



Parks Canada Basic Impact Analysis Johnston Canyon Trailhead Parking Lot Area Upgrades

1. PROJECT TITLE & LOCATION

Johnston Canyon Trailhead Parking Lot Area Upgrades

2. PROPONENT INFORMATION

Project Lead: Eric Baron, Visitor Experience Product Development Officer, Banff Field

Unit Telephone:

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3. PROPOSED PROJECT DATES

Planned commencement: 2016-03-21

Planned completion: 2016-09-15

4. INTERNAL PROJECT FILE #

BNP-001088

5. PROJECT DESCRIPTION

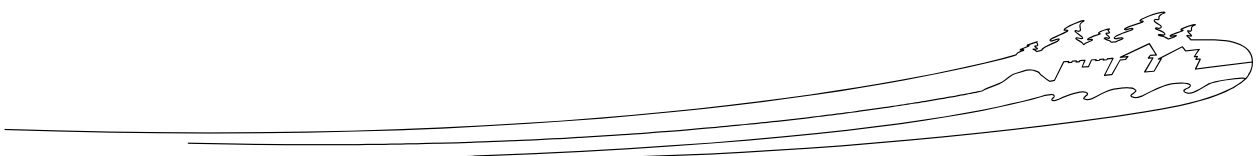
The Johnston Canyon trailhead is located in Banff National Park, Alberta off of the Bow Valley Parkway (BVP), also known as Highway 1A (Figure 1). The Johnston Canyon trail is used by people of all ages at all times of the year. It is one of the busiest trails in the park and it is busy rain or shine. The number of trail users is over 1,200 visitors per day in the busy summer months (EBA 2013). The trailhead has been operating beyond capacity and requires upgrading to meet current and projected visitor volumes. Currently, visitors that cannot be accommodated within the lot park along the shoulders of the BVP, creating a safety concern (Associated Engineering 2016). A moderate example of this is shown in the air photo in Figures 1 to 3, which was taken on a September day (i.e., not at peak time).

The purpose of the current project is to undertake upgrades to the trailhead parking and facilities to improve visitor experience opportunities and improve visitor safety at this very popular year round trailhead. Specifically, the project aims to:

1. Increase parking capacity.
2. Improve entrance/exit access.
3. Reduce parking on BVP roadsides.
4. Improve sense of arrival, welcome and orientation for visitors.

The components of the project comprise the following (see Figures 2 and 3):

- Improve parking capacity in the existing Johnston Canyon trailhead parking area, including RV and accessible parking stalls, by removing a treed island and treed node from the middle of this parking area, re-paving, re-painting stall lines and widening the parking area entry/egress lanes.





Curbs and other measures, such as boulders, will be added to eliminate parking at or near the entry lane.

- Construct a trailhead arch, new information kiosk, stamped concrete plaza, wayfinding signs and stonework seating at the trailhead.
- Create new, overflow parking capacity in the Johnston Canyon campground entry area by removing a treed island, paving and painting stall lines in this area.
- Provide a user-friendly trail connection between the new overflow parking area and the Johnston Canyon trailhead.

Table 1 below provides a summary of the existing and proposed parking stall capacity.

Table 1: Summary of existing and proposed parking capacity

Existing trailhead parking capacity	117 stalls (includes 4 wheelchair accessible stalls)	Total existing	117
Proposed new trailhead parking capacity	Approximately 140 stalls (includes 6 RV and 4 wheelchair accessible stalls)	Total new (approximate)	220
Proposed new overflow parking capacity	80 stalls		

The trailhead parking area will be graded with a gradual slope to direct overland drainage to the south east corner, as is currently the case. The overflow parking area will have a crown in the middle to direct runoff to either side of the lot.

All of the paving work must be completed prior to the end of September, as paving cannot be undertaken in colder temperatures (pers. comm. Jason Van Tine, 2016). The proposed construction schedule is based on a timeline that works back from the end of September with a two-week contingency and is summarized in Table 2 below.

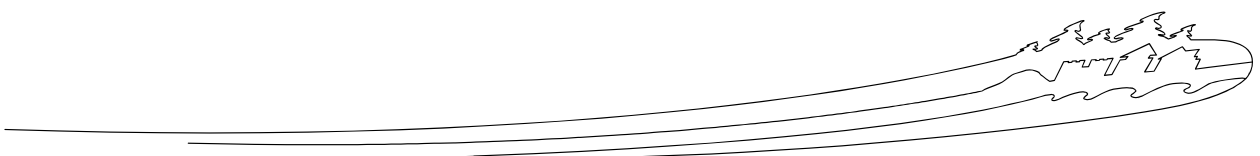




Figure 1: Overview of Existing Johnston Canyon Area Facilities

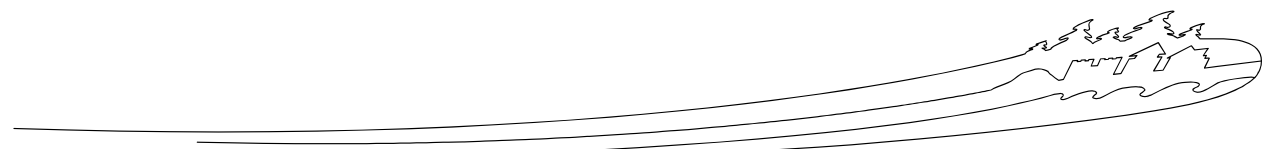
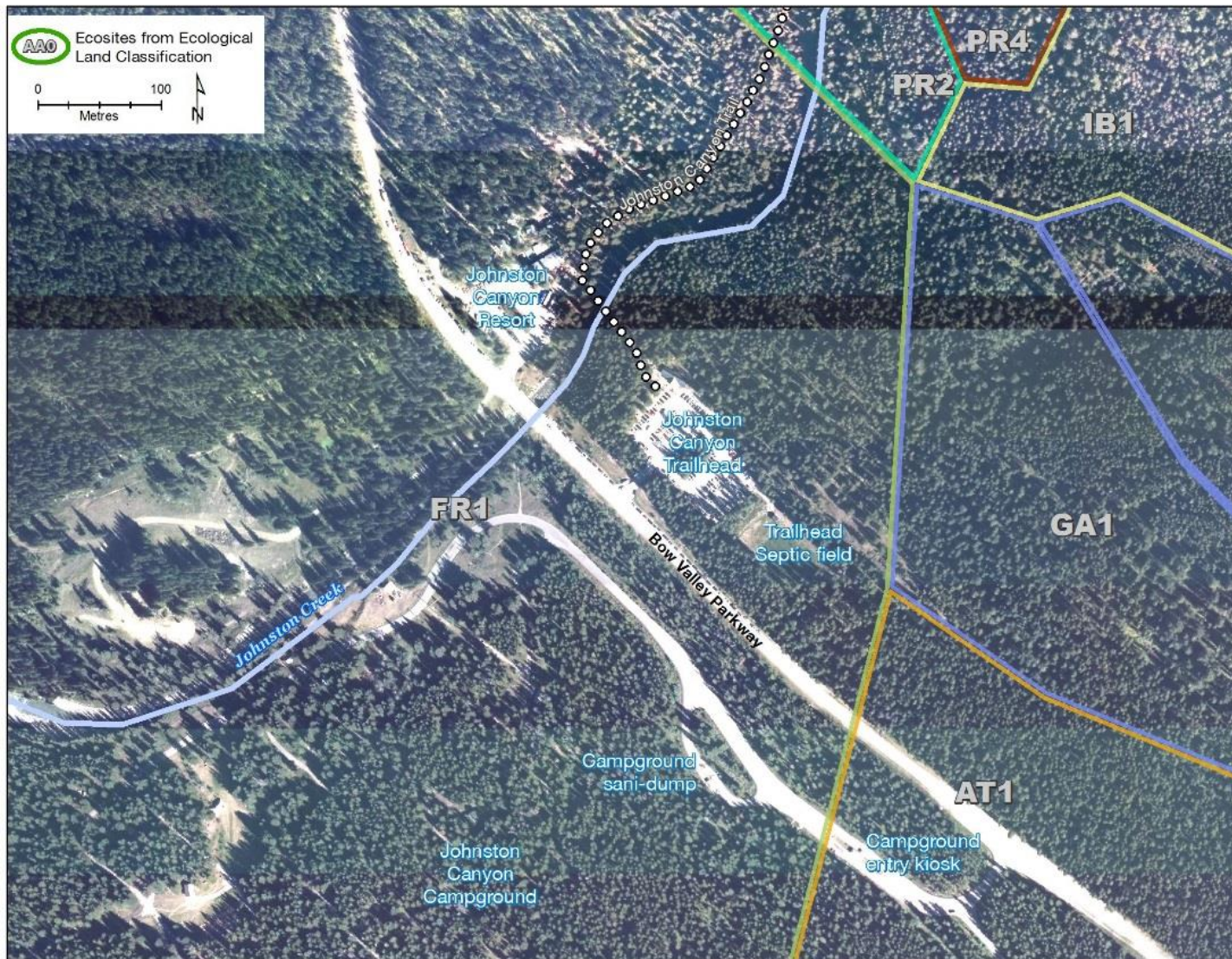




