

any measurable or perceptible consequence to the protected individual or its population. Negligible effect would equate with a "no effect" determination in U.S. Fish and Wildlife Service terms.

- *Minor:* The alternative would affect an individual(s) of a listed species or its critical habitat, but the change would be small. Minor effect would equate with a "may affect" determination in U.S. Fish and Wildlife Service terms and would be accompanied by a statement of "likely..." or "not likely to adversely affect" the species.
- *Moderate:* An individual or population of a listed species, or its critical habitat would be noticeably affected. The effect could have some long-term consequence to individuals, population, or habitat. Moderate effect would equate with a "may affect" in U.S. Fish and Wildlife Service terms and would be accompanied by a statement of "likely" or "not likely to adversely affect" the species.
- *Major:* An individual or population of a listed species, or its critical habitat, would be noticeably affected with a vital consequence to the individual, population, or habitat. Major effect would equate with a "may affect" determination in U.S. Fish and Wildlife Service terms and would be accompanied by a statement of "likely..." or "not likely to adversely affect" the species or critical habitat.
- *Short-term:* After implementation, would recover in less than 1 year.
- *Long-term:* After implementation, would take more than 1 year to recover or effects would be permanent.

### **Impacts Common to All Alternatives**

Removing debris from Snyder Creek would have minor adverse, short-term impacts on bull trout from potential sediment. Removal would be done at low water and by cutting debris rather than by digging it out to reduce the potential for sediment releases.

### **Impact Analysis For Necessary and Appropriate Services Alternatives**

#### ***Granite Park Chalet***

- **Alternative A – Status Quo/No Action** would have no additional impacts on threatened and endangered wildlife.

This alternative would not alter habitat or change human-use patterns in or near areas that likely would be occupied by the following species.

- Bald Eagle. Since adherence to helicopter flight guidelines would ensure that helicopter flights maintain a minimum distance from active eagle nests in order to mitigate disturbance to bald eagles and their young, this alternative would have no additional effect on the bald eagle.
- Grizzly Bear. No measurable change to existing habitats would occur.
- Gray Wolf. Disturbance associated with ongoing maintenance activities is not expected to influence ungulate population trends in distribution. Therefore, no additional impacts to the gray wolf are expected.
- Canada Lynx. Neither alteration of vegetation within the developed area, nor changes in human activity patterns associated with construction and maintenance are expected to

influence prey species population trends in distribution, human access levels, or the range of lynx competitors and/or predators.

- Bull Trout. Although fuel or cargo spills in Upper McDonald Creek from the helicopter could have adverse effects on habitat, with mitigation, there should be no effect.

No additional effects would occur to state listed sensitive species since the operation would not change.

- **Alternative B (Preferred).** Noise of numerous helicopter flights and human activities associated with pack trips needed to transport construction materials could cause minor to moderate short-term, adverse impacts to the bald eagle and grizzly bear, and possibly the gray wolf and Canada lynx during construction. Under this alternative, the practice of removing sanitary waste by helicopter would cease, resulting in minor long-term, positive impacts due to elimination of helicopter noise and potential human interference.

- Bald Eagle. Following helicopter flight guidelines would ensure that the flights would maintain a minimum distance from active eagle nests in order to mitigate disturbance to bald eagles and their young. Increased helicopter traffic would result in a minor negative impact on the bald eagle.
- Grizzly Bear. Additional disturbance of forest and meadow habitats would result in the minor loss of grizzly bear habitat. The overall impact on grizzly bears from flights and construction activity would be moderate, short-term and negative.
- Gray Wolf. Gray wolves are rarely sighted in the vicinity of the Granite Park Chalet. This alternative would alter habitats and human use patterns in or near areas that could potentially serve as den or rendezvous sites in the future and would have minor, negative effects on gray wolves during construction.
- Canada Lynx. This alternative would alter habitats and human use patterns in or near suitable denning habitat. Alteration of vegetation within the developed area, and changes in human activity patterns associated with construction and maintenance might be expected to influence prey species population trends in distribution, human access levels, or the range of Canada lynx competitors and/or predators. Overall, the impact to lynx could be moderate, short-term and negative.
- Bull Trout. Although fuel or cargo spills in Upper McDonald Creek from the helicopter could have adverse effects on habitat, with mitigation, there should be no effect.

Construction work and related helicopter flights could have moderate to major, short-term, adverse impacts on wolverine and golden eagles, and displace or disturb numerous sensitive bird species.

- **Alternative C** would have the same impacts as alternative B. The area disturbed by development would also increase slightly under this alternative, and maintenance and operation of a full-service dining and overnight facility, more support and horse trips, flights and construction could result in increased levels of human disturbance to the bald eagle, grizzly bear, gray wolf, and Canada lynx. There would be no effect on bull trout.

Construction work and related helicopter flights could have moderate to major, short-term, adverse impacts on wolverine and golden eagles, and displace or disturb numerous sensitive bird species. The effects would be greater for alternative C than B because of more disturbance and the need for more frequent support trips for the chalet.

### ***Commercially Guided Day Hiking (Cultural/Natural/Recreational)***

- **Alternative A – Status Quo/No Action.** Day hiking directly affects wildlife by displacing it from high value habitats into marginal habitats where security and forage quality might be lower. Although trained guides would enhance visitor awareness of sensitive resources and leave-no-trace backcountry travel techniques, the lack of limits to group size or number of trips per day would exacerbate wildlife disturbances. The threatened and endangered species below and their habitat use would continue to be affected by the presence of day hikers in remote habitats throughout the park. These conditions would result in minor adverse impacts due to disturbance and displacement. However, no measurable changes to existing habitats would occur.
  - Bald Eagle. Existing conditions would continue to degrade gradually as a result of continued concentrated and radiating human use.
  - Grizzly Bear. This alternative would not change human-use patterns in or near areas that would likely be occupied by grizzly bears. Existing conditions would continue to degrade gradually as a result of continued concentrated and radiating human use.
  - Gray Wolf. This alternative would not alter habitats or human use patterns in or near areas that could potentially serve as den or rendezvous sites in the future. Existing conditions would continue to degrade gradually as a result of continued concentrated and radiating human use.
  - Canada Lynx. This alternative would not result in the alteration of vegetation, or changes in human activity that could influence prey species population trends in distribution, human access levels, or the range of lynx competitors and/or predators.
  - Bull Trout. There would be no additional effects on the species or its habitat.

There would be no additional effects on state listed, sensitive species, but hiking groups could disturb and displace many sensitive species from their habitat. Good interpretive information and programs could have a positive benefit for sensitive species.

- **Alternative B** would limit group size for commercially guided day hikes and the number of trips per day on high-traffic trails, but would also disturb and displace the bald eagle, grizzly bear gray wolf, and Canada lynx as in alternative A, having a minor adverse impact. There would be effect on bull trout.

Hiking groups could disturb and displace many state listed, sensitive species from their habitat, but in general, smaller groups would be less disruptive. Good interpretive information and programs could have a positive benefit for sensitive species.

### ***Guided Underwater Diving Tours***

- **Alternative A – Status Quo/No Action** would have no impact on any threatened and endangered or state listed sensitive species because guided underwater diving tours would not occur in the park.

**Alternative B (Preferred).** In and around Lakes McDonald, Sherburne and Josephine, and Swiftcurrent, Two Medicine, Pray, Lower Two Medicine and St. Mary Lakes, this alternative could result in trampling of vegetation in aquatic habitats, increased levels of noise in remote habitats, and increased human disturbance in adjacent habitats. It could also result in the introduction of non-native plant and animal species, increased turbidity, sanitary waste disposal problems, the deposit oil/gas mixtures on the water surface, and increased chance of human conflicts with threatened and endangered species. These would cause minor adverse impacts.

There could be minor to moderate effects to sensitive duck species from boat and diving activities, and to species using riparian areas if tours occurred close to shore.

