoration Forum – resources on minimizing disturbance footprints and recovery strategies within the montane.
    - https://grasslandrestorationforum.ca/information-portal/

Activity Standards

Reclamation Plan (minimum standard)

1. Non-native vegetation management (including prevention; see Section 2)
2. Topsoil management (including soil salvage techniques; see Section 4) and import (if required)
3. Revegetation methods (including species selection; see Section 5) as directed by pre-site conditions.
4. Monitoring and Maintenance (see Section 8)

Section 2: Non-Native Vegetation Surveying and Management

Principles

1. Prevention of NNV import and establishment is the most important action in Integrated Pest Management
2. All ground disturbing projects must budget for NNV surveying, control and monitoring – regardless of pre-disturbance site conditions.
    - In many cases pre disturbance NNV surveys are required
    - In many cases post-construction NNV control is required.
3. Employing more than one control method is encouraged under the principle of integrated pest management.
4. Proponents are not responsible to eradicate NNV that is already present prior to disturbance but must monitor and control to ensure the NNV does not increase in abundance or diversity.

Considerations

Plant Phenology (life stages): Invasive management actions depend on the plants life stage. Generally chemical control is used in rosette and bolt stages. Mechanical control is used when plants are bolting and developing flower heads. Once foreheads and seed head develop, control actions are much less effective and slower (as flower/seed heads need to be removed prior to control). Therefore, it is in the projects best interest to control prior to flower head development. Changes to project delivery dates affect the type of control that is required and must be considered when these changes are made.

Resources: There are ample online resources that provide a variety of control option for each species. These resources should be reviewed and incorporated into project planning and reviewed by ESO/vegetation specialist. A NNV Management template is provided in Appendix C

- Known NNV distribution, field unit ranking list and field unit control guides are all available through the ESO/vegetation specialist – these documents are updated annually.
- Alberta/ Invasive Species Council – Factsheets
    - https://abinvasives.ca/invasive-species/fact-sheets/
- Invasive Species Council of British Columbia – Factsheets
    - https://bcinvasives.ca/resources/tips/
- Environmental Consultants and Landscaping Companies

Chemical Control Requirements

- Only herbicides approved in the applicable field units' Integrated Pest Management Plan (IPMP) are to be used.
- All chemical application must be completed by a Certified Applicator (AB or BC license) or Assistant Applicator (as per regulations).
- All chemical applications require an approved Restricted Activity Permit
    - This permit must include the applicators license number, desired herbicide to be used and map of locations to be controlled.
- All applications must adhere to
    - Alberta Regulations
        - Environmental Code of Practice for Pesticides
        - Pesticide Sales, Handling, Use and Application Regulations
    - British Columbia Regulations
        - Integrated Pest Management Act and Regulations
- All records must be submitted to ESO within 2 weeks of application
- Spot spraying is the only application method approved for use without an additional Basic Impact Assessment.

Disposal: Vegetation debris (rosettes, stalks, leafs etc.) generally can be disposed anywhere that yard waste is accepted (or left on site, if appropriate). Flowers, seed heads and seeds must be disposed to ensure seed is not dispersed to new areas – this may include burning or disposal at a landfill (nature of waste must be disclosed to landfill operator).

Activity Standards

2.1. NNV Survey

1. A qualified Environmental Profession (Appendix A) should be provided total project area to survey, including on and off site staging areas (associated area at pits).
2. Survey must be completed during growing season (June-August)
3. Surveyor must document species, phenology and size (m^2)with referenced points or polygons, ideally on a map.
    - Appendix C can be used to document identified species.
4. Survey must be provided to ESO within 2 weeks of completion.

2.2. Mechanical Control

1. Flower/seed head removal is required before mechanical control if they are present on plants – this is to ensure seed is not dispersed across the area before damaging plants. Flower/seed heads should be carefully removed from plant (minimizing number of seeds that are release) and placed into paper bags, labeled and properly disposed (see consideration above)
2. Generally mechanical control includes
    - Whack/mow: Using hand tools/power tools (brush saw, weed whackers) to sever the aboveground portion of the plant. Ensure to mow as close to the base as possible, avoiding native vegetation if possible. If flowers/seed heads are not present debris can be left on site (generally).
    - Pull: Using hands/hand tools – soil type will dictate the ease of this method, some species require substantial root remove to be effective, do not continue pulling if not achieving appropriate root removal.
    - Dig: Using hand tools – to remove the majority of root mass. All areas that are dug should be re-seeded using adjacent topsoil or purchased seed (site specific).

2.3. Chemical Control

1. Only certified applicators complete chemical control and shall complete all action as per applicable regulations once approval has been granted (see above considerations)
2. If flower heads/seed heads are present they must be removed prior to chemical application.

Section 3: Sod Salvage

- The *BFU/LLYK Woody Vegetative Debris Management Guideline 2019* covers all aspects of vegetation removal.
    - Sod salvage is omitted from the above guidelines and therefore is included below.
- Consider what woody debris can be salvaged for use in reclamation (see Section 4; surface preparation).

Activity: Sod (vegetation mat) Salvage

Considerations: Sod stripping should be completed in all areas where mats of vegetation exist as it is the most effective and successful method of restoring disturbed areas. This can be accomplished by using a sod stripping machine or by hand on smaller areas. Salvage ground cover vegetation, including grass, forbs and the root layer immediately above the topsoil layer, in areas where ground disturbance is required. Sod should be comprised of 50% or more vascular plant species and established root structures before vegetation sod salvage and transplantation should be attempted.

3.1. Sod Salvage

1. Clearly mark areas for sod salvage to avoid additional disturbance.
2. Remove sod any shape that is manageable (typically squares), hand cut by shovel or with clean-up bucket of excavator, on a level plane below the root, and maintain a consistent depth of 10 to 15cm.
3. Use hand crews to assist the excavator to remove sod blocks with cutting and storage of sod. Gather loose soil and root material to be retained with sod.
4. Do not bend or roll sod blocks and minimize the amount of handling.
5. Storage
    a. Store sod flat, on flat ground or pallets or wood sheeting. Sod must be stored with vegetation facing upwards (e.g. not facing the ground).
    b. Sod mats may be stored in a pile, provided that each layer is placed with grass blades facing upwards.
    c. Place salvaged sod in low profile (<60cm in height) windrows with the appropriate erosion control for rain and windy conditions, in a weed free area for storage designated by the Vegetation specialist/ESO.
    d. Cover sod with a white, breathable geo-textile fabric to protect from precipitation and sun and stack sod blocks.
6. Re-plant sod as soon as possible while keeping stockpile moist in dry weather without over-watering, wet sod may compost.