Figure 2: Johnston Canyon Trailhead Parking Upgrades

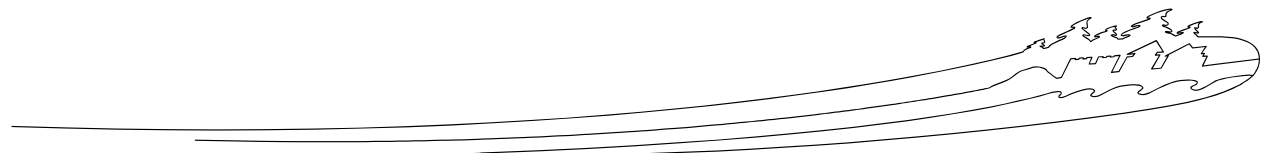




Figure 3: Proposed Overflow Parking Facilities at Johnston Canyon Campground Entry Area





Table 2: Proposed Construction Schedule

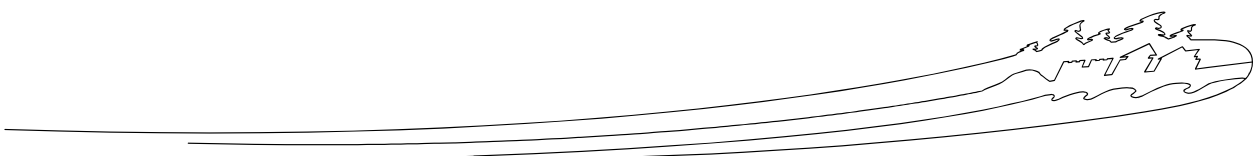
April 1-15, 2016	Tree/shrub removal (prior to migratory breeding bird season)
	Remove trees/shrubs from: - Campground entry area treed island. - Existing trailhead parking lot treed island and treed node.
June 1 - July 31, 2016	Construction of overflow parking area
	Stripping of treed island in campground entry area.
	Bury campground entry area power line directly below current alignment, where lines pass over proposed new overflow parking area.
	Access to the sewage dump station and campground will be maintained during construction.
	Complete grading, lay granular base and pave area previously covered by treed island in campground entry lane, repave existing entry lane area, and paint stall lines for overflow parking.
	Paint lines on campground entry road to delineate a pedestrian path along the north edge of the road to collect pedestrians and lead them to the existing trail crossing under the BVP at the Johnston Creek bridge.
	Where the trail passes under the BVP bridge, Parks Canada trail crew will restore the rip-rap and trail tread to the condition it was in prior to the 2013 floods, using additional rock and crushed gravel material to protect and grade the trail under the bridge.
	Install wayfinding and trailhead signs to guide motorists and visitors accessing Johnston Canyon via the overflow parking area.
August 1 – September 15, 2016	Construction of upgrades to trailhead parking and facilities
	Stripping of treed island and treed node in existing trailhead parking lot.
	The trailhead will be closed during this time. Parking will be available at the newly constructed overflow parking area with access to the Johnston Canyon Trail via the new collector trail.
	Complete grading, lay granular base and pave treed island and repave existing trailhead parking lot, including widened entry lane.
	Construct trailhead arch, information kiosk, wayfinding signs, stamped concrete plaza, and stonework seating at trailhead.
	Remove current pump-out vault privy and install new pump-out vault privy at current location of picnic tables on west edge of existing parking lot (as shown in Figure 2) or adjacent to washroom building. This will comprise complete replacement with new vault and privy building. Exact location to be determined through detailed design, and will be on currently disturbed ground.
Following project completion	Post-construction monitoring
	Conduct ongoing monitoring of environmental impacts and patterns of visitor use to determine effectiveness of collector trail and BVP underpass at keeping vehicles and pedestrians off the BVP, and preventing vegetation trampling and trail shortcutting in the area.

6. VALUED COMPONENTS LIKELY TO BE AFFECTED

6.1 Soils and Landforms

The project locations in Johnston Canyon campground and trailhead occur in Ecosite FR1. Ecosite FR1 comprises fluvial landforms on lower slopes and floors of valleys in the Montane Ecoregion. The surface expression is fluvial fans and aprons of non-calcareous, coarse-stratified material and surfaces are often channelled. Slopes range from 2 to 30%. Soils are dominated by Eutric Brunisols and are well drained (Holland and Coen 1983).

The project sites are located within the existing developed area of the campground and trailhead. Native soils are expected within the treed islands and treed node that are to be removed and at the location of the new pump-out vault privy. Soils in other locations that will be disturbed during construction of this





project (both shoulders of the trailhead entrance road, trail improvements directly under the BVP bridge) are largely expected to be modified from past construction.

6.2 Vegetation

Ecosite FR1 is dominated by closed canopy lodgepole pine forest. The coarse textured soils allow easy passage of water and thus, the soils are droughty, potentially causing slow vegetation growth and problems with re-vegetation (Holland and Coen 1983).

Within the campground the native vegetation has been cleared sufficiently to accommodate access roads, small campsites, kitchen shelters, washrooms, theatre, etc.; the majority of the tree, ground and shrub cover has been retained. Similarly, the trailhead has been cleared of native vegetation in order to accommodate the parking lot, washroom facilities, picnic area and septic field but mature forest surrounds these facilities. Mature forest is present within the two treed islands that are proposed to be removed, as well as adjacent to the trailhead entrance. Other areas of disturbance (existing shoulders of the trailhead access road and treed node in the trailhead parking lot) are previously disturbed and comprise grasses and forbs with some shrubs and smaller trees. The trail alignment directly under the BVP bridge is not vegetated.

Meadow hawkweed (*Hieracium caespitosum*), which is an aggressive non-native species, classified as a prohibited noxious weed species in Alberta, is known to occur in the campground entrance area (see Figure 4). The sites are located near the kiosk, originating from the island of trees located between the main road and the sani-dump location. The infestation has begun to spread across the road. This is a relatively low density area that is a good candidate for eradication and should be aggressively controlled (pers. comm. Rob Osiowy 2016).

Current management of the known locations of this species includes (pers. comm. Rob Osiowy 2016):

- A) Monitoring: Check the site thoroughly for plants throughout the season.
- B) Chemical Control: Two rounds of herbicide application. Timing may vary with growing season.
 - 1. Summer: Between early June and early July.
 - 2. Fall: Between late August and early September.
- C) Mechanical Control: At least two visits to collect remaining flower-heads, likely between mid-July and early August.

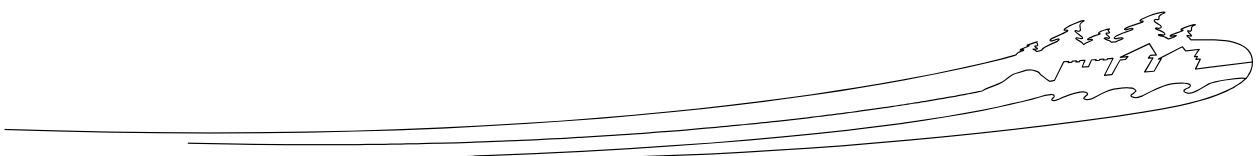




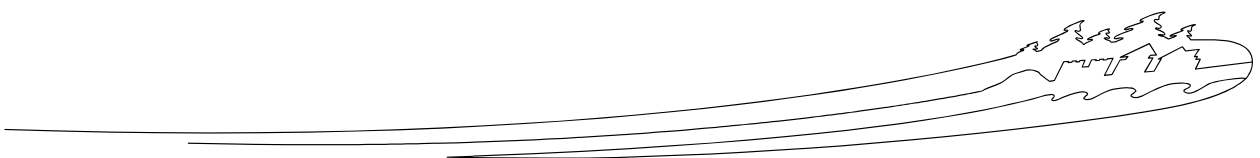
Figure 4 – Meadow Hawkweed Locations in Johnston Canyon Campground Entrance Area



6.3 Wildlife

Ecosite FR1 is highly important to wildlife. Many species occur in this ecosite in large numbers. Ungulates are most abundant in winter. The lush ground cover also supports many species of small mammals and breeding birds (Holland and Coen 1983).

An exhaustive list of species that inhabit the area is not considered necessary given the scope of this project, but includes black and grizzly bears, wolves, cougars, elk, deer and marten. Given their developed state and high level of human use, the campground and trailhead provide relatively low habitat value. However, the campground and trailhead are within an important wildlife movement corridor.