- Bald Eagle. Diving activity and boats transporting divers could disturb bald eagles in foraging, breeding and wintering areas, particularly on popular lakes. The effects could be moderate, negative and short-term at those locations.
- Grizzly Bear. Diving activity close to shore and boats transporting divers could displace grizzly bears. The overall effect would be minor, adverse and short-term.
- Gray Wolf. This alternative could result in increased levels of visitor use in gray wolf habitat. Wolves are most sensitive to human disturbance at den and rendezvous sites (visitor access to these areas could be limited by seasonal closures to protect denning wolves). Ungulates could experience shifts in distribution as a response to increased levels of human disturbance. Any impacts to ungulates would be an indirect impact on gray wolves. Overall, this alternative would result in a minor and negative impact.
- Canada Lynx. Actions that adversely affect lynx would include higher levels of human access into lynx habitat and human activity at or near den sites. These actions would result in modified forested habitat, expanded range of competitors and/or predators, or reduced prey species populations, resulting in a minor, negative impact on the lynx and lynx habitat.
- Bull Trout. Underwater tours could have a minor effect on bull trout in Lake McDonald and St. Mary Lake. Operating plans would prohibit use in sensitive areas.

### ***Firewood Sales***

- **Alternative A – Status Quo/No Action** would continue firewood sales in campstores and would continue to have a negligible, long-term, positive effect on threatened and endangered species because campers would be less likely to disturb wildlife habitat by removing logs, trees, and branches for firewood. There would be no additional effects on sensitive species.
- **Alternative B (Preferred)**. Expanded firewood sales operations at developed campgrounds as well as campstores would mean that campers would be less likely to disturb threatened and endangered wildlife habitat by removing logs, trees, and branches for firewood; therefore, this alternative would have a negligible, long-term, positive effect. There may be a negligible, long-term improvement in habitat if more people are discouraged from illegal firewood gathering by the increased availability of firewood for sale.

### ***Boat Tours and Transportation (Boat Taxi)***

- **Alternative A – Status Quo/No Action**. Continued boat tour and transportation services would have no additional impacts on threatened and endangered species. No measurable change to existing habitats would occur. Continuation of commercial boat tours at Lakes McDonald and Josephine, and Two Medicine, St. Mary, Waterton, and Swiftcurrent Lakes would continue to negatively impact threatened and endangered species at those locations by displacement. However, this alternative also has a positive effect on wildlife because the educational value of the presence of a knowledgeable and experienced guide would result in positive impacts to human/wildlife interactions.

There would be no additional effects to sensitive species from current activities.

- Bald Eagle. Bald eagles nesting or foraging at these six lakes would continue to be disturbed by commercial tour boat operations, and eagles would continue to be displaced from optimal habitats by boat activity at these lakes.

- Grizzly Bear. This alternative would not alter grizzly bear habitat, nor change human-use patterns in or near areas that would likely be occupied by grizzly bears.
  - Gray Wolf. This alternative would not alter habitats or human use patterns in or near areas that could potentially serve as den or rendezvous sites in the future. Disturbance associated with ongoing commercial tour boat operations is not expected to influence ungulate population trends in distribution.
  - Canada Lynx. This alternative would not result in the alteration of vegetation, or changes in human activity that could influence prey species population trends in distribution, human access levels, or the range of lynx competitors and/or predators.
  - Bull Trout. There would be no change in effects from existing conditions.
- **Alternative B (Preferred)**. Impacts noted in alternative A would apply to this alternative as well. Adding boats to Lake McDonald and increasing the number of boat trips would have negligible, temporary effects on bull trout. Lengthening the dock would have minor, temporary, adverse effects during construction on bull trout and bald eagles from sediment and construction activity. Adding boats to Lake McDonald and Two Medicine Lake, and increasing the number of boat trips and new landings at Apgar could increase displacement of sensitive aquatic and bird species. Effects would be minor, long term and adverse.

#### ***Horseback Riding and Horse Packing Services***

- **Alternative A – Status Quo/No Action (Preferred)**. No additional effects are expected in this alternative. Horseback riding and horse packing services would continue to cause minor to moderate, adverse impacts on some threatened and endangered species due to trampling of vegetation along trails, noise in remote habitats, human disturbance in adjacent habitats, and trail erosion. This alternative would also result in the continued influx of nutrients from livestock droppings and urine, continued sedimentation in streams and lakes, continued spread of non-native plant species, and human/wildlife conflicts. For the bald eagle, grizzly bear and gray wolf, existing conditions would not change. No measurable change to existing habitats would occur. The continued presence of a knowledgeable and experienced guide would continue to result in positive impacts to human/wildlife interactions. This alternative would continue to affect wildlife use of aquatic and terrestrial habitats throughout the park (with impacts concentrated in the vicinity of Many Glacier, Apgar, Granite Park Chalet, Sperry Chalet, and the Lake McDonald Lodge).

There would be no additional effects on sensitive species.

- Bald Eagle. No additional effects.
- Grizzly Bear. This alternative would not alter grizzly bear habitat, nor change human-use patterns in or near areas that would likely be occupied by grizzly bears.
- Gray Wolf. This alternative would not alter habitats or human use patterns in or near areas that could potentially serve as den or rendezvous sites in the future. Disturbance associated with ongoing guided horseback riding and horse packing is not expected to influence ungulate population trends in distribution.
- Canada Lynx. Additional impacts to the lynx are not anticipated. This alternative would not result in the alteration of vegetation, or changes in human activity that could influence prey species population trends in distribution, human access levels, or the range of lynx competitors and/or predators.
- Bull Trout. No new impacts would occur.

- **Alternative B** would have the same impacts as alternative A, but would result in a reduction of impacts due to the elimination of guided horseback riding on trails originating from the Apgar stables. This alternative would have a minor to moderate, long-term positive impact on these species at Apgar. There would be an overall minor to moderate reduction in impacts if rides were discontinued in the Apgar area, including those to aquatic avian species along Lower McDonald Creek.
  - Bald Eagle. Bald eagles foraging or roosting along Lower McDonald Creek and the foot of Lake McDonald would not be disturbed by large groups on guided horse trips.
  - Grizzly Bear. Grizzly bears foraging, resting, or traveling in the Lower McDonald Valley would not be disturbed by large groups on guided horse trips.
  - Gray Wolf. Gray wolves hunting or traveling in the Lower McDonald Valley would not be disturbed by large groups on guided horse trips.
  - Canada Lynx. Canada lynx hunting or traveling in the Lower McDonald Valley would not be disturbed by large groups on guided horse trips.
  - Bull Trout. Small reductions in nutrients and sediment could result from the discontinuation of rides in the Lower McDonald Valley. This would be a minor beneficial, long-term effect.
- **Alternative C** would have the same impacts as alternative A with an increase in impacts in the Two Medicine area due to added horseback riding services in those areas. For all the threatened and endangered species listed below, the same impacts described for alternative A would continue under alternative C at all sites except Two Medicine where impacts would be increased due to the expansion of guided horseback riding services in these areas. This alternative could have moderate to major, long-term, negative impacts on these species, except the gray wolf, at Two Medicine. There would be an overall minor to moderate increase in impacts on sensitive species due to temporary disturbance if rides were added in the Two Medicine area.
  - Bald Eagle. Bald eagles foraging, nesting, and roosting along in Two Medicine could be disturbed by large groups on guided horseback rides.
  - Grizzly Bear. Grizzly bears foraging, resting, and traveling in Two Medicine could be disturbed by large groups on guided horseback rides.
  - Gray Wolf. Gray wolves hunting, denning, and traveling in Two Medicine could be disturbed by large groups on guided horseback rides. This alternative would have moderate long-term, negative impacts on the gray wolf.
  - Canada Lynx. Canada lynx hunting, denning, and traveling in Two Medicine could be disturbed by large groups on guided horseback rides.
  - Bull Trout. The additional rides in Two Medicine should have no additional impact on bull trout.
- **Alternative D** would have the same impacts as alternative A, but would result in a reduction of impacts associated with guided horseback riding and horse packing in the Lake McDonald area due to the removal of the stable and discontinued rides in the Upper McDonald Valley. For the threatened and endangered species below except the gray wolf, this alternative would have a minor long-term, positive impact at Lake McDonald. There would be a minor to moderate decrease in impacts, including those to harlequin ducks, from the closure of the Lake McDonald corral and discontinuation of rides up the Upper McDonald Valley. The effects would be long-term and positive.
  - Bald Eagle. Bald eagles foraging, nesting, or roosting at Lake McDonald would not be disturbed by large groups on guided horseback riding trips.