Section 4: Earthworks – excavation, storage and surface preparation

Principles

1. Topsoil will be conserved through
    - Effective erosion and sediment control planning and implementation
    - Minimizing soil movement and handling to protect existing native seed bank.
    - Only working in dry conditions
    - Being used in reclamation/restoration of the site it originated (preferably) or at other sites in the field unit.
    - Topsoil will not be removed from the park or landfilled unless contaminated.
2. Soils will not be admixed (topsoils and subsoils will remain separate) through project delivery.
3. Locally sourced topsoil is desired in all cases, even when volumes are limiting.
4. Coarse woody debris (CWD) is recommended.
5. Topsoil import will be addressed in the *Soil Movement and Sourcing Guidelines* (under development 2021).

Considerations

General Challenges: Within BFU/LLYK topsoil characteristics can vary considerably and be difficult to separate from subsoil. Topsoil can range from humus-rich, dark-colored A horizons to pale, nutrient-leached A horizons depending on elevation, aspect, slope position and parent material. A summary of challenges for topsoil salvage include:

- thin topsoil (less than 10 cm) and thin or discontinuous organic surface layers;
- shallow bedrock (bedrock encountered less than 30 cm from ground surface);
- elevated coarse fragment content greater than 30% of soil volume;
- steep slopes (access challenges);
- a wide range of soil characteristics that can make topsoil difficult to identify in the field;
- elevated erosion risk; and,
- target vegetation that is sensitive to disturbance (e.g., whitebark pine, limber pine).

Excavation and Lifts: Topsoil (sometimes referred to as organic soils) and subsoil (sometimes referred to as mineral soil) are distinct components and need to be managed separately. Earthworks cannot occur in wet, saturated conditions. Any work conducted outside of these periods should identify adequate mitigation measures to avoid additional ground disturbance by heavy machinery (rig mats are preferred). Topsoil depth in Banff National Park varies considerably and can be difficult to separate from subsoils. It is imperative that topsoil is salvaged to conserve the native seed bank. Admixing soil (one lift procedure) will contravene mitigations established under project approvals (Environmental Assessment).

Topsoil Storage: Topsoil will begin degrading immediately after excavation (loosing seedbank, leaching nutrients, digesting and being lost to erosion); the -following are storage timeline standards for

- Temporary Storage (<30days) – topsoil loss mitigated through considerations below. Best practice is for topsoil to be stored no longer than 5 days without an erosion mitigation (geotextile, tarps, hydro-mulching etc.), especially on exposed (windy) sites. These mitigations will be addressed in the proponents *Erosion and Sediment Control Plan*.
- Long term Storage (>30days) – Long term storage requires a soil management plan be submitted to the Field Unit for full policy review, unless mitigations are stipulated in an approved -Impact Assessment. Soil management plans may include minimum reclamation plan components (see Section 1), long term planning (future use) and a full suite of -analyses for record keeping purposes. The assessment criteria for long term storage application will be at the discretion of the respective field unit.

During project planning consider where topsoil can be stored as to avoid being moved multiple times (each move loses 10-25% of the topsoil volume). Store in sheltered areas, separated 1 m from other stockpiles, use appropriate material (e.g., geotextile) to separate soil components where space is limited. Topsoil should be stockpiled on the uphill side of the disturbance on sloped terrain and away from any grades, subsoil's, spoil material, construction activity and day to day operations. Surrounding soil with berms to avoid material loss. Topsoil from separate ecotypes, different areas of the project or different projects cannot be mixed without approval of the ESO through consultation with the vegetation specialist (i.e., grassland soils must be kept separate from forested soils).

Subsoil Storage: Subsoil storage has similar considerations for storage though loss is not as impactful to site reclamation. Storage timeline listed above apply to subsoils storage. NNV invasion of subsoils is the concern.

Contaminated Soil: Contaminated soils will be addressed via the EA Process and may involve Federal Contaminated Site specialists. These guidelines do not address any activities for contaminated soils.

If soil disposal is required, proper manifesting and landfill criteria will be required.

Excess Materials: Occasionally, a project will result in more material than can be used. If so, this material must be moved off the project site and arrangements must be made for disposal or stockpiling for other projects in consultation with the ESO and vegetation specialist. Surplus excavated material may be used to fill depressions within the disturbance footprint provided that topsoil is stripped before filling, with approval from ESO in consultation with Assets/Highway SC. Excess materials should be stored in piles separated by horizon (i.e. topsoil stored separately from subsoil).

Weather Changes: In the event of a work program shutdown during inclement weather (e.g. winter conditions unfavorable for construction, heavy rain events, construction delays, etc.) contingency planning for bare soils or excavated material stockpiles is required.

Decompaction: Soils that are compacted do not allow moisture to flow through them, causing issues with saturation and drying. Hard-packed soils must be decompacted to ensure vegetation establishment. Largely this is accomplished by hand (for trails, informal staging areas, etc) and by harrow or other machinery for larger areas.

Coarse Woody Debris (CWD): CWD provides microhabitats that improve abiotic and biotic site condition. CWD "pieces" should be composed of a wide range of sizes (average diameter 10cm, average length 2m) and tree species reflective of the over story. It should be applied in a patchy distribution and properly keyed into the soils (see below).

Table 1: Permitted CWD Volumes as per *BFU LLYK Woody and Vegetative Debris Management Guidelines 2019*

Cover Type	CWD pieces/ha
Hardwood	40
Mixedwood	60
Softwood	110

Resources:

- Rough and Loose (if requested)
  - https://www.cclmportal.ca/sites/default/files/2020-02/Making_Site_Rough_and_Loose.pdf
- General best practices for soil management in native grasslands
  - https://grasslandrestorationforum.ca/wp-content/uploads/2018/04/Recovery-Strategies-FF-FP-MON-First-Approx-Revised-April-2018-SECURED.pdf
  - https://open.alberta.ca/dataset/dbbc914c-a2f7-4df9-8b28-979459883f17/resource/5070c720-58e8-4a1d-baed-256727449611/download/2016-principles-for-minimizing-surface-disturbance-in-native-grassland-september-1-2016.pdf

Activity Standards

Activity: Excavation

4.1 Excavation

1. Excavations must occur in 2 or 3 lifts.
    a. Two Lift (common)
        i. Lift 1 (topsoil; O and A horizons)
        ii. Lift 2 (sub soil; B and possibly C horizons)
    b. Three Lift (in sensitive areas)
        i. Lift 1 (organics; O horizon)
        ii. Lift 2 (topsoil; A horizon)
        iii. Lift 3 (sub soil; B and possibly C horizons)
    c. If unable to complete desired lifts, ESO must be contacted before moving forward. Consider using a spotter to ensure heavy equipment is calibrated to the lifts of the project area.
2. Soil stockpiles must ensure these lifts are not mixed and best practice is to maintain 1m spacing between stockpiles.
3. If topsoil/organics is being stored for more than 5 days, cover with tarps or geotextile to reduce soil loss.