Sensitive times for wildlife in the area include the following:

- Grizzly bear hypophagia (low food intake) from May 1 to June 30 (weather dependent),
- Grizzly bear hyperphagia (high food intake) August 1 to September 30 (berry dependent),
- Wolf denning and rendez-vous site use from April 1 to July 30,
- Bird and bat breeding from April 15 to August 15,

Bears often feed along the shoulders of the BVP and the wolf pack in the area is known to travel frequently along and across the BVP (pers. comm. Steve Michel 2016). The current overflow parking that occurs along the shoulders of the BVP causes additional safety concerns for wildlife making use of habitat in this area for travel and foraging. This is because it takes an otherwise point node of high human use and extends it linearly along the BVP, making it more challenging for wildlife to negotiate around. The associated traffic congestion and people out of their cars walking on the road shoulders and in the driving lanes also increases the likelihood of close-proximity human-wildlife encounters.

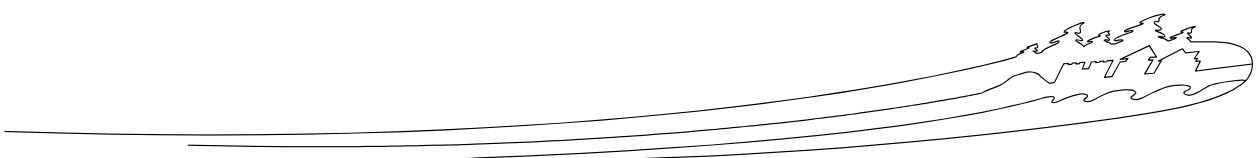
6.4 Terrestrial Species at Risk

Terrestrial species on Schedule I of the Species at Risk Act (SARA) which may occur in the project area and have the potential to be impacted by project activities are listed below. The black swift, which is not yet listed under SARA but has been assessed as Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and is known to nest in Johnston Canyon, is also discussed below.

Common Name	Scientific Name	SARA Schedule 1 Designation
Little Brown Bat	<i>Myotis lucifugus</i>	Endangered
Common nighthawk	<i>Chordeiles minor</i>	Threatened
Olive-sided flycatcher	<i>Contopus cooperi</i>	Threatened

Little brown bat

The little brown bat (*Myotis lucifugus*), along with two other bat species, is listed as an Endangered Species under Schedule I of SARA, as their survival is imminently threatened by a deadly and highly contagious disease known as White Nose Syndrome (Environment Canada 2014). Based on available data, it is known that the little brown bat occurs in Banff National Park (Horne 2013). These bats overwinter in cold and humid hibernacula (caves/mines) and their specific physiological requirements limit the number of suitable sites for overwintering (COSEWIC 2013). Females establish summer maternity colonies, often in buildings (especially little brown bat) or large-diameter trees. Holroyd and Van Tighem (1983) noted that during their research “seven lactating females were netted at their nursery colony in the Johnston Creek Staff House”. Little is known about the distribution of bats in Banff National Park, however there is clearly potential for bats to be using habitat in the Johnston Creek area during their active season, including for roosting and for nursery colonies. Bats generally use the same forests and at the same time of year as migratory birds, therefore complying with the prohibitions of the *Migratory Birds Convention Act* (i.e., no vegetation removal during the breeding bird season) is generally thought to result in compliance with the SARA prohibitions regarding destruction of a bat residence. Based on Environment Canada’s General Nesting Periods of Migratory Birds in Canada





(<https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1>), the project area is located in Zone B4, where the breeding bird window extends approximately from 15 April to 15 August.

Olive-sided flycatcher

The Olive-sided Flycatcher is most often associated with open areas containing tall live trees or snags for perching. These vantage points are required for foraging. This species generally forages from a high, prominent perch from which it sallies forth to intercept flying insects and then returns to the same perch. Open areas may be forest clearings, forest edges located near natural openings (such as rivers or swamps) or human-made openings (such as logged areas), burned forest or openings within old-growth forest stands; these forests are characterized by mature trees and large numbers of dead trees. There is evidence that the breeding success of birds nesting in harvested habitats is lower than the breeding success of birds nesting in natural openings. Generally, forest habitat is either coniferous or mixed wood.

Common Nighthawk

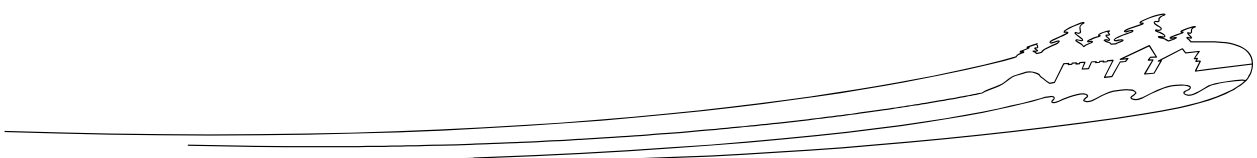
The Common Nighthawk nests in a wide range of open, vegetation-free habitats, including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores, and river banks. This species also inhabits mixed and coniferous forests. Based on the available habitat, it is not expected to nest in the vicinity of the project.

Black swift

The black swift, a bird that nests in cliff-side habitats often associated with waterfalls, has been assessed in May 2015 as endangered by the COSEWIC. This species has experienced a large population decline over recent decades in the United States and Canada, like many other birds that specialize in a diet of flying insects. The causes of the decline are not well understood but are believed to be related to changes in food supply that may occur in one or more points in the black swift's life cycle. It has been known since 1919 that black swifts nest in pockets and on ledges in the walls of Johnston Canyon. They typically begin to arrive in mid to late May. They lay a single egg about the beginning of July and have a long incubation period of about one month. The rearing of the chick is also long. Most swifts are gone by the beginning of September but some young are still on the nest until mid-September. Black swift nesting habitat will not be affected by this project.

6.5 Aquatic/Hydrological Resources

Water levels in Johnston Creek vary markedly with the season. High water levels are often reached in early to mid-June. Johnston Creek joins the Bow River approximately 0.5 km south of Johnston Canyon. Fish known to occur within Johnston Creek downstream of the waterfalls in the canyon include cutthroat trout, bull trout, brook trout, rainbow trout and mountain whitefish. One of two species of cutthroat trout, the Westslope cutthroat trout, is listed as Threatened under Schedule 1 of the SARA. The greatest threats to the Westslope cutthroat trout in Alberta include habitat loss, overharvesting and the introduction of non-native species.





Based on the above species composition and the sensitive life stages for each of these fish species, the window for in-stream works that minimizes the risk of negative effects is August 16 to 31. No in-stream works are proposed as part of this project, however the timing of sensitive life stages applies to any activities that could result in indirect sedimentation of the creek.

6.6 Aesthetics

The aesthetics of the Johnston Canyon campground and trailhead are typical of such roadside campgrounds and trailhead facilities located throughout the mountain parks, with simple, rustic structures and facilities set amongst mature forest. The current layout of the trailhead parking lot does not meet the demand for parking on many days of the year, including most days in the summer months (May through September) and long weekends throughout the year. This results in spillover parking along the shoulders of the BVP (as seen on the air photo in Figures 1 to 3), which results in safety concerns and negative aesthetic impacts for visitors accessing Johnston Canyon, as well as all other visitors driving along the BVP. The Johnston Canyon trailhead also lacks clear delineation of the entrance to the canyon trail.

6.7 Public Facilities and Services

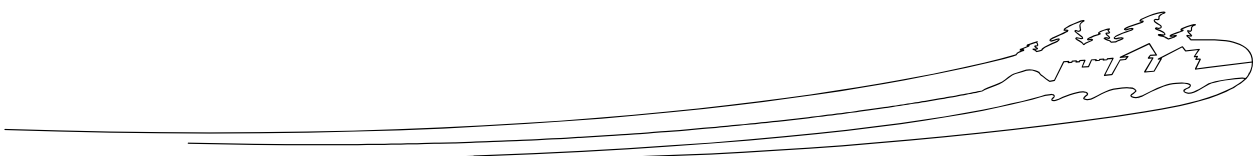
The Johnston Canyon trailhead has flush toilets, picnic tables and bear-proof garbage receptacles, as well as pump-out vault privies. The Johnston Canyon Resort adjacent to the day use area has overnight cabin-style accommodation, a restaurant and café. The Johnston Canyon campground is located approximately 500 m east of the trailhead on the BVP and offers 132 campsites, including RV and tent camping, picnic shelters, hot and cold running water, showers, flush toilets, an indoor theatre building and a sani-dump station.

6.8 Public Safety

As stated above, the trailhead has been operating beyond capacity resulting in informal overflow parking along the shoulders of the BVP, creating a public safety concern (Associated Engineering 2016).