- Grizzly Bear. Grizzly bears foraging, resting, or traveling in the Upper McDonald Valley would not be disturbed by large groups on guided horseback riding trips.
- Gray Wolf. Gray wolves hunting or traveling in the Upper McDonald Valley would not be disturbed by large groups on guided horse trips. This alternative would have a negligible long-term, positive impact on gray wolves at Lake McDonald.
- Canada Lynx. Canada lynx hunting or traveling in the Lower McDonald Valley would not be disturbed by large groups on guided horse trips.
- Bull Trout. This alternative would reduce some nutrient loading and sedimentation to Lake McDonald and the upper valley, resulting in a beneficial, long-term effect.

### Conclusion

Alternative A for Granite Park Chalet would have no additional impacts. Alternative B would have moderate short-term, adverse impacts on threatened and endangered species from disturbance and displacement, and alternative C would have the same impacts. In addition, the cessation of hauling sanitary waste by helicopter under alternatives B and C would cause minor long-term, positive impacts

Although alternative B for commercially guided day hiking would have a less negative impact on threatened and endangered species than alternative A because it limits group sizes and the number of trips per day on high-traffic trails, human disturbances would have minor adverse impacts on some threatened and endangered species.

Under alternative A, guided underwater diving tours would not be available in the park; therefore, there would be no impact on park threatened and endangered species. Alternative B would have minor, adverse impacts.

Alternatives A and B for firewood sales would result in overall negligible long-term, positive impacts on threatened and endangered species near campgrounds by reducing disturbances from visitors gathering wood.

Alternative B for boat tours and transportation (boat taxi) would have minor, long-term effects on Lake McDonald. Alternative B would have increased negative effects on bald eagles at Lake McDonald and Waterton Lakes, and minor to moderate effects on Two Medicine Lake from disturbance caused by increased boat tours.

Alternatives B and D for horseback riding and packing services would have overall minor to moderate, localized, positive impacts. Impacts for alternative C would be the same as for alternative A, with the addition of localized impacts in the Two Medicine and St. Mary areas.

There would be no significant adverse impacts on threatened and endangered species whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the *General Management Plan* (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of threatened and endangered species as a result of the implementation of any of the alternatives.

### *Apgar Village Developed Area*

- **Alternative A – Status Quo/No Action.** The current conditions described in Chapter 3 Affected Environment would be maintained, and maintenance of existing visitor facilities would be ongoing. Improvements and repairs would have negligible to minor short-term, adverse impacts

during implementation to the grizzly bear, bald eagle, gray wolf, Canada lynx and bull trout. The small number of ground disturbing activities under this alternative would occur in a relatively small area that is previously disturbed by human activities. As a result of the disturbed nature of the site and adjacent development, long-term impacts would be negligible for all of the threatened and endangered species listed below except the bull trout.

- Bald Eagle. No other changes would occur.
- Grizzly Bear. This alternative would not affect grizzly bear habitat, nor change human-use patterns in or near areas that would likely be occupied by grizzly bears.
- Gray Wolf. This alternative would not alter habitats or human use patterns in or near areas that could potentially serve as den or rendezvous sites in the future.
- Canada Lynx. This alternative would not change the existing conditions associated with this species; therefore, additional impacts to the lynx are not anticipated.
- Bull Trout. Formalizing and hardening pedestrian pathways along the shoreline would reduce the amount of lakeside soil and vegetation available to filter sediments and pollutants in runoff from the surrounding developed area. Developing hardened pathways along the shoreline would increase localized runoff and would have a minor long-term, adverse impact. An increase in human use at the outlet could have minor impacts.

There would be no additional effects on sensitive species.

- **Alternative B (Preferred)**. This alternative would have the same negligible to minor, short-term impacts as described in alternative A. However, any construction in the spring, fall and winter would have moderate adverse impacts, since these are sensitive seasons for most threatened and endangered species in the park. Adverse impacts would be negligible to minor and short-term, depending on the season of trail construction. If construction occurs in the summer, impacts would be negligible. Construction of the parking lots and other visitor-related facilities in the summer would have less adverse, short-term effects. However, construction during this season on trails that run through habitat that could be occupied by threatened and endangered species would have greater adverse effects.

Construction during spring, fall or winter could result in the alteration of human-use patterns in or near areas that would likely be occupied by grizzly bears, which could lead to an increased chance of conditioning bears to human food and creating human/bear conflicts, thereby creating a moderate, adverse impact.

Construction work in late or early season could potentially have short-term adverse impacts on wolverine. Additional parking lots may result in a minor loss of habitat from clearing and hazard tree removal for sensitive bird species dependent on mature trees or snags. The result would be minor negative, long-term effects.

Extending the operating season of the Village Inn eight weeks (three weeks earlier and five weeks later) could affect threatened, endangered and sensitive wildlife species by encouraging more visitor use in the spring and fall at Apgar. This could displace or alter travel routes for grizzly bears, Canada lynx and wolves. This could also disturb bald eagles roosting and feeding along McDonald Creek. Increased activity during the spring and fall could affect energy expenditure, productivity and increase mortality. Overnight visitors might also impact other nearby areas since the duration and time of their stay would be different than for day users. The effects would be negative, minor to moderate and long-term.



- **Alternative C.** Impacts described for alternatives A and B, including extending the operating season, would remain the same under this alternative with the following exception: replacing the Village Inn with a formalized public space may increase the amount of human disturbance to the bull trout at the outlet and along Lower McDonald Creek in spring, fall and winter, resulting in a minor long-term impact.

Impacts on sensitive species would be the same as in alternative B, but removal of the Village Inn would have minor to moderate, adverse impacts on sensitive species using the outlet, lower lake and riparian area including several duck species and loss of habitat for some bird species with the relocation. Minor to moderate adverse, long-term effects would result.

- **Conclusion.** All alternatives would have minor short-term, localized adverse impacts on threatened and endangered species as well as minor long-term, localized adverse impacts on the bull trout. Alternative B may have moderate adverse impacts during any construction that occurs in the spring, fall and winter since these are sensitive seasons for most threatened and endangered species in the park. Alternative C may have a minor, long-term impact on the bull trout due to the increase of human disturbance at the outlet and along Lower McDonald Creek in spring, fall and winter. The effects of extending the season would be negative, minor to moderate and long-term.

There would be no significant adverse impacts on threatened and endangered species whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the *General Management Plan* (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of any threatened and endangered species as a result of the implementation of any of the alternatives.

#### ***Lake McDonald Developed Area***

- **Alternative A – Status Quo/No Action.** Current conditions described in Chapter 3 Affected Environment would be maintained under this alternative, and maintenance of existing visitor facilities would be ongoing. Improvements and repairs would have minor short-term, adverse impacts during implementation due to construction noise and general disturbances to the area. The following threatened and endangered species would be temporarily affected: bald eagle, grizzly bear, gray wolf, Canada lynx, and bull trout.

Formalizing and hardening pedestrian pathways along the shoreline would reduce the amount of lakeside soil and vegetation available to filter sediments and pollutants in runoff from the surrounding developed area.

- Bald Eagle, Grizzly Bear. Because this alternative is not likely to alter human use, construction and maintenance activities at the Lake McDonald developed area, it would not result in any additional impacts on these species.
- Gray Wolf. This alternative would not alter habitats or human use patterns in or near areas that could potentially serve as den or rendezvous sites in the future. Most use would be by individuals habituated to high levels of human activity. Therefore, no additional impacts to this species are expected.
- Canada Lynx. This alternative would not alter habitats or human use patterns in or near areas that could potentially serve as den sites in the future. Neither alteration of vegetation within the developed area, nor changes in human activity patterns associated with construction during

the winter, fall, or spring is expected to influence prey species population trends in distribution, human access levels, or the range of lynx competitors and/or predators. Use by lynx during the summer is expected to continue at current levels with the continuation of normal maintenance and operation of the Lake McDonald Lodge and associated visitor services. Therefore, no adverse effects to lynx or their prey are expected as a result of this alternative.

- Bull Trout. Construction might increase localized runoff and have a minor long-term, adverse impact. Construction of new parking lots near Snyder Creek and new buildings could have minor localized, short-term, adverse impacts.

There would be no additional effects on sensitive species.

- **Alternative B.** Impacts described under alternative A also apply to this alternative.

Development proposed under this alternative is expected to have minor adverse impacts on the bald eagle, grizzly bear, gray wolf, and Canada lynx, due to the existing development in the area and the limited area that would be affected. Sediments and pollutants in increased water run-off from the expanded paved surface area would cause minor to moderate long-term, localized, adverse impacts on the bull trout.