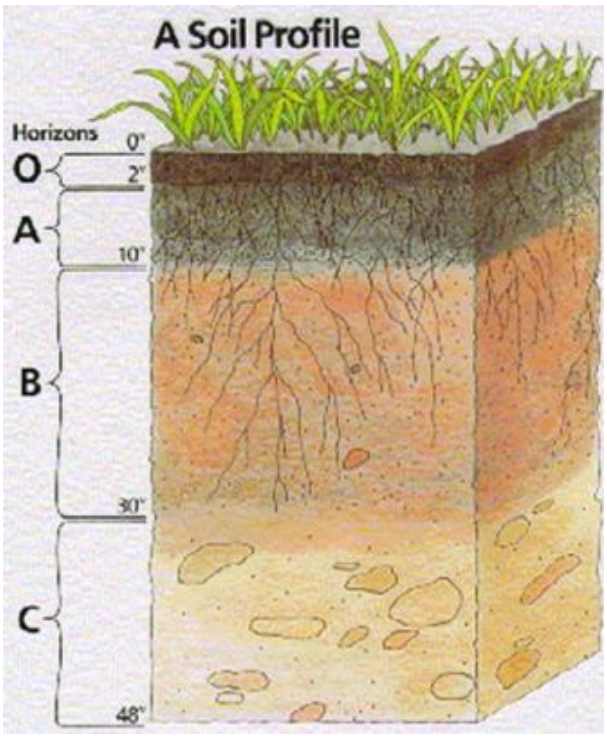


Figure 2: Soil Profile example

4.2 Temporary Storage

1. Prepare all components and materials of Erosion and Sediment Control Plan (or Environmental Protection Plan) prior to stockpiling soils.
2. Locate stockpiles as per considerations above, and approval of the ESO.
3. Topsoil stockpile will not exceed heights greater than 2 m. Subsoil piles may be larger with the approval of ESO.
4. Topsoil that is to be stockpiled for longer than 5 days must mitigate soil loss by protecting, covering, hydro-mulching, seeding or other measures as per Erosion and Sediment Control Plan.
    a. If covers are to be used; they should prevent light penetration (dark-coloured tarp) and be anchored to prevent erosion and wildlife entrapment.

4.3 Soil Placement and Surface Preparation

1. Subsoil placement, backfilled areas should be allowed to settle before topsoil replacement to prevent undesired depressions and undermining of planted materials
    - If final site contours are level prepare subsoils accordingly.
    - If final site contours are to be "rough and loose" adhere to the project plan for determining surface undulation requirements.
        - In general, undulations are desired to be +/- .5m from midline (1m total vertical variation) and spaced out by 1-2m (1-2m horizontal distance between low points)
2. Any use of compost, fertilizers and soil amendments must be approved by the ESO in consultation with the vegetation specialist and in accordance with the Section 6 and 7. Imported soils must adhere to the *Soil Movement and Sourcing Guidelines*.
3. Topsoil shall be reapplied at a depth of roughly 30-50 mm or at a depth of the original site conditions.
4. Topsoils should be distributed across planting area
    - For two lift procedures, the top layer is topsoil and organics.
    - For three lift procedures, the final layer of organics should be placed last.
    - Do not compact topsoil by driving repeatedly over site.
    - Keep topsoil unconsolidated in order to allow for seed infilling



Figure 3 Properly incorporated coarse woody debris (1 growing season)

5. Timing of placement and grading of topsoil should coincide with re-vegetation/seeding without winter intervening.
6. Grading or topsoil placement shall be completed to the satisfaction of the ESO prior to any surface preparation.
7. All eroded areas shall be corrected prior to surface preparation, as determined by the ESO, using local material where possible.
8. Areas to be seeded shall be loosened to a depth no less than 20 mm (greater where site conditions warrant) at the time of seeding to allow seed to be planted at a depth of 10mm-30mm.
9. If coarse woody debris is specified each piece must
    - Lie flat on the ground (branches should not be holding the stem off the ground)
    - Incorporated into the topsoils at one end prevent movement (see figure 3)
    - At a distribution that adheres to the *BFU LLYK Woody and Vegetative Debris Management Guidelines 2019* (Table 1)

4.4 Decompaction

1. Ensure that no further compaction will be occurring on site – this should be the last activity to occur as re-compacted soil is more damaging and compacted soils.
2. Use hand tools (shovels, row rakes) to decompact soil surface. Heavily compacted soils may require pick-axes or equivalent.
    - All soil "blocks" are broken up, soil should be loose and granular.
    - Depth will vary based on severity of compactions; compacted versus decompacted soil should be an obvious change.
3. Site should be left rough, with seed being lightly fan-raked into soil.

Section 5: Revegetation - species selection, seeding, planting

Principles

1. Native species will be used in all cases to ensure representative and resilient communities.
2. Where infrastructure exists, Fire Smart principles must be considered in planting plan. This will limit the number of species that are available to be planted. No exceptions will be made.
3. Species with no or low palatability to wildlife must be used in projects near areas of high human use.
4. Timing is essential to success of reclamation.
5. All planting plans will be reviewed by the Vegetation Specialist.

Considerations

Species Selection – BFU Field Unit: Species must be suitable for the project site from a variety of perspectives including human-use, flammability (fire hazard) and human-wildlife coexistence. Materials should be sourced from nurseries and growers in Alberta Plant Hardiness Zone 3b (or as close as possible) to ensure successful establishment and suitable phenotype. In all cases native-collected material are preferred to cultivars. Proponents must provide their planned species for review as they are more familiar with exact site conditions. All seed mixes should include grass and forb (herbaceous) species when possible. Consider assessing the surrounding are to understand which species are most suitable (not applicable to developed areas). There are a variety of resources to help in suitable species selection; as well as the review process.

- *Recommended Plant Species for Landscaping in Banff National Park* (2018)
    - Note that this is not the same as the Town of Banff recommended plant list; which is not to be used on projects outside of the towns boundary.
- https://www.biosphereinstitute.org/attractant-management-resources
- Local landscaping and environmental professionals
- The Banff Field Unit Vegetation Specialist
- Appendix B: Standard Vegetation Prescription.

Species Selection- LLYK Field Unit

Species must be suitable for the project site from a variety of perspectives including human-use, flammability (fire hazard) and human-wildlife coexistence. Materials should be sourced from nurseries and growers from the same Plant Hardiness Zone (Kootenay NP 3A to 4B, Yoho NP 4A-4B and Lake Louise 3A-4B) (or as close too as possible) to ensure successful establishment and suitable phenotype. In all cases native-collected material are preferred to cultivars. Proponents must provide their planned species for review as they are more familiar with exact site conditions. For roadside application, LLYK field unit approve the use of the seed mixes referred in *Seed Mixes and Reclamation Strategies for Projects in the LLYK Field Unit of Banff, Kootenay and Yoho National Parks, 2016*. For any other application, seed mixes should be reviewed and approved by the field unit vegetation specialist. There are a variety of resources to help in suitable species selection; as well as the review process.