6.9 Cultural Heritage

There are no known cultural heritage resource sites located within or in the direct vicinity of the trailhead or campground.





7. EFFECTS ANALYSIS & MITIGATION MEASURES

7.1 Soils and Landforms

7.1.1 Potential Effects

The proposed upgrades to parking and trailhead facilities at Johnston Canyon will remain within the existing developed area of the trailhead and campground. Clearing and soil stripping requirements are summarized in Table 3 and shown in Figures 2 and 3.

Table 3: Summary of Approximate Clearing and Soil Stripping Requirements

Location	Vegetation cover	Vegetated area to be cleared and stripped	Area that will be hardened	Area that will be re-vegetated
Trailhead treed island	Mature, coniferous forest	670 m ²	670 m ²	0 m ²
Trailhead treed node	Previously disturbed, semi-mature coniferous forest	115 m ²	115 m ²	0 m ²
Trailhead entry/egress lane	Previously disturbed (grasses, forbs, shrubs)	120 m ²	0 m ²	120 m ²
New trailhead facilities*	Previously disturbed (grasses, forbs, shrubs)	80 m ²	80 m ²	0 m ²
New privy location in existing picnic area	Previously disturbed (grasses, forbs, shrubs)	100 m ²	50 m ²	50 m ²
Campground entry treed island	Mature, coniferous forest	1710 m ²	1710 m ²	0 m ²
Total		2,795 m²	2625 m²	170 m²

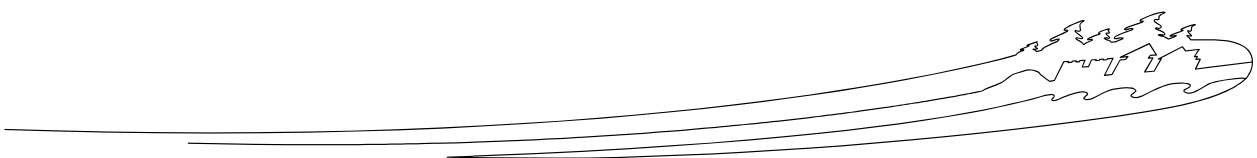
* Note: The estimate shown here for stripping at the new trailhead facilities does not include the portion that has already been hardened.

Potential effects to soils and landforms during construction include the following:

- Loss of soil structure due to compaction and rutting from equipment access in unpaved areas.
- Increased potential for wind and water erosion in areas of soil disturbance.
- Soil contamination from accidental spills or leaks of hydrocarbons from equipment, vehicles and/or during refueling.
- Soil contamination from lack of proper sanitary facilities during closure of the trailhead facilities (washroom building) at the busiest time of the year, while keeping the trail open.

Potential effects to soils and landforms during operation include the following:

- Increased runoff volumes, due to increases in the amount of paved area, has the potential to result in soil erosion if not properly managed.



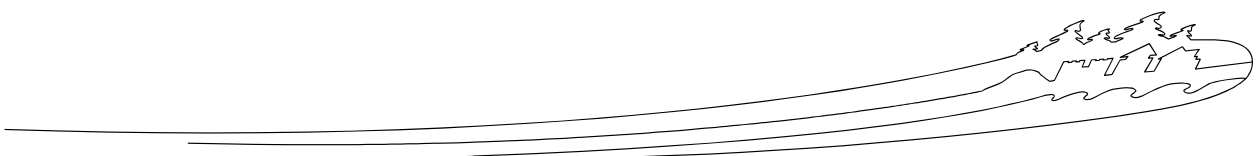


- The current grade of the trail directly under the road bridge is not to standard due to damage incurred during the 2013 flood. As a result, there is potential for erosion and slope stability concerns with increased pedestrian use of this portion of the trail in its current state.
- The new connector trail between the new overflow parking area in the campground and the trailhead will cause a significant increase in the number of visitors brought into proximity with the banks of Johnston Creek where the trail passes under the BVP bridge. This has the potential to result in increased off-trail use in this area, with the associated potential to result in soil compaction and erosion from increased foot traffic on the creek banks.
- There is potential for soil compaction and erosion from the creation of informal trails through the forest between the campground entry area and the BVP if signage and wayfinding is unsuccessful in directing pedestrians to the formal access trail between the overflow parking area and the trailhead (i.e., if people start to cut through the forest and cross the driving lanes of the BVP to access the Johnston Canyon trail via the trailhead parking lot).

7.1.2 Mitigation Measures

Mitigation measures to address the potential effects to soils and landforms from construction activities comprise the following:

- Only existing roadways and hardened areas will be used for access and equipment operation within the project site. The only exceptions include the treed islands and treed node that are to be removed and the footprints required for the proposed new trailhead facilities and privy, as shown on Figures 2 and 3.
- A staging area(s) will be identified for material and equipment on existing hardened surfaces (e.g., roadway, gravel surface, previously disturbed area with high resiliency).
- Equipment proposed for use in un-hardened areas must be set up to have minimal ground disturbance (e.g., low ground pressure tracks/tires).
- Tree and shrub removal (flush cutting) may be undertaken early in the project, however grubbing or any other activities that involve soil disturbance/earth moving should not be undertaken until construction work is proposed in any given area. This is to minimize the duration of exposure of disturbed soils to wind and water erosion. If pre-stripping is required, erosion and sediment control will be required during the period that soils are exposed prior to construction.
- If necessary, the Parks Canada VE Function will put measures in place to prevent public access to the tree island in the trailhead parking lot between the time that the trees are cut in April and construction starts in August, in order to prevent ground disturbance in this area.
- The contractor will be required to submit an Erosion and Sediment Control (ESC) Plan for approval prior to commencing work.
- The ESC plan must include a site specific dewatering plan, in the event this is required during excavation work, detailing how and where the water will be discharged. Site specific mitigations may be required depending on the conditions of the discharge area, freezing conditions operation and overflow avoidance.

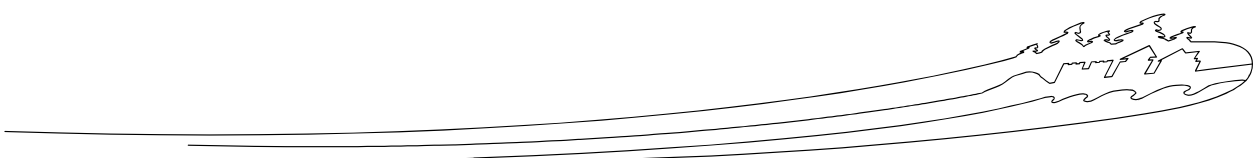




- Topsoil separation is required. Disturbed areas should be reclaimed with stockpiled topsoil. No imported topsoil is permitted.
- Topsoil will be stored away from any steep slopes, creek banks, subsoils, spoil material, construction activities and day-to-day operations and must be stored in a manner to prevent soil loss through wind and/or water erosion.
- No compaction of topsoil is permitted.
- Disturbed areas that are not being hardened are to be seeded and stabilized (e.g. mulch/tackifier) as soon as possible after disturbance, preferably as soon as a significant area is graded and finished and before a rain event.
- Excavated material is to be reused on site wherever possible.
- Backfilling should allow for settling to prevent depressions.
- Any mineral soil and gravels that cannot be re-used on site can be stockpiled inside the Park only if the source of the overburden is from a site free of any potential contamination and weed seeds.
- The soils desired for stockpiling are required to be hauled to a Parks Canada approved location, deposited, graded and restored with a native hydro-seed treatment, or covered with tarps for no more than six months, and if then unused, graded and restored as above.
- Excavated asphalt surfaces will be milled or dug out. Millings may be used with the existing campground to augment existing gravel road surfaces. Extra millings or asphalt dug out will be disposed of outside the park according to Alberta Regulations.
- Work will be conducted in a manner which prevents potential release of hazardous substances into the environment, including but not limited to, petroleum products and their derivatives, antifreeze or solvents. Any accidental releases of hazardous substances must be reported immediately to Parks Canada staff to determine appropriate regulatory reporting requirements.
- A spill contingency response kit including sorbent material and berms to contain 110% of the largest possible spill (i.e., fuel or other toxic liquids) related to the work will be available on site at all times. Any contaminants must be recovered at source and disposed of according to applicable laws, policies and regulations.
- Access to the trailhead washroom facilities must be maintained throughout construction or alternative facilities (porta-potties) provided at appropriate locations and in sufficient numbers to meet demand for the duration of any washroom closure. The location(s) of any porta-potties must account for visitors using the new overflow parking area and those that choose to park along the BVP.

Mitigation measures to address the potential effects to soils and landforms from project operation following completion of construction comprise the following:

- All paved areas will be graded to direct runoff into stable, vegetated areas well away from Johnston Creek. Design of curbs will allow for passage of runoff into vegetated areas:
 - The trailhead parking area will be graded with a gradual slope to direct overland drainage to the south east corner, as is currently the case.