Removing Boys' Dormitories 1 and 2 as well as the Johnson, Jammer and Hydro dormitories from Area I, and removing the existing Coffee Shop parking lot and Girls' Dormitories 1 and 2 from Area II would result in some revegetation. This action would have a negligible long-term, positive impact on threatened and endangered species given the small area affected and the proximity of adjacent development.

The new employee housing area proposed near the Coffee Shop would result in expanded human presence in the adjacent forested habitat; however, human presence and adjacent development have previously disturbed this area. As a result of the disturbed nature of the site, adverse impacts on and endangered species from new facilities would be minor. Short-term impacts associated with construction would be minor in all seasons, given the magnitude of the project. Parking lot and road improvement projects north of Snyder Creek would have minor long-term impacts due to loss of habitat. If construction is scheduled during spring, fall or winter, short-term impacts would be of minor to moderate intensity because these seasons are sensitive for most threatened and endangered species in the park.

Construction work during the early or late seasons could potentially have adverse impacts on wolverine. Additional development may result in a minor loss of habitat for boreal toads from clearing and loss of habitat for sensitive bird and bat species dependent on mature trees or snags from clearing and hazard tree removal. Minor adverse, long-term effects would occur. Removal of buildings in the riparian zone would result in a negligible improvement to habitat for several species.

Extending the operating season of the Lake McDonald Lodge, General Store, Coffee Shop, and other visitor accommodations five weeks (two weeks earlier and three weeks longer) would affect wildlife by displacing species from habitat within and adjacent to the developed area during the sensitive spring and fall seasons. Increased activity during this time could affect energy expenditure and productivity and increase mortality. The effects would be most pronounced on bald eagles roosting or feeding in the area, or grizzly bears traveling adjacent to the area.

Overnight users may also impact other nearby areas since the duration and time of their stay would be different than for day users. The effects would be negative, minor to moderate and long-term.

- **Alternative C (Preferred).** Applicable impacts described for alternatives A and B remain the same under this alternative for threatened and endangered species and species of concern. Impacts to sensitive species would be the same as under alternative B.
- **Conclusion.** Alternatives A, B and C would have minor short-term, adverse impacts during implementation due to construction noise and general disturbances to the area to the grizzly bear, gray wolf, and Canada lynx. Extending the season would have negative, minor to moderate, long-term impacts.

There would be no significant adverse impacts on threatened and endangered species whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the *General Management Plan* (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of any threatened and endangered species as a result of the implementation of any of the alternatives.

### ***Rising Sun Developed Area***

- **Alternative A – Status Quo/No Action.** Current conditions as described in Chapter 3 Affected Environment would be maintained under this alternative, and maintenance of existing visitor facilities would be ongoing. Improvements and repairs would have minor short-term, adverse impacts during implementation on the bald eagle, grizzly bear, gray wolf, and Canada lynx. The general maintenance proposed under this alternative would result in additional minor adverse impacts on threatened and endangered species unless activities are implemented during the current maintenance and operating season; then there would be no additional long-term effect on threatened and endangered or sensitive species.
  - Bald Eagle. Because no new development would occur under this alternative, direct loss of eagle habitat or removal of important habitat components such as foraging perches or screening vegetation would not occur due to management actions. Available habitat and opportunities for nesting, perching, foraging, and roosting in the St. Mary Valley would continue to be limited by development and associated use.
  - Grizzly Bear. Since no additional disturbance of forest or grassland habitats is proposed, there would be no additional effects on the grizzly bear. This alternative would not affect habitat, or change human-use patterns in or near areas that would likely be occupied by grizzly bears.
  - Gray Wolf. This alternative would not alter habitats or human use patterns in or near areas that could potentially serve as den or rendezvous sites in the future. Most use would be by individuals habituated to high levels of human activity.
  - Canada Lynx. This alternative would not alter habitats or human use patterns in or near areas that could potentially serve as den sites in the future. Alteration of vegetation within the developed area, or changes in human activity patterns associated with construction during the winter, fall, or spring would not be expected to influence prey species population trends in distribution, human access levels, or the range of lynx competitors and/or predators. Use by lynx during the summer is expected to continue at current levels with the continuation of normal maintenance and operation of the Rising Sun developed area.
  - Bull Trout. This alternative would not affect known or potential bull trout habitat.

- **Alternative B.** Impacts described under alternative A also apply to this alternative. Constructing five new cabins with parking in Area I, as well as a new employee dormitory with parking and an outdoor recreation facility, would result in some loss of habitat, but the adverse impacts on threatened and endangered species would be minor and long-term, except during construction. Proposed construction activities would result in negligible short-term, adverse impacts in summer; and minor to moderate, short-term, adverse impacts in spring or fall. In winter, these activities would cause moderate short-term, adverse impacts on the bald eagle, grizzly bear, gray wolf and Canada lynx. Raising and lengthening the berm would have negligible effects on known or potential bull trout habitat.

Construction work during the early or late seasons could potentially have adverse impacts on wolverine and golden eagles. The small loss of habitat could result in minor impacts on several bird and possibly bat species. Removal of the boat concession house could have a negligible, long-term impact on species using the riparian area or lake, although the dock and parking area would remain.

Extending the operating season of the visitor overnight accommodations, Coffee Shop and General Store/Motel/Dormitory five weeks (three weeks earlier and two weeks longer) would displace threatened, endangered and sensitive wildlife species from habitat within and adjacent to the developed area during the sensitive spring and fall seasons. Increased activity during this time could affect energy expenditure and productivity and increase mortality. Overnight visitors might also impact other nearby areas since the duration and time of their stay would be different than for day users. Wolves have been documented in the meadows adjacent to the developed area in association with the elk herd, and bald eagles roost and feed along the shoreline of St. Mary Lake. The effects would be negative, minor to moderate and long-term.

- **Alternative C (Preferred).** Applicable impacts described for alternatives A and B, including extending the operating season, remain the same under this alternative with the following exceptions.

Constructing 10 new cabins and associated parking, and two new employee dormitories including an outdoor recreation facility in Area I would result in increased habitat loss, but the adverse impacts on threatened and endangered species would be continue to minor and long-term, except during construction. Proposed construction activities would result in negligible short-term, adverse impacts in summer; and minor to moderate, short-term, adverse impacts in spring or fall. In winter, these activities would cause moderate short-term, adverse impacts on the bald eagle, bull trout, grizzly bear, gray wolf and Canada lynx.

Impacts on sensitive species would be the same as under alternative B, but with slightly more habitat loss.

- **Conclusion.** Although alternatives B and C propose development, the overall area to be impacted would be two acres or less. All alternatives would have minor long-term, localized, adverse impacts on the bald eagle, grizzly bear, gray wolf and Canada lynx except during construction. Proposed construction activities would result in negligible short-term, adverse impacts in summer; minor to moderate, adverse, short-term impacts in spring or fall and moderate short-term impacts in the winter. There would be no effect or effects would be negligible on known or potential bull trout habitat. Extending the operating season would have negative, minor to moderate, long-term

effects on threatened and endangered, and state listed species.

There would be no significant adverse impacts on threatened and endangered species whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the *General Management Plan* (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of threatened and endangered species as a result of the implementation of any of the alternatives.

### ***Two Medicine Developed Area***

- **Alternative A – Status Quo/No Action.** Current conditions as described in Chapter 3 Affected Environment would be maintained under this alternative, and maintenance of existing visitor facilities would be ongoing. Improvements and repairs would result in minor to negligible, short-term, adverse impacts on these species during implementation. There would be no additional impacts on sensitive species.
  - Bald Eagle. No new development would occur under this alternative. Consequently, direct loss of eagle habitat or removal of important habitat components such as foraging perches or screening vegetation would not occur due to management actions. Available habitat and opportunities for nesting, perching, foraging, and roosting in the Two Medicine Valley would continue to be limited by development and associated use.
  - Grizzly Bear. Under this alternative, no additional disturbance of forest or grassland habitats is proposed; therefore, it would have no additional effects on the grizzly bear. This alternative would not affect grizzly bear habitat, nor change human-use patterns in or near areas that would likely be occupied by grizzly bears.
  - Gray Wolf. This alternative would not alter habitats or human use patterns in or near areas that could potentially serve as den or rendezvous sites in the future. Most use would be by individuals habituated to high levels of human activity. Therefore, no additional impacts to this species are expected.
  - Canada Lynx. This alternative would not alter habitats or human use patterns in or near areas that could contain suitable habitat for lynx den sites. Neither alteration of vegetation within the developed area, nor changes in human activity patterns associated with construction during the winter, fall, or spring is expected to influence prey species population trends in distribution, human access levels, or the range of lynx competitors and/or predators. Use by lynx during the summer is expected to continue at current levels with the continuation of normal maintenance and operation of the Two Medicine developed area.
  - Bull Trout. There would be no effect, since there is no known population in this area.
- **Alternative B (Preferred).** Impacts described under alternative A also apply to this alternative. The overall impact on the bald eagle, grizzly bear, gray wolf, and Canada lynx would be minor to negligible, short-term and adverse due to the minor new construction of walkways and increased levels of human disturbance. There would be no effect on bull trout.