- *Seed Mixes and Reclamation Strategies for Projects in the LLYK Field Unit of Banff, Kootenay and Yoho National Parks, 2016*
- https://www.biosphereinstitute.org/attractant-management-resources
- Local landscaping and environmental professionals
- LLYK Field Unit Vegetation program

Material Type Selection: Projects should assess whether seeds, plugs, potted plants or turf is the most appropriate for their sites. High use sites should favor established vegetation as well as fencing to ensure revegetation is successful. Seeding without barriers (fences, closures) is not suitable for areas of high human-use.

Timing: Topsoil placement, surface preparation and planting/seeding should occur immediately after each other to ensure success. Consider keeping topsoil stockpiled until a time that all activities can be completed. Consider incremental seeding (phased-approach) to complete sections of project when appropriate. Consider forecast when seeding/planting; ideally planting with rain expected.

Planting Windows: Generally, there are two planting windows were vegetation establishment will be most successful. Planting/seeding outside these windows is not advised and generally results are poor, requiring a second seeding event. If planting outside of these windows irrigation must be completed at a suitable interval throughout the summer. For difficult-

to-establish sites, seeding outside of theses windows is prohibited to ensure the responsible use of native seed (limited resource).

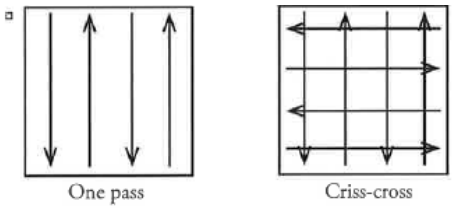
- **Spring Window:** April (soil must be thawed) to mid-June
- **Fall Window**: Late September to early November (soil must not be frozen)

Seed Certificates: Prior to purchasing, seed certificates for grass and for seed must be approved in writing by the vegetation specialist. Seed certificates must have the botanical name, seed analysis, lot analysis, seed origin and stamped by the certifying body. Seed analysis (germination tests) are **not** suitable replacements for seed certificates.

Activity Standards

5.1 Broadcast Seeding (hand, machine)

1. Ensure soils are prepped to receive seed (see Section 4). If hard-pan has developed, light raking will ensure surface is suitable.
2. Do not seed in high winds
3. Standard seeding rate is 25kg/ha and may be adjusted as dictated by site conditions (NNV, erosion, season and seeding methods).
4. Broadcast seeding should be completed in two passes. The second pass should be 90degrees to the first pass to ensure seed is applied to all soil surfaces. Objects on the soil can create "shadows" preventing seed placement in these areas, the second pass fills in the "shadows". Application rate per pass should be ½ of the total application rate.



5. Seed should be planted 10mm-30mm below surface by completing seed-setting.
6. Seed set must occur - soil should be raked or rolled after seeding to set seed in place (and reduce foraging of seed). This generally is completed by hand but a light harrow may be acceptable for larger sites.
7. If wood-fiber mulch is being applied; follow the product instructions and make sure to account for any slope changes. See Section 7.

5.2 Hydro seeding

1. Hydro seeding will only be approved on large sites located adjacent to infrastructure.
    - Generally, it is less effective at native vegetation establishment; should be expected to complete a second application on bare spots 1-year post-seeding.
2. Hydro mulch product and additives must be approved in writing.
    - See Section 6
3. Standard hydro seeding rate is 50kg/ha
4. Activity must be conducted by a trained professional and ensure all fiber-mulch product application instructions followed.
5. Water used in hydro-seeding must be obtained from a municipal source as past projects attempting to pump water from nearby freshwater streams have inadvertently (and unlawfully) introduced fertilizer and nutrients into freshwater streams; resulting in massive algal blooms. Withdrawing water from a waterbody in a NP without a RAP is unlawful.

5.3 Other seeding methods

1. Drill seeding, cyclone seeders and other methods can be used with approval.

Section 6: Soil Amendments

Principles

1. It is understood that soil amendments are required to establish vegetation on sites with poor soil quality
2. Soil amendments and additions are not to replace proper soil management practices.
3. Soil amendments require written approval.
    - Broadcast granular fertilizer application will not be approved in BNP
    - Targeted fertilization using slow-release products will be considered for planted materials.

Considerations

Approvals: There are hundreds of soil amendment and engineered soil medium products on the market; each requiring review and approval. As not all amendments will be approved it is important to submit for approval as soon as possible. Generally, products that are approved do not contain non-biological based macro and micro nutrients, do not leach and support our native species establishment (slow release). A product specification sheet or laboratory analysis must be submitted for review.

Concentration: Native vegetation has evolved with relatively poor macro nutrient requirement (as compared to landscaping ornamentals and non-native vegetation) and having too high of concentration of macro nutrients decreases establishment of native species and increases non-native grasses and forbs. As a result, amendment volumes (and topsoil lifts) may appear to be too low to support vegetation growth; however, this relatively low nutrient soil supports native establishment over non-native.

Activity Standards

6.1 Amending topsoil

1. Subsoil contours should be established (see Section 4)
2. If topsoil is available; ensure it is evenly distributed across the site.
    - Best practice (if possible) is to complete mixing of topsoil and amendment at an approved staging area prior to distributing across the site.
3. Amendment evenly across site if possible, or in a consistent manner
    - Ensure approved ratio of amendment: topsoil is achieved
4. Use equipment to effectively mix only the topsoil lift (do not mix subsoils). This can be accomplished using row rakes, harrow or machinery.
5. Grade and prepare surface as per Section 4.

Section 7: Hydraulically applied mulch and tank mix additions

Principles

1. Hydraulically applied wood-fiber mulch (hydro-mulch) has been shown to improve native seed establishment and germination.
2. Hydro-mulch and hydro seeding (hydro-mulch + seed) are different. Hydro seeding is less effective at establishing native species due to seed being stuck in the mulch matrix (rather than the soil)
3. It is understood that tank-mix additions can be added to hydro-mulch to improve vegetation establishment.
    - Biotic addition and amendments (including fertilizers) must be approved in writing.

Considerations

Approvals: There are many possible tank-mix additions, each requiring review and approval. As not all amendments will be approved it is important to submit for approval as soon as possible. Generally, products that are approved do not contain non-biological based macro and micro nutrients, do not leach and support our native species establishment (slow release). A product specification sheet or laboratory analysis must be submitted for review.

Wood-fiber mulch: Wood-fiber mulch shall be clean and free of weeds and other foreign matter, be 100% biodegradable, compatible with the environment, and shall contain no germination inhibiting components.

Bark-mulch: Bark-mulch is not generally recommended in reclamation/restoration and is considered a fire hazard; it is often confused with wood-fiber mulch, which is typically the man constituent of hydraulically applied mulch. Upon approval, under the purview of the *BFU/LLYK Vegetation and Woody Debris Management Guidelines 2019*, wood that is mulched on site can be used.

Tackifier: Proponents should carefully consider the amount of tackifier to be used on windy and exposed sites (consult experts). Tackifier must be capable of joining together the mulch particles to secure the mulch to the ground. The binder shall not form an impervious seal that will prevent the penetration of moisture to underlying soil.