- The overflow parking area will have a crown in the middle to direct runoff to either side (north/south) of the lot.
- Parks Canada trail crew will restore the trail under the BVP bridge to the condition it was prior to the 2013 flood. This will be undertaken by hand work using additional rock and crushed gravel to provide a stable, flat grade. This work must remain within the existing trail footprint; no encroachment into the creek is permitted.
- A photo-point monitoring program will be designed and undertaken by the Parks Canada Visitor Experience (VE) function, in consultation with the Parks Canada Environmental Assessment Office, to monitor the condition of the banks of Johnston Creek in this area, as well as the forested band between the overflow parking area and the BVP. This will be undertaken in conjunction with VE's post-construction human-use monitoring of the overflow parking area and collector trail, in order to identify any increase in off-trail use of this area and any associated soil compaction and erosion from increased foot traffic on the creek banks and/or in this forested band. Should an increase in off-trail use be observed, additional mitigation measures, such as additional signage and/or fencing, may be required in order to contain foot traffic to the designated path.

7.1.3 Residual Effects

An increase in runoff can be expected as a result of the increase in paved and hardened surfaces. Provided the above mitigation measures are implemented, residual effects to soils and landforms are expected to be highly localized, permanent, non-reversible and negligible to low in magnitude.

7.2 Vegetation

7.2.1 Potential Effects

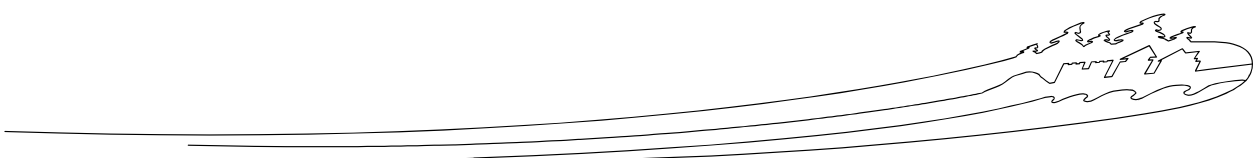
As described above for soils, the proposed upgrades to parking and trailhead facilities at Johnston Canyon will remain within the existing developed area of the trailhead and campground. Vegetation clearing requirements are summarized in Table 4 and shown in Figures 2 and 3.

Potential effects to vegetation during construction include the following:

- Permanent loss of approximately 0.26 ha of native vegetation (approximately 0.25 ha of coniferous forest and approximately 0.01 ha of previously disturbed grasses, forbs and shrubs) due to paving and new facility construction.
- Damage to vegetation located directly adjacent to work areas.
- Introduction of non-native species populations, or expansion of existing populations (in particular the proposed ground disturbance and equipment use where meadow hawkweed has already become established as a significant seed source has the potential to spread this species, which is an aggressive invader).

Potential effects to vegetation during operation include the following:

- As described for soils above, there is potential for increased off-trail use on the banks of Johnston Creek in the vicinity of the BVP bridge, as well as in the forested band between the





overflow parking area and the BVP, with the associated potential to result in damage to and loss of vegetation due to trampling.

Table 4: Summary of Approximate Vegetation Clearing Requirements

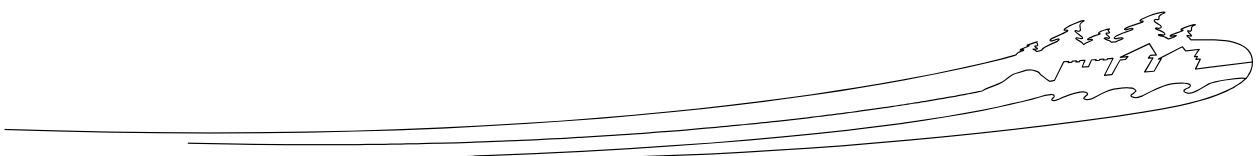
Vegetation cover	Location	Vegetated area to be cleared	Area that will be hardened	Area that will be re-vegetated (seeded to native grasses)
Mature, coniferous forest	Trailhead treed island	670 m ²	670 m ²	0 m ²
	Campground entry treed island	1710 m ²	1710 m ²	0 m ²
	Sub-total	2,380 m²	2,380 m²	0 m²
Previously disturbed, semi-mature coniferous forest	Trailhead treed node	115 m²	115 m²	0 m²
Previously disturbed (grasses, forbs, shrubs)	Trailhead entry/egress lane	120 m ²	0 m ²	120 m ²
	New trailhead facilities*	80 m ²	80 m ²	0 m ²
	New privy location in existing picnic area	100 m ²	50 m ²	50 m ²
	Sub-total	300 m²	130 m²	170 m²
Total		2,795 m²	2,625 m²	170 m²

* Note: The estimate shown here for stripping at the new trailhead facilities does not include the portion that has already been hardened.

7.2.2 Mitigation Measures

The mitigation measures for soils and landforms above will assist in minimizing the extent of vegetation disturbance during construction. Additional mitigation measures to address the potential effects to vegetation from construction activities comprise the following:

- All construction equipment must be washed/steam cleaned prior to arrival on site to minimize risk of introducing invasive weed species.
- Special measures apply to the locations of meadow hawkweed (Figure 4):
 - Ground disturbance in the locations of meadow hawkweed must be avoided.
 - When excavation is required for construction purposes, all excavated topsoil from these areas (and any subsoil that is potentially contaminated with weed seeds) must be removed from the park for disposal in compliance with provincial regulations.
 - Equipment that has been used in these areas must be cleaned prior to use elsewhere on the project in order to avoid spreading this aggressive weed.
- Trees and shrubs designated for removal will be flagged and reviewed by the Parks Canada Environmental Surveillance Officer (ESO) prior to removal.
- Stems suitable for firewood will be taken to Peyto Pit for storage and future use by Parks Canada.
- All brush (limbs and tops) must be removed from the park for appropriate disposal.
- Ensure excavated material and/or construction material does not bury adjacent plant material.





- Protect roots of retained trees to drip line to prevent disturbance or damage. Avoid any unnecessary traffic, dumping and storage of materials over root zone.
- In areas to be restored, grass seeding is to be applied by hydro-seeding. The rate is 25 kg/ha (2.5g/m²) (e.g., 1x25 kg bag will cover 1 hectare).
- No use of fertilizer is permitted.
- Grass seeding is most effective if seeded in the fall, as this allows for full scarification of the seed over the winter and adequate moisture availability.
- An appropriate native grass seed mix for the area will be supplied by Parks Canada.
- The site will be monitored and controlled for a minimum of three years following seeding to ensure the successful establishment of native vegetation and to prevent weed establishment. This may be undertaken under contract or funds may be provided to the Parks Canada Non-Native Vegetation Program to undertake the work at rate of \$2,000/ha of disturbance.

Mitigation measures to address the potential effects to vegetation from project operation following completion of construction are as per soils above.

7.2.3 Residual Effects

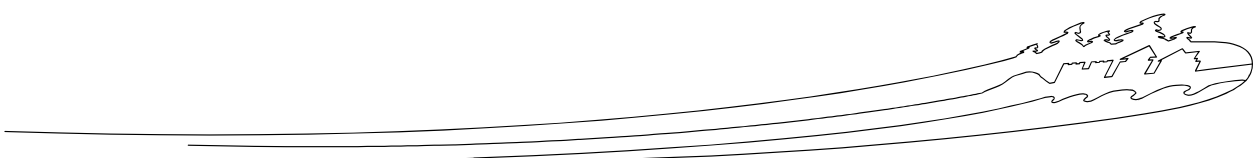
The project will result in the permanent loss of approximately 0.26 ha of native vegetation (approximately 0.25 ha of coniferous forest and approximately 0.01 ha of previously disturbed grasses, forbs and shrubs) due to paving and new facility construction. Provided the above mitigation measures are implemented, residual effects to vegetation are expected to be highly localized, permanent, non-reversible and low in magnitude.

7.3 Wildlife

7.3.1 Potential Effects

Potential effects to wildlife during construction include the following:

- Permanent loss of approximately 0.26 ha of relatively low-value wildlife habitat (located within existing high human use areas) due to paving and new facility construction.
- Damage to nests/roosting sites and disruption of nesting/roosting sites during vegetation removal.
- Wildlife injury/mortality due to un-secured excavations.
- Wildlife habituation/attraction to artificial food sources.
- Increased potential for human/wildlife conflicts to occur as a result of increased human activity (construction) in this already busy area, particularly with scheduling of construction at the busiest time of year during a year when high visitation levels are expected. Specifically:
 - The schedule will result in reduced parking capacity during the busiest season at this location where parking capacity is already exceeded.
 - Parking capacity will be reduced from the current 117 parking stalls available at the trailhead down to the 80 stalls that will be available in the new overflow parking area during construction of the trailhead upgrades.