Construction work during the early or late seasons could have moderate to major, short-term, adverse impacts on wolverine, golden eagles and bighorn sheep, but the small amount of overall disturbance should result in negligible effects on other species.

Extending the operating season for the General Store four weeks (one week earlier and three weeks later) might displace some threatened, endangered and sensitive wildlife species adjacent to the store but the effects would be negligible, negative and long-term.

- **Conclusion.** Overall, alternatives A and B would have minor to negligible short-term, localized, adverse impacts on threatened and endangered species from repairs, improvements, minor construction and increased levels of human disturbance. Extending the operating season would have negligible, negative, long-term effects.

There would be no significant adverse impacts on threatened and endangered species whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the *General Management Plan* (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of threatened and endangered species as a result of the implementation of any of the alternatives.

### ***Many Glacier Developed Area***

- **Alternative A – Status Quo/No Action.** Current conditions described in Chapter 3 Affected Environment would be maintained under this alternative, and maintenance of existing visitor facilities would be ongoing. Improvements and repairs would have minor to negligible, short-term adverse impacts during construction on the following species: the bald eagle, grizzly bear, gray wolf, Canada lynx, and bull trout. There would be no additional effects on sensitive species.
  - Bald Eagle. This alternative would not affect bald eagle habitat, nor change human-use patterns in or near areas that would likely be occupied by bald eagles in the future.
  - Grizzly Bear. Under this alternative, no additional disturbance of forest or grassland habitats is proposed; therefore, it would have no additional effects on the grizzly bear. This alternative would not affect grizzly bear habitat, nor change human-use patterns in or near areas that would likely be occupied by grizzly bears.
  - Gray Wolf. This alternative would not alter habitats or human use patterns in or near areas that could potentially serve as den or rendezvous sites in the future. Most use would be by individuals habituated to high levels of human activity. Therefore, no additional impacts to this species are expected.
  - Canada Lynx. This alternative would not alter habitats or human use patterns in or near areas that could contain suitable habitat for lynx den sites. Alternative A would not change the existing conditions associated with this species; therefore, additional impacts to the lynx are not anticipated.
  - Bull Trout. There would be no effects. Only one population is known to exist in the Many Glacier geographic area.
- **Alternative B.** Impacts described under alternative A also apply to this alternative. The small number of ground disturbance activities proposed under this alternative would occur in a relatively small area previously disturbed by human activities. The overall habitat area to be impacted by construction would be two acres or less. Proposed construction activities would result in negligible short-term, adverse impacts in summer, minor to moderate short-term, adverse impacts in spring/fall, and moderate to major short-term, adverse impacts in winter. Expanding the construction season would increase the intensity of associated impacts because it would greatly increase the level of human disturbance during the sensitive spring and fall seasons. There would

be no effect on bull trout.

Construction work during the early or late seasons could have moderate to major, short-term, adverse impacts on wolverine, golden eagles and bighorn sheep. There would be negligible effect on other species because of the small loss of habitat and proximity to other development.

Extending the operating dates of the Many Glacier Hotel and other accommodations two weeks (one week earlier and one week later) would displace threatened, endangered and sensitive wildlife species from habitat within and adjacent to the developed area during the sensitive spring and fall seasons. Opening the hotel and related facilities requires staff to be present in the valley five to six weeks prior to opening. Increased activity during the extension could affect energy expenditure and productivity and increase mortality. The area is used extensively by grizzly bears in the spring and fall. Recent sightings have confirmed that wolves, wolverine, and Canada lynx also use the area in the spring and fall. The hotel and related buildings are in the middle of a travel corridor and winter range for bighorn sheep. The effects would be more pronounced because the operating dates for both the Many Glacier and Swiftcurrent facilities would be extended, since they are in the same valley. Overnight visitors might also affect wildlife in other nearby areas since the duration and time of their stay would be different than for day users. The effects would be negative, minor to moderate and long-term.

- **Alternative C (Preferred).** Applicable impacts described for alternatives A and B, including extending the operating season, remain the same under this alternative. While some increased development is proposed, the overall habitat area impacted by construction is two acres or less. Proposed construction activities would result in negligible short-term, adverse impacts in summer, minor to moderate short-term, adverse impacts in spring/fall, and moderate to major short-term, adverse impacts in winter. Expanding the construction season would increase the intensity of associated impacts because it would greatly increase the level of human disturbance during the sensitive spring and fall seasons.

Construction during the early or late seasons could have moderate to major short-term, adverse impacts on wolverine, golden eagles and bighorn sheep. There would be minor to moderate, long-term loss of habitat and obstruction of migration routes for bighorn sheep by additional dormitories on the hill above the hotel.

- **Conclusion.** Although alternatives B and C proposed development, the overall area to be impacted would be two acres or less. All alternatives would have minor long-term, localized, adverse impacts on the bald eagle, grizzly bear, gray wolf and Canada lynx except during construction. Proposed construction activities would result in negligible short-term, adverse impacts in summer; minor to moderate, short-term, adverse impacts in spring or fall and moderate to major, short-term impacts in the winter. There would be no effect on bull trout from any of the alternatives. Extending the operating dates would result in negative, minor, long-term and positive effects.

There would be no significant adverse impacts on threatened and endangered species whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the *General Management Plan* (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of threatened and endangered species as a result of the implementation of any of the alternatives.

### ***Swiftcurrent Developed Area***

- **Alternative A – Status Quo/No Action.** Current conditions as described in Chapter 3 Affected Environment would be maintained under this alternative, and maintenance of existing visitor facilities would be ongoing. Improvements and repairs would have minor short-term, adverse impacts on the bald eagle, grizzly bear, gray wolf and Canada lynx during construction. Given the proximity of the Swiftcurrent developed area to the Many Glacier developed area and the location of both in the same drainage system, existing conditions for threatened and endangered species in the Swiftcurrent Valley are the same as those described for alternative A at Many Glacier. There would be no additional effects on sensitive species.
  - Bald Eagle. This alternative would not affect bald eagle habitat, nor change human-use patterns in or near areas that would likely be occupied by bald eagles in the future.
  - Grizzly Bear. Under this alternative, no additional disturbance of forest or grassland habitats is proposed; therefore, it would have no additional effects on the grizzly bear. This alternative would not affect grizzly bear habitat, nor change human-use patterns in or near areas that would likely be occupied by grizzly bears.
  - Gray Wolf. This alternative would not alter habitats or human use patterns in or near areas that could potentially serve as den or rendezvous sites in the future. Most use would be by individuals habituated to high levels of human activity. Therefore, no additional impacts to this species are expected.
  - Canada Lynx. This alternative would not alter habitats or human use patterns in or near areas that could contain suitable habitat for lynx den sites. Alternative A would not change the existing conditions associated with this species; therefore, additional impacts to the lynx are not anticipated.
  - Bull Trout. There would be no effect on this species.
- **Alternative B (Preferred).** Impacts described under alternative A also apply to this alternative. The small number of ground disturbance activities proposed under this alternative would occur in a relatively small area previously disturbed by human activities. The overall habitat area impacted by construction is four acres or less. Proposed construction activities would result in negligible short-term, adverse impacts in summer, minor to moderate short-term, adverse impacts in spring/fall, and moderate to major short-term, adverse impacts in winter. Expanding the construction season would increase the intensity of associated impacts because it would greatly increase the level of human disturbance during the sensitive spring and fall seasons. There would be no effect on bull trout.