Activity Standards

7.1 Hydro-mulch application

1. Hydro-mulch must always be applied as per specific product instructions
    - Typically to be applied during calm conditions and dry forecast for > 24 hours.
    - Typically, at a min of 4mm
2. Tank additions (biotics) must always be applied as per specific product instructions.
3. Ensure that full coverage is attained (ground should be entirely covered to ensure erosion protection) and depth is consistent across site.
4. Do not cover trees, stumps, shrubs or established vegetation with mulch. If this occurs, it much be removed by hand.
5. Dispose of any leftover tank mix at an appropriate landfill; do not spread additional layers or dump onsite.
6. Water used in hydro-mulching must be obtained from a source as past projects attempting to pump water from nearby freshwater streams have inadvertently (and unlawfully) introduced fertilizer and nutrients into freshwater streams; resulting in massive algal blooms. Withdrawing water from a waterbody in a NP without a RAP is unlawful.

Section 8: Monitoring, Maintenance and Site Closure

Principles

1. Monitoring and maintenance is an essential part of reclamation and has financial implications to proponents.
    - While PCA monitors sites periodically, it is the proponent's responsibility to monitor and address deficiencies for items identify under warranty.
2. It is understood that reclamation takes many years to meet site conditions below – generally monitoring and site visits will determine if a suitable reclamation trajectory has been achieved.

Considerations

Responsibility: Project proponents are responsible for establishment of native vegetation growth and control of non-native vegetation until site (and project) has satisfied the ESO (in consultation with vegetation specialist). Warranty, contract hold-backs and additional measure will be taken to ensure site reclamation is achieved.

Reclamation Acceptance Conditions: Unless otherwise stated; the following general site conditions must be met

- <20% Bare soil (>80% desired native vegetative cover)
- No new NNV species present (does not include species that were present pre-disturbance)
- No increase in extend/density of NNV present prior to disturbance; it is the projects responsibility to document original site conditions.
- No erosion issues
- >80% planting survival

Maintenance: Best practice is for projects to plan NNV management for 2-5 years post construction. Plantings and vegetation establishment are generally covered under warranty and ongoing maintenance (replacement, re-seeding) should occur until achieved.

Activity Standard

8.1 Monitoring Report

1. Following are examples of what needs to be monitoring and reported on
    - NNV Survey and documentation
    - Seed establishment assessment
    - Planted materials assessment
    - Erosion assessment
    - Bare area assessment
2. Any deficiencies should be rectified with addition activity (maintenance) until decided condition is achieved.

Document Control Tracking

Date of Issue	Author(s)	Brief Description of Change
March 16th, 2021	Brian Yakiwchuk, Fire/Veg, BFU	Document submitted for approval after incorporating comments from review process.

Appendix A: Qualified Environmental Professional (QEP) – External

The following are desired qualifications for a variety of activities relating to reclamation planning and implementation.

Reclamation Plan Development (Design)

- 10 + years' experience developing and implementing reclamation/restoration projects that involve;
    - Earthworks and Erosion and Sediment Control plans
    - Sourcing and assessing suitable, weed-free, topsoil
    - Collection and propagation (on site or through nurseries/growers) of native species (grass, forbs, shrubs, trees) and development of planting plans.
    - Invasive vegetation management integration into project delivery
    - Ecological function based end-point goals, objectives and monitoring criteria
    - Phased project delivery
- Experience must include projects planned/delivered in the Montane and/or Subalpine natural subregions.
- Professional agrologist (P.Ag) or biologist (P.Biol) in good standing with applicable provincial agencies.

Reclamation Plan Implementation (Supervision)

- 5+ years' experience leading project activities such as
    - Fill, sub soils and topsoil placement
    - Installation and maintenance of native plant materials
    - Erosion and sediment control plan implementation
    - Implementing mitigations of Environmental Assessments and/or Environmental Protection Plans
    - Invasive vegetation identification and management
- Professional agrologist (P.Ag) or biologist (P.Biol) in good standing with applicable provincial agencies.

NNV Survey

- Must be able to identify all early detection rapid response (EDRR), rank 1, rank 2 and rank 3 species at all phenological stages (including non-native grasses) to the satisfaction of the Vegetation Specialist.
- Must have the ability to properly document occurrences as per Appendix C.

Rare Plant Survey

- 5+ Years' experience completing Rare Vegetation Surveys within the applicable sub region of Alberta (Montane, Subalpine or Alpine) and;
- Must adhere to the Alberta Native Plant Council Guidelines for Rare Plant Surveys in Alberta, including its "Qualifications of Surveyors" section.

Appendix B: Reclamation Template for Developed Areas (BFU ONLY)

This template is intended for small, simple projects where minimal disturbance is occurring (~10m2) within front country locations associated to largely non-native vegetation type (turf-grass dominated).

Project/Location: _____

Responsible Person (proponent) _____ Phone Number _____

1. NNV Management

Prevention: Cleaning all equipment (boots, tools, machinery) (mandatory)

EDRR or rank 1 species present? ☐No ☐Yes, complete Appendix C

Rank 2 and 3 species present? ☐No ☐Yes, complete mechanical control of plants/removal of flower/seed heads within 10m at all times during project delivery.

Comments:

_____
_____
_____

2. Topsoil Management

Topsoil will be removed and stored separately from subsoils, ensuring no mixing (mandatory)

Using ☐ Hand tools ☐ small machinery

- No topsoil will be imported (mandatory)
- Topsoil will be stored for less than 5 days (mandatory)

Comments:

_____
_____
_____

3. Revegetation

Turf present on site? ☐No ☐Yes, complete sod salvage (See Section 3)

Site has no NNV nearby, no turf grass and >70%native vegetation cover?

☐No ☐Yes, use topsoil as seed source, **do not seed**.

Site has minimal vegetation (pre-disturbed)? ☐No ☐Yes, hand-seed after disturbance with BNP Developed Area Mix or use purchased turf in high-use areas.