- This will result in an increase in the amount of parking along the BVP from the beginning of August through mid-September over and above the existing parking that occurs on the BVP during this time.
- This will overlap with a key feeding time for bears. The grizzly bear hyperphagia (high food intake) occurs approximately from August 1 to September 30 (berry dependent), and bears are known to forage along the shoulders of the BVP.

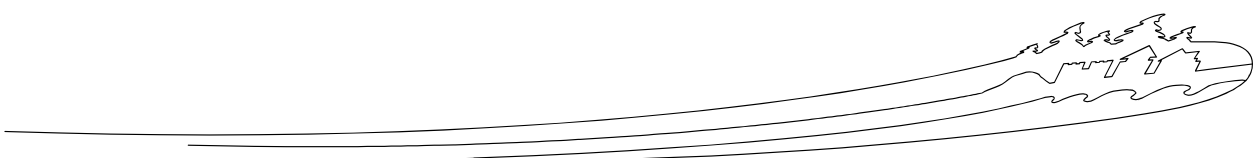
Potential effects to wildlife during operation include the following:

- The provision of additional parking capacity will help to reduce the number of vehicles parking along the BVP at busy times. This will reduce the extent of this linear disturbance, making it easier for wildlife to negotiate around this node of high human use and reduce the likelihood of close human-wildlife conflict encounters.

7.3.2 Mitigation Measures

Mitigation measures to address the potential effects to wildlife from construction activities comprise the following:

- All tree removal to be completed before April 15 or after August 15.
- A sweep for corvid, owl and raptor nests (early nesters) must be undertaken prior to cutting any trees. Any active nests must be left undisturbed until the young have fledged.
- If tree removal is required during this timeframe (April 15 to August 15):
 - A survey of the area by a qualified biologist for nesting birds should be completed within 7 days prior to the clearing commencing. All active nests must be allowed to remain undisturbed until birds have fledged and nest is no longer used.
 - A survey of the area by a qualified biologist for roosting bats should be completed within 7 days prior to the clearing commencing. All active roosts must be allowed to remain undisturbed until bats have fledged and the roost is no longer used.
 - The survey plan and qualifications of the biologist(s) must be submitted to the Parks Canada Environmental Assessment Office for approval prior to the surveys commencing.
- Minimize the amount of time a trench or excavation remains open. If left unattended overnight the area must be fenced or covered to prevent wildlife injury/mortality.
- Any fencing used during construction must be of a design that will minimize the potential for wildlife entanglement or injury.
- Food waste is to be kept separate from construction waste and removed daily.
- Construction activities are to occur during daylight hours only.
- Secure all materials that might attract wildlife (e.g., petroleum products, human food, recyclable food and drink containers and garbage) within a Parks Canada approved facility, secure building or vehicle. Notify Parks Canada staff immediately should wildlife gain access to attractants.
- Wildlife shall not be approached or harassed in any way (e.g., feeding, baiting, luring).
- Parks Canada staff are to be notified immediately of any potential wildlife conflict (e.g., aggressive behaviour, persistent intrusion to any fenced area), distress or mortality. In the case





of aggressive behaviour or persistent intrusion, work shall be stopped immediately and the area safely evacuated.

- The Parks Canada VE function will prepare and implement a parking and traffic management plan and public communication strategy, in consultation with the Parks Canada Resource Conservation Human-Wildlife Conflict specialists and the Highways Operations department, in order to attempt to minimize the potential for human-wildlife conflict as a result of the reduced parking capacity during construction of the trailhead upgrades (currently proposed for August 01 to September 15) and the associated increase in parking along the shoulders of the BVP.

7.3.3 Residual Effects

The project will result in the permanent loss of approximately 0.26 ha of relatively low-value wildlife habitat located within the existing developed area of the trailhead and campground, which are high human use areas. This effect is considered to be localized, permanent, non-reversible and is expected to be low in magnitude.

The preparation of a parking and traffic management plan and public communication strategy will assist in minimizing the increased potential for human-wildlife conflicts to occur during construction of the trailhead upgrades at the busiest time of year but will not eliminate it. Provided the above mitigation measures are implemented, negative residual effects to wildlife during construction of the project are considered to be localised, short-term, intermittent to frequent, reversible and are expected to be low to moderate in magnitude.

Once operational, the provision of additional parking capacity will help to reduce the number of vehicles parking along the BVP at busy times. This will reduce the extent of this linear disturbance, making it easier for wildlife to negotiate around this node of high human use and reduce the likelihood of close human-wildlife conflict encounters. This is considered a permanent, positive effect.

7.4 Terrestrial Species at Risk

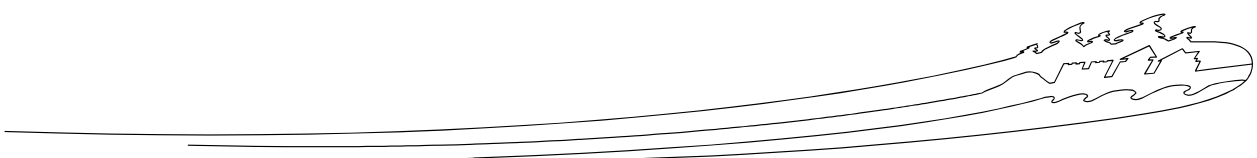
Potential effects and mitigation measures for terrestrial species at risk (birds and bats) are as described for wildlife above. No destruction or disturbance of bird nests or bat roosts is expected to occur. No residual effects to species at risk are anticipated.

7.5 Aquatic/Hydrological Resources

7.5.1 Potential Effects

Potential effects to aquatic and hydrological resources during construction include the following:

- Sedimentation as a result of wind and water erosion of soils disturbed by construction activities.
- Contamination from accidental spills or leaks of hydrocarbons from equipment, vehicles and/or during refueling.
- Loss of fish habitat and/or changes to hydrological regime if the trail improvements under the BVP bridge extend beyond the existing trail footprint.





Potential effects to aquatic and hydrological resources during operation include the following:

- Contamination from increases to parking area runoff.
- Sedimentation from soil erosion as a result of potential increased off-trail use on the banks of Johnston Creek in the vicinity of the BVP bridge.
- Contamination from improper removal and/or installation of the old and new privy toilets at the trailhead.

7.5.2 Mitigation Measures

Mitigation measures to address the potential effects to aquatic and hydrological resources from construction activities comprise the following:

- Water containing suspended materials shall not be permitted to enter Johnston Creek or any drainage pathway into Johnston Creek. More specific measures to prevent the potential for sedimentation and contamination are addressed through the mitigation measures identified for soils above.
- Parks Canada trail crew will restore the trail under the BVP bridge to the condition it was prior to the 2013 flood. This will be undertaken by hand work using additional rock and crushed gravel to provide a stable, flat grade. This work must remain within the existing trail footprint; no encroachment into the creek is permitted. Appropriate erosion and sediment control measures will be in place to prevent sedimentation from occurring as a result of this work.

Mitigation measures to address the potential effects to aquatic and hydrological resources from project operation following completion of construction comprise the following:

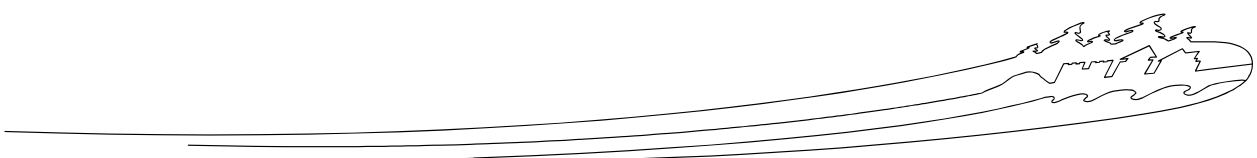
- Potential for sedimentation and contamination are addressed through the mitigation measures identified for soils above.
- Mitigation measures specific to removal of the old privy toilets and installation of the new ones are as follows:
 - Removal and disposal of the septic tank at an appropriate facility, followed by back filling with suitable clean fill, compacted to appropriate specifications;
 - The new privy building will be over 60 m away from Johnston Creek (the Alberta Private Sewage Systems Standard of Practice (2009) requires a minimum setback of 10 m); and
 - The new septic tank for the new privy will be leak tested to ensure proper function.

7.5.3 Residual Effects

Provided the above mitigation measures are implemented, residual effects to aquatic resources are expected to be highly localized, short-term, intermittent, reversible and are expected to be negligible in magnitude. No residual effects to aquatic species at risk are anticipated.