Construction work during the early or late seasons would have moderate to major, long-term, adverse impacts on wolverine, golden eagles and bighorn sheep. There would be a minor loss of habitat for other species, but the effects would be minimal because of the proximity to the rest of the development.

Extending the operating dates of the visitor accommodations and Restaurant/Store three weeks (two weeks earlier and one week later) would displace wildlife species from habitat within and adjacent to the developed area during the sensitive spring and fall seasons. Opening the inn and related facilities requires staff to be present in the valley five to six weeks prior to opening. Increased activity during this time could affect energy expenditure and productivity, and increase mortality. The area is used extensively by grizzly bears in the spring and fall. Recent sightings have confirmed that wolves, wolverine, and Canada lynx also use the area in the spring and fall. The inn and related buildings are in the middle of a travel corridor and winter range for bighorn sheep. Overnight visitors may also impact wildlife in other nearby areas since the duration and



time of their stay would be different than for day users. The effects would be negative, minor to moderate and long-term.

- **Alternative C.** Applicable impacts described for alternatives A and B, including extending the operating season, remain the same under this alternative. While there this alternative proposes some increased development, the overall habitat area impacted by construction is four acres or less. Proposed construction activities would result in negligible short-term, adverse impacts in summer, minor to moderate short-term, adverse impacts in spring/fall, and moderate to major short-term, adverse impacts in winter. Expanding the construction season would increase the intensity of associated impacts because it would greatly increase the level of human disturbance during the sensitive spring and fall seasons. There would be no effect on bull trout.

Impacts on sensitive species would be the same as under alternative B.

- **Conclusion.** Although alternatives B and C propose development, the overall area impacted is four acres or less. All alternatives would have minor long-term, localized, adverse impacts on the bald eagle, grizzly bear, gray wolf and Canada lynx except during construction. Proposed construction activities would result in negligible short-term, adverse impacts in summer; minor to moderate, short-term, adverse impacts in spring or fall and moderate short-term impacts in the winter. There would be no effect on bull trout. Extending operation dates would have negative, minor to moderate impacts.

There would be no significant adverse impacts on threatened and endangered species whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the *General Management Plan* (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of threatened and endangered species as a result of the implementation of any of the alternatives.

### Wildlife Cumulative Impacts

During the history of Glacier National Park, development to accommodate visitors and steady growth in park visitation have affected threatened and endangered species through loss of habitat and disturbance from increasing human presence. Impacts on these species extend beyond physical boundaries because some species are less likely to use habitats near heavily used areas such as roads, trails, campgrounds and other developments.

In areas throughout and adjacent to the park, past actions such as development have affected threatened and endangered species. Present ongoing services within the park disturb these species' habitat in developed areas, along roads and trails, and near lakes and rivers. These services also contribute to habitat displacement. Reasonably foreseeable projects outside the park such as constructing additional employee housing, improving roads and bridges, and U.S. Forest Service timber salvaging and trail construction would have localized adverse impacts on threatened and endangered species. Future development projects inside the park, including the Going-to-the-Sun Road rehabilitation project that could cause loss of habitat in areas with little or no existing disturbance, would have moderate site-specific, adverse impacts on threatened and endangered species. The combined impacts of all actions both inside and outside the park, and any of the alternatives would have an overall minor to moderate, regional, long-term, adverse cumulative impact on any threatened and endangered species.

## Plant Species

### Methodology

Current vegetation conditions were assessed through consultation with the park's staff ecologist and biological technicians, synthesis of research reports and databases, and field surveys conducted during the summer of 2001. There are no known occurrences of federally listed threatened or endangered plant species in the park. The park likely holds suitable habitat for the federally listed water howellia (*Howellia aquatilis*), and may hold suitable habitat for the federally listed Spalding's catchfly (*Silene spaldingii*). Montana Natural Heritage Program databases and park research project reports were used to compile information used in this document. Refer to Tables 3.3 - 3.5.

A federal candidate species, the slender moonwort (*Botrychium lineare*) is found in the Many Glacier Valley. No plant species of concern have been identified in the Lake McDonald, Many Glacier, Swiftcurrent, Two Medicine or Rising Sun developed areas, or Granite Park, although additional field surveys would be conducted in summer of 2003.

Thresholds of impact are defined in Table 4.1.

- *Negligible*: The alternative would affect an individual of a listed species or its critical habitat, but the change would be so small that it would not be of any measurable or perceptible consequence to the protected individual or its population. Negligible effect would equate with a "no effect" determination in U.S. Fish and Wildlife Service terms.
- *Minor*: The alternative would affect an individual(s) of a listed species or its critical habitat, but the change would be small. Minor effect would equate with a "may affect" determination in U.S. Fish and Wildlife Service terms and would be accompanied by a statement of "likely..." or "not likely to adversely affect" the species.
- *Moderate*: An individual or population of a listed species, or its critical habitat would be noticeably affected. The effect could have some consequence to individuals, population, or habitat. Moderate effect would equate with a "may affect" in U.S. Fish and Wildlife Service terms and would be accompanied by a statement of "likely" or "not likely to adversely affect" the species.
- *Major*: An individual or population of a listed species, or its critical habitat, would be noticeably affected with a vital consequence to the individual, population, or habitat. Major effect would equate with a "may affect" determination in U.S. Fish and Wildlife Service terms and would be accompanied by a statement of "likely..." or "not likely to adversely affect" the species or critical habitat.
- *Short-term*: After implementation, would recover in less than 1 year.
- *Long-term*: After implementation, would take more than 1 year to recover.

### Impact Analysis For Necessary and Appropriate Services Alternatives

For other necessary and appropriate activities, the limited sensitive plant surveys parkwide have not indicated direct or potential conflicts with the alternatives. In general, alternatives that limit group size (commercially guided day hiking, alternative B) or reduce usage (horseback riding and horse packing services, alternatives B and D), pose the least threat to potentially impact sensitive plant species or habitat. Therefore, the analyses are similar to the consequences described for vegetation.

### ***Apgar Village Developed Area***

- **Alternative A – Status Quo/No Action.** There would be no impacts to plant species of concern.
- **Alternative B.** Impacts could be negligible to minor, negative and long-term on the velvetleaf blueberry from construction of a bicycle path to the campground.
- **Alternative C.** Under alternative C, the construction of a new paved bicycle path around the southeast periphery of the Apgar Village developed area could potentially impact individual velvetleaf blueberry plants; however, the exact route of the proposed bicycle path has not yet been finalized. Once a route is specified, mitigation measures, including a thorough survey of the proposed route for velvetleaf blueberry, would reduce or eliminate the potential negative impact. If individual velvetleaf blueberry plants were impacted, adverse effects would be negligible to minor, long-term.

### ***Many Glacier Developed Area***

- **Alternatives B and C** propose to provide an information/orientation pull-off on Many Glacier Road. A site along the road near Packer's East supports slender moonwort (*Botrychium lineare*), a federal candidate species, which is only found in the Many Glacier Valley. Detailed site plans for the pull-off have not yet been determined. Potential impacts will be assessed once detailed site plans are developed. Also, extending the operation dates of Many Glacier and Swiftcurrent would require early plowing of the Many Glacier Road. This could have a major, adverse, long-term effect on the slender moonwort.

### ***Swiftcurrent Developed Area***

- **Alternative B.** Plowing operations needed for earlier access could affect the slender moonwort plant population. The effects would be more pronounced by extending the operating dates for both the Many Glacier and Swiftcurrent facilities, since they are in the same valley.

## **Conclusion**

Apgar Village alternatives B and C could have minor long-term, site-specific, adverse impacts if individual velvet-leaved blueberry plants are impacted by the construction of a bicycle path.

The information/orientation pull-off along Many Glacier Road would be located to avoid adverse effects on plant species of concern. Sites surveys would be conducted during design. Early plowing could have a major negative, long-term effect.

There would be no significant adverse impacts on federally or state listed plant species whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of federally or state listed plant species as a result of the implementation of any of the alternatives.

## **Plant Cumulative Impacts**

Special status plant species could be impacted by a variety of future projects. Reasonably foreseeable future projects outside the park such as roadwork and U.S. Forest Service timber salvage operations could cause disturbance or removal of individual federally or state-listed plants. Other planned

projects inside the park, including the Going-to-the-Sun Road rehabilitation project and the construction of the West Side Discovery Center, which could include removal of individual velvet-leaved blueberry plants, would introduce additional disturbance. The cumulative effect of all of these actions and any of the alternatives could cause minor long-term, adverse impacts.