If present, rake leaf and needle litter onto disturbance post-project (helps prevent wind erosion)

Comments:

_____
_____
_____

4. Monitoring and Maintenance

Vegetation survival will be monitored on _____(date) (mandatory) and;

Any bare areas, or new NNV species will be remedied (mandatory)

Comments:

_____

Review

☐ Reviewed (including suitability of template use) by _____Date _____

Comments

_____
_____
_____
_____
_____
_____

Developed Area Seed Mix and Common Plantings (BFU2020)			
Species	**Species (Latin)**	**% Weight**	**Comments**
Smooth Wild Rye	*Elymus glaucus*	35	quick germ, drought tolerant
Rocky Mountain Fescue	*Festuca saximontana*	20	Deer resistant/unpalatable
June Grass	*Koeleria macrantha*	15	Good competitor for Kentucky Bluegrass - early spring growth
Alpine Blue Grass	*Poa alpina*	5	tolerates heavy traffic, pioneer
Awned wheat grass	*Agropyron trachycaulus var. subsecundus*	10	Saline; short plant, quick establishment
Fringed brome	*Bromus ciliatus*	10	cold tolerant, excellent for roadside
Yarrow (white)	*Achillea millefolium*	5	Must be white variety.
Ideal substitutes or additions			
Spike Trisetum	*Trisetum spicatum*		For lowline/hydric areas areas
Tickle grass	*Agrostis scabra*		For lowline/hydric areas areas
Shrubs			
Shrubby cinquefoil		*Potentilla fructicosa*	
Common wild rose		*Rosa woodsii*	
Meadowsweet		*Spiraea betulifolia*	
Wolf willow		*Elaeagnus commutata*	
Trees			
Trembling aspen		*Populus tremuloides*	
Balsam poplar		*Populus balsamifera*	
Considerations			
Mesic/xeric sites (roadside, pits, ditches, campground area (with this moisture regime)) low palatability. Not all species will be suitable for all sites – use nearby vegetation as a guide. **Not an exhaustive list of approved species.**			

Appendix C: Non Native Vegetation Management Plan Template (BFU ONLY)

Proponent/Project: _____

Responsible Person : _____ Phone #: _____

1. Overview

Purpose of NNVMP ☐ PCA Operator (OCAs, camp, utilities etc.) – annual submittal of section 1 and 2 ☐ Project (all sections to be completed)	**Monitoring Frequency**: PCA operators: Form (section 1 and 2) must be completed annually for PCA operators and submitted by October 31st Projects: Inspections for duration of project and annually until warranty expiry
Expert Consultation: Yes☐ No ☐	**if YES, name and contact information of Expert**: Veg Specialist/ESO _____ Consultant _____
NNV Survey: ☐ Completed/Known Occurrences ☐ Required; planned _____	
Prevention: ☒ Cleaning all equipment (boots, tools, machinery **mandatory**) ☐ Weed seed analysis (soil) ☐ Seed certificate review	
Control: ☐ Mechanical ☐ Chemical (RAP required, Certified Applicator Required, Code of Practice / Product Label to be followed)	
Disposal:	
Submittal Date:	
Comments:	

2. Identification, Control and Monitoring of NNV

Characterise NNV noted in survey and planned control methods. This table is to be updated at each submission in order to monitor infestation size. Add lines as required or track in excel format.

Common Name	Rank	Extent (est)	Mechanical (timing)	Chemical (timing)	Location Comments
Ex: Canada thistle	*2*	*30m2*	*☒July-Aug*	*☒Sep*	*Located along the north end of the septic field, near the garage door.*
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	
			Monitoring Date		

☐ Map provided (required for operators) ☐ Alternative approved monitoring method _____

☐ Photos provided (required for operators)

Methods (provide details on mechanical/chemical control planned as per resources)

3. Chemical Control (requires Restricted Activity Permit - do not complete without written approval)
   If chemical methods are being used or planned, please complete the following (table can be copied and completed for each pesticide to be used). If completing for a PCA operator with an approved Integrated Pest Management Plan (IPMP); do NOT complete section 3 or 4, refer to your IPMP and check this box ☐

Product Trade Name:	PCP #:
Active Ingredient(s) / guarantee:	
Estimated size of area to be treated:	
Method of Application:	Liquid spray (spot treatment)
	Spot spraying is the ONLY allowed application method in BNP

Are any of the following areas within 30 m of the site of proposed pesticide application? If so please also complete section 4 below.

Potable water supplies ☐	Species at Risk: individuals, residences, and/or identified critical habitat* ☐
Drainage ditch (wet or dry) ☐	Standing surface water (ex. lakes, ponds, etc.)* ☐
Children's play areas ☐	Flowing surface water (ex. river, streams, canals, etc.)* ☐
Public use areas ☐	Other wetlands (ephemeral channels)* ☐
Sensitive wildlife (ex. species-at-risk, migratory birds) observed or known to be present during proposed pesticide management and complete avoidance is not feasible* ☐	
Sensitive natural areas or features (ex. riparian areas, other sensitive vegetation communities, rare plants, nests, etc.) within recommended buffers on product label* ☐	
Non- target species identified as culturally or spiritually significant by Indigenous Nation(s). ☐	

If any of the above areas were selected please describe the area, including the distance to the proposed treatment area. Identify potential environmental impacts on valued components and any site-specific mitigation measures to minimize impacts.

Contractor Name: _____

☐ Control records provided to ESO/Vegetation Specialist (max 2 weeks post application)

4. Impact Assessment Determination (to be completed when pesticide application is near sensitive areas/ features listed in section 3).

Summary of Potential Residual Effects and mitigations:

SARA Requirements

- ☐ There are no residual adverse effects to species at risk and therefore the SARA prohibitions

The SARA Permit Decision Tool used and determined:

- ☐ There is no contravention of SARA prohibitions
- ☐ Project activities contravene a SARA prohibition and CAN be authorized under SARA
- ☐ Project activities contravene a SARA prohibition and CANNOT be authorized

Determination of Significance:

Taking into account implementation of mitigation measures outlined in this document, the IPM Plan and the activities contained herein, are:

- ☐ Not likely to cause significant adverse environmental effects.
- ☐ Likely to cause significant adverse environmental effects.

APPENDIX E – Model Class Screening Report Sub-Class 4: Trails and Parks

Attachment 1 Sub-Class 4: Mitigation for Reducing Impacts of Trails, Parks, Parkettes and Recreation Grounds

Activity	Potential Impacts	Mitigation Measures
Pre-Planning		
General activities	Runoff / sedimentation; Soil contamination	• Prepare an Emergency Response Plan for the worst case, i.e., heavy rainfall and runoff events, high winds, spills, fires, etc. • In the event of emergency operations (as defined in Section 7.12 of the MCSR), call 911. The Warden Dispatch may also be contacted (available 24 hours/day) at (403) 762-4506 or the Wardens Office at (403) 762-1470 to notify of any emergency procedures required. • Ensure all activities are conducted at least 30 m from waterbodies.
	Wind and water erosion	• Prepare a satisfactory Sediment and Erosion Control Plan covering all construction and restoration periods. • Acquire necessary sediment control equipment (i.e., straw bales, landscaping fabric, sediment fences, etc.) and install prior to construction. • Extra planning should be used for areas with silty deposits (VL3 and VL4) and sloped areas with sandy deposits (see Figure 7.1).
	Compaction of soils	• Identify soils susceptible to compaction (fine textured and organic soils). • In sensitive areas, use equipment of low bearing weight, low PSI tires, or tracked vehicles, especially in sensitive sites.
	Habitat loss and fragmentation; or encroachment on wildlife movement corridor	• Identify wildlife habitat that may be impacted by activities and avoid sensitive areas. • Identify and avoid wetlands. • Ensure only necessary vegetation is removed and delineate areas to be avoided with biodegradeable flagging tape and/or temporary fences.
	Sensory disturbance and mortality of wildlife	When working adjacent to natural areas: • According to the wildlife that may be present, schedule high noise level activities and other intrusive construction activities to avoid critical life stages (breeding, nesting, rearing, migration). Consult with Parks Canada (403-762-1416) to discuss any localized wildlife concerns. • Confine “noise” activities to hours set out in Town of Banff Noise Bylaw. • Consider posting wildlife signs to reduce vehicle speeds and increase driver awareness near construction areas were wildlife mortality has or is likely to occur. • Educate workers to not harass or attract wildlife, keep the site free of food scraps, and dispose of garbage in bear proof containers.