7.6 Visitor Experience

No impacts to visitor experience as a result of environmental impacts from construction and operation of this project area expected to occur. During the construction period, this project will result in





temporary negative impacts to aesthetics, public facilities and public safety in the vicinity of the Johnston Canyon trailhead due to the presence of construction equipment/activities and the temporary reduction in parking capacity at the busiest time of the year in an area where parking is already beyond capacity.

Mitigation measures to address the potential effects to visitor experience from construction activities include the following:

- Trees and shrubs should be flush cut and methods/equipment used for this should be designed to minimise ground disturbance.
- The Parks Canada VE function will prepare and implement a parking and traffic management plan and public communication strategy, in consultation with the Parks Canada Resource Conservation Human-Wildlife Conflict specialists and the Highway Operations department, in order to minimize the potential for human-wildlife conflict as a result of the reduced parking capacity during construction of the trailhead upgrades (currently proposed for August 01 to September 15). This parking and traffic management plan and communication strategy will also be designed to minimize impacts to visitor experience during the construction period.

The purpose of this project is to improve aesthetics, public facilities and public safety through upgrades to facilities and increased parking capacity, therefore it is expected to have a permanent positive impact on visitor experience once construction is complete.

7.7 Cultural Heritage

7.7.1 Potential Effects

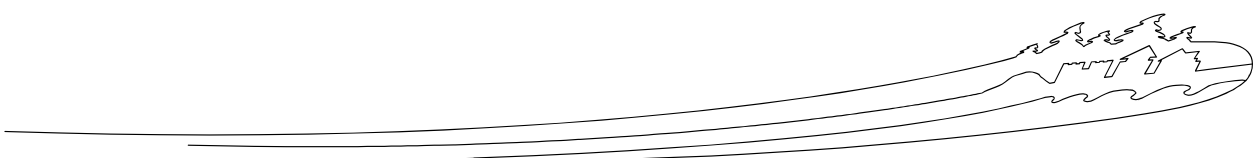
There are no known sites of cultural interest in the project locations. The potential remains to uncover previously unknown sites or artefacts during ground disturbance.

7.7.2 Mitigation Measures

- If staff observe any significant cultural resources while they are working they should stop work in the immediate area and report it to the ESO or the Departmental Representative immediately. The Contractor and workers shall wait for instructions before proceeding with their work. Significant resources in this context include historical structural features, concentrations of turn of the century bottles or cans, or pre-contact resources such as concentrations of butchered animal bone, hearths or artefacts.
- All historical or archeological objects found in Banff National Park are protected under the National Parks Act and Regulations and are the property of Parks Canada. The Contractor and workers shall protect any artefacts found and request direction from the ESO or the Departmental Representative.

7.7.3 Residual Effects

The residual impact to cultural resources is expected to be nil to negligible.





8. PUBLIC/STAKEHOLDER ENGAGEMENT & ABORIGINAL CONSULTATION

8 a) Indicate whether public/stakeholder engagement was undertaken in relation to potential adverse effects of the proposed project:

☒ No

☐ Yes (describe the process to involve relevant parties and indicate how comments were taken into consideration).

8 b) Indicate whether Aboriginal consultation was undertaken in relation to potential adverse effects of the proposed project:

☒ No

☐ Yes (describe the process to involve relevant parties and how the results were taken into consideration).

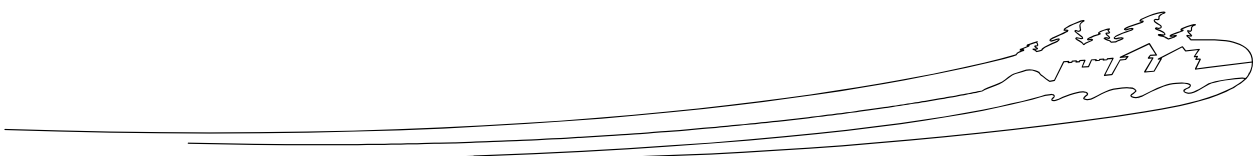
9. SIGNIFICANCE OF RESIDUAL ADVERSE EFFECTS

The project will result in the permanent loss of approximately 0.26 ha of native vegetation due to paving and new facility construction. These areas are located within the existing developed area of the trailhead and campground and are of relatively low habitat value. An increase in runoff can be expected as a result of the increase in paved and hardened surfaces.

Provided the mitigation measures outlined in this report are implemented, residual effects to soils, landforms, vegetation, wildlife habitat and aquatic resources are expected to be negligible to low in magnitude. The residual impact to cultural resources is expected to be nil to negligible. A temporary low to moderate magnitude effect on wildlife is expected as a result of the increased potential for human-wildlife conflicts to occur during construction of the trailhead upgrades at the busiest time of year (August 01 to September 15). No residual effects to species at risk are anticipated.

Once operational, the provision of additional parking capacity will help to reduce the number of vehicles parking along the BVP at busy times. This will reduce the extent of this linear disturbance, making it easier for wildlife to negotiate around this node of high human use and reduce the likelihood of close human-wildlife conflict encounters. This is considered a permanent, positive effect.

Based on the above, no significant adverse environmental effects are anticipated.





10. SURVEILLANCE

- ☐ Surveillance is not required
- ☒ Surveillance is required (provide details such as the proposed schedule and the focus of inspections)

Construction monitoring will comprise the following:

- An environmental briefing will be conducted by the ESO with the construction crew prior at project start-up and regular monitoring visits will occur throughout construction.

Post-construction monitoring will comprise the following:

- The site will be monitored and controlled for a minimum of three years following seeding to ensure the successful establishment of native vegetation and to prevent weed establishment. This may be undertaken under contract or funds may be provided to the Parks Canada Non-Native Vegetation Program to undertake the work at rate of \$2,000/ha of disturbance.
- A photo-point monitoring program will be designed and undertaken by the Parks Canada Visitor Experience (VE) function, in consultation with the Parks Canada Environmental Assessment Office, to monitor the condition of the banks of Johnston Creek in this area, as well as the forested band between the overflow parking area and the BVP. This will be undertaken in conjunction with VE's post-construction human-use monitoring of the overflow parking area and collector trail, in order to identify any increase in off-trail use of this area and any associated soil compaction and erosion from increased foot traffic on the creek banks and/or in this forested band. Should an increase in off-trail use be observed, additional mitigation measures, such as additional signage and/or fencing, may be required in order to contain foot traffic to the designated path.

11. FOLLOW-UP MONITORING

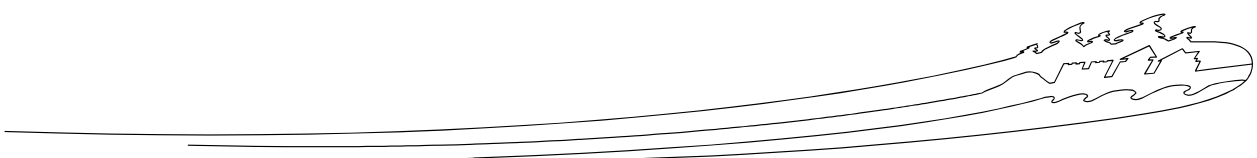
Follow-up monitoring is:

- ☒ not required
- ☐ legally required (e.g. under the *Species at Risk Act* or *Fisheries Act*)
- ☐ required in accordance with the *Parks Canada Cultural Resource Management Policy*

12. SARA NOTIFICATION

Notification is:

- ☒ not required
- ☐ required under the *Species at Risk Act* (outline the nature of and response to any notification).



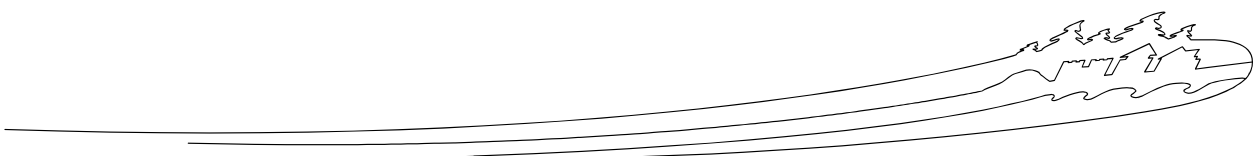


13. EXPERTS CONSULTED

Department/Agency/Institution: Parks Canada, Banff Field Unit	Date of Request: March 2016
Expert's Name & Contact Information: Jane Park,	Title: Fire/Vegetation Specialist
Expertise Requested: Advice regarding fire/vegetation issues related to this project.	
Response: <ul style="list-style-type: none"> - Trees should be flush cut and methods/equipment used for this should be designed to minimise ground disturbance. - All brush is to be removed from the park for disposal. - All logs are to go to Peyto Pit for use as firewood. - The project sites must be monitored following construction to ensure that re-vegetation of disturbed areas with native species is successful. Monitoring and control of any weeds that occur in these areas will also be required. This may be undertaken under contract or funds may be provided to the Parks Canada Non-Native Vegetation Program to undertake the work at rate of \$2,000/ha of disturbance. 	