## NATURAL SOUNDS

### Methodology

Sound levels in the park were assessed through field visits and consultation with Glacier National Park staff. Alternatives were evaluated based on current sound levels and information gathered from other environmental assessments and environmental impact statements, as well as current literature reviews.

Thresholds of impact are defined in Table 4.1.

- *Negligible:* Effects would not be perceptible.
- *Minor:* Effects would result in an increase in noise levels in localized areas.
- *Moderate:* Effects would result in a readily detectable, widespread introduction of noise.
- *Major:* Effects would result in an introduction of noise.
- *Short-term:* Would occur during implementation.
- *Long-term:* Would be permanent.

### Impacts Common to All Alternatives

All alternatives involving construction and/or repair would introduce temporary but increased noise into the park; however, these actions would take place in developed areas where existing noise from traffic, concessioner operations and visitor services is common. Increased noise introduced during construction would be loudest near the point of generation and would decrease with distance from the source. Typical noises associated with construction activities would be caused by equipment such as

trucks, bulldozers, hand tools and other machinery, and by additional human activity in work areas. Various measures would be implemented to minimize construction-related noise, including equipping construction equipment with adequate mufflers and scheduling work activities to avoid early morning or night work near lodges, campgrounds and sensitive wildlife habitat. Impacts related to construction, demolition and maintenance activities would be minor, short-term, and negative during implementation.



### Impact Analysis For Necessary and Appropriate Services Alternatives

#### *Granite Park Chalet, Public Showers*

- **Alternative A – Status Quo/No Action.** Minor long-term, adverse impacts would result from the recurring removal of waste from toilet facilities.

- **Alternative B (Preferred).** Increased noise associated with construction and maintenance activities under alternatives B and C for Granite Park Chalet and alternative B for public showers would cause short-term adverse impacts. Impacts from increased noise during construction would be localized and have an overall minor effect on natural sound.

#### ***Commercially Guided Day Hiking (Cultural/Natural/Recreational)***

- **Alternative A – Status Quo/No Action.** Continuing to provide commercially guided day hiking services would have no additional impact on natural sound.
- **Alternative B (Preferred).** Limiting group size and the number of trips per day on high-traffic trails would not dramatically change noise levels.

#### ***Boat Tours and Transportation (Boat Taxi)***

- **Alternative A – Status Quo/No Action.** Park tour and transportation boats do not operate at high speeds and produce significant noise. Under alternative A, current interpretive boat tours and transportation services would have no additional impact on natural sound.
- **Alternative B (Preferred).** Added tour boat services on Lake McDonald and Two Medicine would not dramatically increase noise in the Lower McDonald Creek and Two Medicine drainages.

#### ***Guided Interpretive Motor Vehicle Tours and Public Transportation***

- **Alternatives A and B (Preferred).** Motor vehicle tours, shuttle services, taxi services and private vehicle shuttle services do not significantly affect the existing noise level from existing park traffic. Alternatives A and B would not impact current natural sound along park roads.

#### ***Horseback Riding and Horse Packing Services***

- **Alternatives A – Status Quo/No Action (Preferred), B, C and D.** Horseback riding and horse packing services would continue to introduce noise from visitors, guides and stock in areas where natural sound is predominant. Guided horseback riding services, however, do not increase noise levels significantly above those that occur from private horse use. Alternatives A, B, C and D would all have negligible negative impacts on natural sound.

#### ***Commercially Guided Bicycle Tours***

- **Alternatives A and B (Preferred).** Commercially guided bicycle tours would be restricted to roads and bicycle paths within the visitor services zone of all management areas with the exception of the North Fork area, and in the rustic zone of the Apgar Lookout, the 1913 Ranger Station and the Cut Bank area. Currently, there is noise associated with vehicle traffic in all of these areas, but commercially guided bicycle tours would not have any effect on natural sound.

#### **Conclusion**

The Granite Park Chalet and public showers action alternatives would cause overall minor short-term, localized, adverse impacts from increased noise associated with construction.

Commercially guided day hiking services, boat tours and transportation (boat taxi), guided interpretive motor vehicle tours and transportation, and commercially guided bicycle tours would have no new effect on natural sound.

Alternatives A, B, C and D for horseback riding and horse packing services would all have negligible long-term, localized, negative impacts.

There would be no significant adverse impacts on natural sound whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of natural sound as a result of the implementation of any of the alternatives.

#### ***Apgar Developed Area***

- **Alternative A – Status Quo/No Action.** Increased noise associated with construction and maintenance activities would cause adverse, short-term impacts. Impacts from increased noise during construction would be localized and have an overall minor effect on natural sound.
- **Alternative B.** Impacts described in alternative A also apply to this alternative. Extending the operating season of the Village Inn eight weeks (three weeks earlier and five weeks later) could affect natural sound by encouraging more visitor use during the early and late seasons at Apgar. The result could be additional noise from vehicles and other activities than currently exists during these times. The effects would be negative, minor and long-term.
- **Alternative C.** Impacts for alternatives A and B, including extending the operating season, remain the same for this alternative.

**Conclusion.** All alternatives would have minor adverse, short-term impacts from construction and maintenance. In addition, alternatives B and C would have minor negative, long-term effects on natural sound from increased visitor use due to an extended operating season.

There would be no significant adverse impacts on natural sound whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of the park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the park's General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of natural sound as a result of the implementation of any of the alternatives.

#### ***Lake McDonald Developed Area***

- **Alternative A – Status Quo/No Action.** Increased noise associated with construction and maintenance activities would cause short-term adverse impacts. Impacts from increased noise during construction would be localized and have an overall minor effect on natural sound.
- **Alternative B.** Extending the operating season of the Lake McDonald Lodge, General Store, Coffee Shop and other visitor accommodations five weeks (two weeks earlier and three weeks longer) would effect natural sound by increasing human activities such as vehicle use and other actions associated with running and operating the facilities. The effects would be negative, minor

and long-term.

- **Alternative C.** Impacts for alternative B remain the same for this alternative.

**Conclusion.** All alternatives would have minor adverse, short-term impacts from construction and maintenance. In addition, alternatives B and C would have minor negative, long-term effects from increased activity due to an extended operating season.

There would be no significant adverse impacts on natural sound whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of the park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the park's General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of natural sound as a result of the implementation of any of the alternatives.

### ***Rising Sun Developed Area***

- **Alternative A – Status Quo/No Action.** Increased noise associated with construction and maintenance activities would cause short-term adverse impacts. Impacts from increased noise during construction would be localized and have an overall minor, negative effect on natural sound.
- **Alternative B.** Extending the operating season of the visitor overnight accommodations, Coffee Shop and General Store/Motel/Dormitory five weeks (three weeks earlier and two weeks longer) would affect natural sound by increasing activities and related noise from traffic and operation of the facilities. The effects would be negative, minor and long-term.
- **Alternative C.** Impacts for alternative B remain the same for this alternative.

**Conclusion.** All alternatives would have minor adverse, short-term impacts from construction and maintenance. In addition, alternatives B and C would have minor negative, long-term effects from an increased activity due to an extended operating season.

There would be no significant adverse impacts on natural sound whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of the park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the park's General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of natural sound as a result of the implementation of any of the alternatives.

### ***Two Medicine Developed Area***

- **Alternative A – Status Quo/No Action.** Increased noise associated with construction and maintenance activities would cause short-term adverse impacts. Impacts from increased noise during construction would be localized and have an overall minor, negative effect on natural sound.
- **Alternative B.** Extending the operating season for the General Store four weeks (one week earlier and three weeks later) would have negligible, negative, long-term impacts from a slight increase in use of the area.

- **Conclusion.** All alternatives would have minor adverse, short-term impacts from construction and maintenance. In addition, alternatives B and C would have minor negative, long-term effects from a slight increase in use due to an extended operating season.

There would be no significant adverse impacts on natural sound whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of the park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the park's General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of natural sound as a result of the implementation of any of the alternatives.