Attachment 1 Sub-Class 4: Mitigation for Reducing Impacts of Trails, Parks, Parkettes and Recreation Grounds - *Continued*

Activity	Potential Impacts	Mitigation Measures
General activities (continued)	Disturbance of archaeological resources	• Determine whether there are archaeological sites in the area (see Figure 7.1). • Consult with Parks Canada (403-762-1416) if sites are identified. • If potential archaeological sites may be subject to ground disturbance, adapt activities to avoid them. • Educate workers to stop work immediately and to notify site supervisor upon finding any archaeological artefacts.
	Public safety	• Use appropriate signage for closed trails, parks, parkettes, and Recreation Grounds (e.g., signage for trail detours during construction/maintenance). • Call utility line companies to identify infrastructure locations (Alberta OneCall: 1-800-242-3447)
	Reduced aesthetics (noise and visual)	• Evaluate the site layout, access routes and construction activities to minimize their visual impact. • Plan work schedule to confine "noise" activities to hours set out in Town of Banff Noise Bylaw and, if possible, periods of low visitation.
Construction of Trails		
Clearing of vegetation	Runoff / sedimentation	• Minimize vegetation cover removal and grubbing. • Initiate replanting of disturbed areas immediately after construction is completed. • Halt construction activity on exposed soil during events of high rainfall intensity and runoff and refer to the Sediment and Erosion Control Plan. Periodically inspect erosion control structures for effectiveness.
	Compaction	• Restrict vehicles to access routes. • Select appropriate equipment, especially in erosion/slump prone areas (as identified on mapping). In sensitive areas, for example: wide tracked equipment, rubber tired vehicles and low bearing pressure weight equipment can be used.
	Reduced aesthetics	• Transport stockpiled material offsite immediately or stockpile cleared vegetation in an area out of view from public until it can be disposed of appropriately.
Preparing base, grading, trail surfacing and installation of fixtures	Runoff / sedimentation (through intermittent drainage pathways including storm sewer systems)	Particularly areas with slope class of 5 (5-15%) or greater and sites close to water (see Figure 7.1). • Cover stockpiles with polyethylene sheeting, tarps, or vegetative cover. • Minimize vegetation cover removal. • Filter or settle out sediment before the water enters any drainage pathway; including stormwater systems. • Control overland flow up gradient and down gradient of exposed areas by use of diversion ditches, bales, vegetative filter strips, and/or sediment traps.

Attachment 1 Sub-Class 4: Mitigation for Reducing Impacts of Trails, Parks, Parkettes and Recreation Grounds - *Continued*

Activity	Potential Impacts	Mitigation Measures
Preparing base, grading, trail surfacing and installation of fixtures (continued)	Wind and water erosion	All Ecosites, especially VL3 and VL4 in steeply sloped areas, and sloped areas with sandy loam/loamy sand soils for water erosion (see Figure 7.1). • Protect exposed soils with coarse granular materials, mulches, or straw. • Cover fills or stockpiles with polyethylene sheeting, tarps, or vegetative cover. • Line steep ditches with filter fabric, rock or polyethylene lining to prevent channel erosion.
Fence installation	Barrier to wildlife movement	• Evaluate the need for all fences. • Construct fences and orient in such a manner to reduce impacts on wildlife movement (see Figure 7.1). Consult with Parks staff to determine appropriate fence designs and locations (403-762-1416).
Construction of Parks, Parkettes & Recreation Grounds		
Clearing of vegetation; Preparing base, grading, surfacing playfields, installation of fixtures	Runoff/sedimentation; wind and water erosion; Compaction; Reduced aesthetics	• See mitigations for "Construction of Trails".
Establishing turf; Landscaping	Contamination from fertilizers and herbicides	• Accurately assess the need for chemicals. Use products and methods recommended in Parks Canada, Management Directive 2.4.1 (1985) The Management of Pesticides. • Minimize use of fast-release fertilizers. • Do not use herbicides in areas where residue may enter a waterbody. • Do not over water.
	Attracting wildlife and causing increased potential for interaction between wildlife and people	• Plant Parks-approved grass seed and native non-palatable species (see Appendix C) of trees and shrubs, to discourage wildlife.
	Water erosion	• Initiate replanting of disturbed areas within 48 hours after construction is completed.

Attachment 1 Sub-Class 4: Mitigation for Reducing Impacts of Trails, Parks, Parkettes and Recreation Grounds - *Continued*

Activity	Potential Impacts	Mitigation Measures
Fence installation	Barrier to wildlife movement	• See mitigations for "Fence installation" under "Construction of trails".
Modification, Maintenance and Repair of Trails, Parks, Parkettes and Recreation Grounds		
Resurfacing	Runoff / sedimentation (through intermittent drainage pathways including storm sewer systems)	Particularly areas with slope class of 5 (5-15%) or greater and sites close to water. • Cover stockpiles with polyethylene sheeting, tarps, or vegetative cover. • Minimize vegetation cover removal. • If necessary, use bales, vegetative filter strips, and/or sediment traps to control any sedimentation along the trail being resurfaced.
	Wind and water erosion	• Protect exposed soils with coarse granular materials, mulches, or straw. • Use mulch or aggregate to prevent soft areas from turning into large depressions • Cover fills or stockpiles of surfacing materials with polyethylene sheeting or tarps.
Maintaining facilities (including irrigation)	Runoff / sedimentation (through intermittent drainage pathways including storm sewer systems)	• Minimize the time that the excavation remains open during irrigation repairs. If deemed necessary, use site-specific erosion control methods, including bales, vegetative filter strips, and/or sediment traps. • Do not schedule work during wet weather
Vegetation management (including herbicide use in parks, parkettes and Recreation Grounds)	Contamination from fertilizers and herbicides	• Accurately assess the need for chemicals. Use products and methods recommended in Parks Canada, Management Directive 2.4.1 (1985) The Management of Pesticides. • Minimize use of fast-release fertilizers. • Do not use fertilizers and herbicides in areas where residue or run-off may enter a waterbody or drainage pathway. • Do not over water.
	Damage to adjacent vegetation, loss of native vegetation	• Do not go off-road or trail to remove trees. • Chip dead or dangerous trees, stockpile and use for tree beds. Buck remainder of trees to be used as firewood. Dispose of diseased vegetation by burning. Obtain burning permit.
Winter plowing and sanding	Runoff / sedimentation (through intermittent drainage pathways including storm sewer systems)	• Ensure that sand spreading mechanisms are properly tuned to minimize the use of sand on trails. • Train staff in proper use of plowing machinery so adjacent vegetation is not damaged.