Department/Agency/Institution: Parks Canada, Banff Field Unit	Date of Request: March 2016
Expert's Name & Contact Information: Robert Osioy,	Title: Non-native Vegetation Specialist
Expertise Requested: Advice regarding non-native vegetation issues related to this project.	
Response: <ul style="list-style-type: none"> - Information about and mitigation measures provided for the prohibited noxious weed that is known to be present within the campground. 	

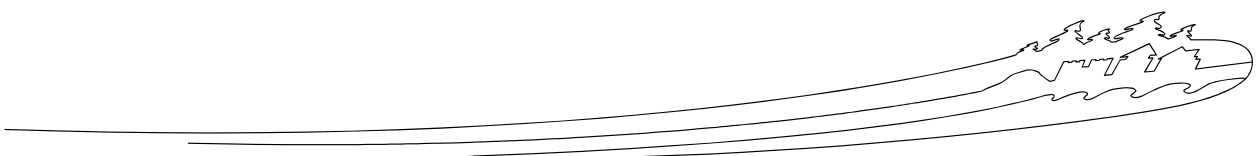
Department/Agency/Institution: Parks Canada, Banff Field Unit	Date of Request: March 2016
Expert's Name & Contact Information: Mark Taylor,	Title: Aquatic Specialist
Expertise Requested: Advice regarding aquatic resource issues related to this project.	
Response: <ul style="list-style-type: none"> - Ensure paved/hardened areas are graded to direct runoff into stable, vegetated areas well away from Johnston Creek. 	





Department/Agency/Institution: Parks Canada, Banff Field Unit	Date of Request: March 2016
Expert's Name & Contact Information: David Gummer,	Title: Wildlife Specialist
Expertise Requested: Advice regarding wildlife issues related to this project.	
Response: <ul style="list-style-type: none"> - Measures must be in place to prevent wildlife injury/mortality from entrapment, entanglement or falls related to any excavations or fencing required as part of this project. - Work must be conducted during daylight hours only. - Check for early nesters prior to tree removal (corvids, owls and raptors) and protect any occupied nests from disturbance until any young have fledged. - The existing level of parking along the shoulders of the BVP is a concern for wildlife movement in this area. The scheduling of project construction, specifically the closure of the trailhead parking lot and reduced parking capacity at the busiest time of year, will exacerbate this existing problem for the duration of construction. It would be preferable to schedule construction in a manner that avoids the peak visitor season or to have the Johnston Canyon trail closed during the period of trailhead upgrade construction to avoid further increases to parking along the BVP. 	

Department/Agency/Institution: Parks Canada, Banff Field Unit	Date of Request: March 2016
Expert's Name & Contact Information: Steve Michel,	Title: Human/Wildlife Conflict Specialist
Expertise Requested: Advice regarding human-wildlife conflict issues related to this project.	
Response: <ul style="list-style-type: none"> - Food garbage must be kept secure at all times. This applies to trade waste bins and ensuring that no food garbage (from construction personnel or the public) ends up in the trade waste bins (i.e., these must be kept inaccessible to the public). - The existing level of parking along the shoulders of the BVP is a concern with respect to the potential for close human-wildlife encounters as wildlife attempt to travel and forage in this area. The scheduling of project construction, specifically the closure of the trailhead parking lot and reduced parking capacity at the busiest time of year, will exacerbate this existing problem for the duration of construction, particularly as it coincides with berry season in an area where bears are known to forage along the shoulders of the BVP. It would be preferable to schedule construction in a manner that avoids the peak visitor season or to have the Johnston Canyon trail closed during the period of trailhead upgrade construction to avoid further increases to parking along the BVP. 	





Department/Agency/Institution: Parks Canada, Banff Field Unit	Date of Request: March 2016
Expert's Name & Contact Information: Steve Malins,	Title: Cultural Resource Management Advisor
Expertise Requested:	
Response: <ul style="list-style-type: none"> - There are no known sites of cultural interest in the vicinity of the project. - The "accidental finds" clause should be included as a mitigation, as standard. 	

Department/Agency/Institution: Parks Canada, Banff Field Unit	Date of Request: March 2016
Expert's Name & Contact Information: Bill Hunt,	Title: Resource Conservation Manager
Expertise Requested:	
Response: <ul style="list-style-type: none"> - In addition to consulting with Resource Conservation staff, VE should also consult with the Highways Operations department prior to finalising the parking and traffic management plan. 	

14. DECISION

Taking into account implementation of mitigation measures outlined in the analysis, the project is:

- ☒ not likely to cause significant adverse environmental effects.
☐ likely to cause significant adverse environmental effects.

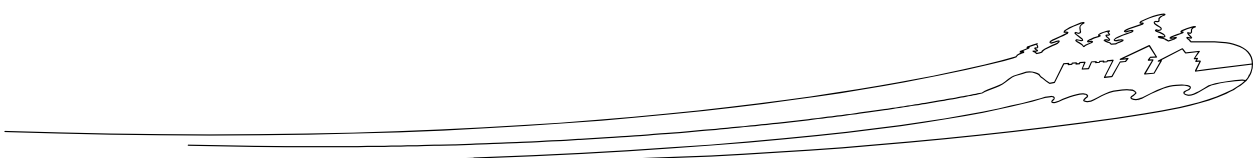
NOTE: If the project is identified as likely to cause significant adverse effects, CEAA 2012 prohibits approval of the project unless the Governor in Council (Cabinet) determines that the effects are justified in the circumstances. A finding of significant effects therefore means the project CANNOT go ahead as proposed.

FOR SARA REQUIREMENTS:

- ☒ There are no residual adverse effects to species at risk and therefore the SARA-Compliant Authorization Decision Tool was not required

OR, the SARA-Compliant Authorization Decision Tool ([Appendix 2](#)) was 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





15. RECOMMENDATION AND APPROVAL

Prepared by: EIA author (name & position): Helen Dickinson, Environmental Assessment Scientist, Banff Field Unit	Date: 2016-03-18
Recommended by: Functional manager of the project (name): Greg Danchuk, Visitor Experience Manager, Banff Field Unit	Date: 2016-03-18
Approved by: Name & position: (<i>Field Unit Superintendent, Director of a Waterway</i>): Dave McDonough	Date: 2016-03-18
Signature: See Determination Form	

16. REFERENCES

Associated Engineering. 2016. Predesign Report for Johnston Canyon Day Use Area, Banff National Park. Prepared for the Parks Canada Agency.

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

EBA (A Tetra Tech Company). 2013. Banff National Park Johnston Canyon Rock Face Inspection 2013. Prepared for the Parks Canada Agency.

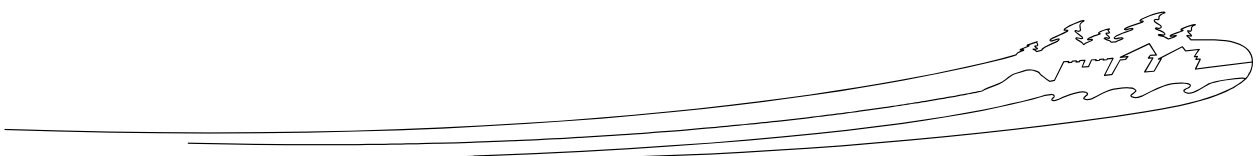
Environment Canada. 2014. Little Brown Myotis, Northern Myotis and Tri-colored Bat Species at Risk Fact Sheet.

Holland, W.D. and G.M. Coen (eds.) 1983. Ecological (Biophysical) land classification of Banff and Jasper National Parks. Volume 1: Summary. Alberta Institute of Pedology publication No. M-83-2.

Holroyd, G.L. and K.J. Van Tighem. 1983. Ecological (Biophysical) Land Classification of Banff and Jasper National Parks. Volume III: Wildlife.

Horne, Greg. 2013. Status of Bats (Chiroptera) in 2013, Banff National Park, Alberta, Canada. Prepared for Jesse Whittington, Carnivore Specialist for Banff National Park. March 31, 2013.

Safety Codes Council. 2009. Alberta Private Sewage Systems Standard of Practice. Standard Established by the Plumbing Technical Council.





Personal Communications

Van Tine, Jaison. 2016. Technical Services Coordinator II, Banff National Park of Canada.

17. NATIONAL IMPACT ASSESSMENT TRACKING SYSTEM

- ☒ Project registered in tracking system
- ☐ Not yet registered (*CEAA 2012 requires PCA submit a report to Parliament annually. EIAs must be entered in the tracking system **by the end of April** to enable reporting.*)

*****Ensure that all required mitigation measures and conditions (e.g. follow-up monitoring requirements) are included in project permits and authorizations*****