Attachment 1 Sub-Class 4: Mitigation for Reducing Impacts of Trails, Parks, Parkettes and Recreation Grounds - *Continued*

Activity	Potential Impacts	Mitigation Measures
Decommissioning and Abandonment of Trails, Parks, Parkettes and Recreation Grounds		
Reclamation or restoration	Contamination from accidental spills	• Accurately assess the need for chemicals. Use products and methods recommended in Parks Canada, Management Directive 2.4.1 (1985) The Management of Pesticides. • Minimize use of fast-release fertilizers. • Do not use herbicides in areas where residue may enter a waterbody. • Do not over water.
	Erosion (water)	• Initiate replanting of disturbed areas within 48 hours after construction is completed. • For every tree removed, plant two native trees.
General Activities		
Waste management (general)	Visual impacts (including viewscapes)	• Collect all waste, store appropriately and dispose trade waste at Bow Valley Waste Management Commission's Class III landfill, and household garbage at the Waste Transfer Station.
	Contamination of soil and water from accidental spill or improper disposal	• Prepare an appropriate Spill Response Plan. In the event of emergency operations (as defined in Section 7.12 of the MCSR), call 911. The Warden Dispatch may also be contacted (available 24 hours/day) at (403) 762-4506 or the Wardens Office at (403) 762-1470 to notify of any emergency procedures required. • Dispose of contaminated soil at provincially certified disposal sites outside of the Park. Written proof of disposal is required. No treatment of contaminated soils (e.g., bioremediation) is allowed in the Park. • No rock, silt, cement, grout, asphalt, petroleum product, lumber, vegetation, domestic waste, or any deleterious substance shall be placed or allowed to disperse into any stream, river, pond, storm or sanitary sewer, or other water course.
Equipment operation and maintenance	Decrease in ambient air quality due to emissions	• Ensure all equipment is properly tuned, in good operating order, and fitted with standard air emission control devices. • Minimize idling of engines at all times.
	Dust production	• Wet down dry and dusty roads. • Do not use oil-based dust suppressants. • Reduce speeds. • Ensure fine materials being stored or transported are covered with tarps or equivalent material.

Attachment 1 Sub-Class 4: Mitigation for Reducing Impacts of Trails, Parks, Parkettes and Recreation Grounds - *Continued*

Activity	Potential Impacts	Mitigation Measures
Equipment operation and maintenance (continued)	Soil and water contamination from accidental spills.	• Prepare an appropriate Spill Response Plan. In the event of emergency operations (as defined in Section 7.12 of the MCSR), call 911. The Warden Dispatch may also be contacted (available 24 hours/day) at (403) 762-4506 or the Wardens Office at (403) 762-1470 to notify of any emergency procedures required. • Avoid work in high risk areas, particularly in areas of high water table, steeply sloped sites or in close proximity to streams. • Have spill containment equipment on-hand and ensure that all personnel are trained in their use. • Ensure all construction equipment is free of leaks from oil, fuel or hydraulic fuels. • The crossing of any waterbody (including wetlands) by construction equipment, or the use of such equipment within waterbodies is strictly prohibited unless prior approval has been confirmed. • Designate refuelling areas at least 100 m away from any water body. Refuelling sites will be bermed with an impermeable liner to contain 125% of the anticipated fuel quantity. Any contaminated rainwater will be moved out of the park. • Refuelling activities should not be conducted where run-off could carry contaminants into drainage pathways (including storm sewers). • Dispose of contaminated materials at provincially certified disposal sites outside of the Park (i.e., at Bow Valley Waste Management Commission's Class III landfill.). No treatment of contaminated soils (e.g., bioremediation) is allowed in the Park. All applicable documentation demonstrating proper disposal should be obtained.
	Compaction of soils	• Restrict vehicular travel and other equipment operation to the construction site and approved access routes. • Vehicle parking will be restricted to specialized areas on the construction site. • Minimize or halt construction traffic during wet conditions when the soil shows signs of ponding or rutting. • In sensitive areas, use equipment which minimizes surface disturbance including low ground pressure tracks/tires, blade shoes and brush rake attachments.

Attachment 1 Sub-Class 4: Mitigation for Reducing Impacts of Trails, Parks, Parkettes and Recreation Grounds - *Continued*

Activity	Potential Impacts	Mitigation Measures
Equipment operation and maintenance (continued)	Damage to adjacent vegetation	Undeveloped areas adjacent to development site: • Careful machine operation is required to ensure that damage to surrounding vegetation does not occur. • Excavated material must not be permitted to bury plant material that is to be retained. Snow fences may be used to prevent excavated material entering the surrounding forest.
	Weed invasion	• All construction equipment from outside Banff National Park will be steam cleaned prior to arrival to minimize the risk of introducing weeds. • Construction equipment from outside the Park will not be washed while in the Park.
	Sensory disturbance to wildlife	All undeveloped areas and areas bordering natural habitat, especially wildlife movement corridors and natural wetlands: • Use existing roadways, pathways and previously disturbed areas for site access and travel within the site. • Educate workers not to enter wildlife corridors. • Confine "noise" activities to hours set out in Town of Banff Noise Bylaw and, if possible, to periods of low visitation.
	Increased traffic levels	• Time activities to minimize vehicle conflicts on access roads.

APPENDIX F – Direction on Accidental Finds Protocol

Change of Scope Protocol

Any changes to the proposed plans must be submitted to the Parks Canada Agency Terrestrial Archaeology Representative for review.

Accidental Finds Protocol

In the event that items are found when Archaeologists or Cultural Resource Management (CRM) Advisors are not present on-site during construction activities.

There may be cultural resources present in the project area that have not yet been discovered (even after an archaeological assessment has been carried out or no assessment was deemed necessary for the project). If staff observe any significant cultural resources while working, they should STOP WORK in the immediate area, and contact the appropriate Parks Canada Archaeologist or CRM Advisor, to discuss any protective measures that might be needed.

Significant finds that could be considered grounds for work stoppage include but are not limited to: human remains; unique or diagnostic artifacts; or features (i.e. rock art, hearths, structure remains) associated with known sites and/or previously unidentified sites in the area. In all cases, CRM Advisors must be made aware of the finds, and these finds must be communicated back to Parks Canada Archaeologists.

Contacts:

Jessica Hill
Archaeologist, Archaeology, Collections and Curatorial Branch
Jessica.Hill@pc.gc.ca
Cell 403-617-4910

Megan Trefry
Archaeologist, Archaeology, Collections and Curatorial Branch
Megan.Trefry@pc.gc.ca
Cell 403-837-9754

Kate Leonard
Cultural Resource Management Advisor, Heritage Programs, Banff Field Unit
kate.leonard@pc.gc.ca
Cell (613) 408-8934