#### ***Many Glacier Developed Area***

- **Alternative A – Status Quo/No Action.** Increased noise associated with construction and maintenance activities would cause short-term adverse impacts. Impacts from increased noise during construction would be localized and have an overall minor, adverse effect on natural sound.
- **Alternative B.** Extending the operating dates of the Many Glacier Hotel and other accommodations two weeks (one week earlier and one week later) would affect natural sound by increasing activities and related noise from traffic and operation of the facilities. The effects would be more pronounced from extending the operating dates for both the Many Glacier facilities and Swiftcurrent facilities, since they are in the same valley. The effects would be negative, minor and long-term.
- **Alternative C.** Impacts for alternative B remain the same for this alternative.

**Conclusion.** All alternatives would have minor adverse, short-term impacts from construction and maintenance. In addition, alternatives B and C would have minor negative, long-term effects from increased activity due to an extended operating season.

There would be no significant adverse impacts on natural sound whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of the park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the park's General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of natural sound as a result of the implementation of any of the alternatives.

#### ***Swiftcurrent Developed Area***

- **Alternative A – Status Quo/No Action.** Increased noise associated with construction and maintenance activities would cause short-term adverse impacts. Impacts from increased noise during construction would be localized and have an overall minor, negative effect on natural sound.
- **Alternative B.** Extending the operating dates of the visitor accommodations and Restaurant/Store three weeks (two weeks earlier and one week later) would affect natural sound by increasing activities and related noise from traffic and operation of the facilities. The effects would be more pronounced if the operating seasons for both the Many Glacier facilities and Swiftcurrent facilities were extended, since they are in the same valley. The effects would be negative, minor and long-term.



- **Alternative C.** Impacts for alternative B remain the same for this alternative.

**Conclusion.** All alternatives would have minor adverse, short-term impacts from construction and maintenance. In addition, alternatives B and C would have minor negative, long-term effects from increased activity due to an extended operating season.

There would be no significant adverse impacts on natural sound whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of the park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the park's General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of natural sound as a result of the implementation of any of the alternatives.

### Cumulative Impacts

Existing noise from vehicle traffic and developed areas would continue to affect natural sound inside and outside of the park. Reasonably foreseeable future projects outside the park would have local effects on natural sound, but would not create a cumulative impact in combination with projects inside the park. Reasonably foreseeable future projects inside the park, including the Going-to-the-Sun Road rehabilitation, combined with the commercial services alternatives would result in minor to moderate short-term, negative impacts on natural sound from the additive impact of multiple, simultaneous noise sources.

## AIR QUALITY

### Methodology

Current air quality conditions were assessed through consultation with Glacier National Park staff and U.S. Environmental Protection Agency reports. Alternatives were evaluated based on current air quality and information gathered from other environmental assessment and environmental impact statement documents as well as current literature reviews.

Thresholds of impact are defined in Table 4.1.

- *Negligible:* Changes in air quality would not be measurable.
- *Minor:* Effects would result in a measurable change in air quality, although the changes would be small and the impacts would be localized.
- *Moderate:* Effects on air quality would be readily measurable and widespread.
- *Major:* Effects would be readily measurable on a regional scale, and air quality standards could be exceeded.
- *Short-term:* Would occur during implementation.



- *Long-term:* Would be continual or permanent.

### **Impacts Common to All Alternatives**

Alternatives that involve construction, rehabilitation and maintenance would experience traffic and activity from truck and equipment that would increase dispersed dust and exhaust emissions during implementation. Adverse impacts on air quality would be minor to negligible, short-term and localized. Dust abatement measures would be implemented to minimize air-borne particulates.

### **Impact Analysis For Necessary and Appropriate Services Alternatives**

#### ***Granite Park Chalet, Public Showers and Developed Areas***

- **Alternatives B (Preferred) and C.** A temporary increase in exhaust emissions and particulate dust from construction and maintenance work under alternatives B and C for Granite Park Chalet, alternative B for public showers and the alternatives for the developed area would result in a negligible short-term, localized, adverse impact on air quality.

Constructing new parking lots or expanding existing ones in the developed areas would not significantly increase the amount of vehicle emissions in any given developed area, and adverse impacts would be negligible. Constructing and operating new guest and employee facilities in the developed areas would not impact air quality because new facilities would generate negligible emissions.

#### ***Firewood Sales***

- **Alternative A – Status Quo/No Action.** There would be no new effects or change in air quality from existing conditions.
- **Alternatives B (Preferred) and C.** The anticipated increase in availability and use could result in minor, short-term, adverse effects on air quality in the park from increased firewood use.

#### ***Boat Tours and Transportation (Boat Taxi)***

- **Alternative A – Status Quo/No Action.** Under alternative A, because tour boats generate negligible air pollutants, their emissions would continue to have negligible adverse impacts on air quality.
- **Alternative B (Preferred).** Added tour boat services on Lake McDonald and Two Medicine Lake would not dramatically increase emissions under alternative B, which would have negligible adverse impacts.

#### ***Guided Interpretive Motor Vehicle Tours and Public Transportation***

- **Alternative A – Status Quo/No Action.** Assuming that motor vehicle tours, shuttle services and taxi services reduce the overall number of vehicles on park roads, continuing them under alternative A would continue to have a minor positive impact on air quality from reduced vehicle emissions.
- **Alternative B (Preferred).** Because expanding these services and providing shuttle services to transport private vehicles under alternative B would have a negligible influence on the number of vehicles currently on park roads, impacts would also be minor and positive.

### ***Horseback Riding and Horse Packing Services***

- **Alternatives A – Status Quo/No Action (Preferred), C and D** would have no impact on air quality.
- **Alternative C.** Under alternative C, no new facilities for expanded horseback riding or horse packing services in the Two Medicine area would be built inside the park. All stock would be maintained outside the park from where they would be transported each day that services would be provided. This stock transport would negligibly increase in emissions from vehicles and would cause negligible adverse impacts on air quality.

### **Conclusion**

Alternatives B and C for Granite Park Chalet, alternative B for public showers and alternatives for the developed areas would result in a negligible short-term, localized, adverse impact due to a temporary increase in exhaust emissions and particulate dust during construction.

Because constructing new parking lots in the developed areas would not significantly increase the amount of vehicle emissions in any given developed area, long-term adverse impacts on air quality would be negligible. Constructing and operating new guest and employee facilities in the developed areas would not impact air quality.

Under alternative A, emissions from tour boats would continue to have negligible long-term, localized, adverse impacts on air quality. These impacts would be the same under alternative B.

Assuming that guided motor vehicle tours and public transportation reduce the overall number of vehicles on park roads, alternatives A and B for these services would have minor long-term, widespread, positive impacts on air quality from reduced vehicle emissions.

Under alternative B for guided horseback riding and horse packing services, transporting stock to and from the park would result in a negligible long-term, localized, adverse impact on air quality. Alternatives A, C and D would not impact air quality.

There would be no significant adverse impacts on air quality whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of air quality as a result of the implementation of any of the alternatives.

### **Cumulative Impacts**

Potential impacts from any alternatives combined with: dust generation and exhaust emissions from road and bridge improvement, and construction projects outside the park; Going-to-the-Sun Road rehabilitation work; and facility improvements or construction inside the park would have a negligible short-term, adverse impact on regional air quality. No long-term cumulative impacts would be expected as a result of implementing any of the alternatives combined with other projects outside the park; however, fueling the red buses with propane would have a minor long-term, positive cumulative impact on air quality inside the park. No cumulative impacts would exceed applicable regional air quality standards.

## CULTURAL RESOURCES HISTORIC, ARCHAEOLOGICAL AND ETHNOGRAPHIC

### Methodology

In this *Draft CSP and Draft EIS*, impacts on cultural resources are described below in terms of type, context, duration and intensity, which are consistent with the regulations of the Council on Environmental Quality (CEQ) that implement the National Environmental Policy Act (NEPA). These impact analyses are not intended to entirely fulfill the requirements of Section 106 of the National Historic Preservation Act (NHPA). A Section 106 review would occur before any undertaking is implemented.

Under the Advisory Council on Historic Preservation's regulations implementing Section 106 of the NHPA (36 CFR Part 800), findings of either *no adverse effect* or *adverse effect* must also be made for undertakings affecting National Register of Historic Places listed or eligible cultural resources. An *adverse effect* occurs when an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the national register (e.g. diminishes the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects caused by the preferred alternative that would occur later in time, be farther removed in distance or be cumulative (36 CFR Part 800.5, Assessment of Adverse Effects). A determination of *no adverse effect* means there is an effect, but it would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the national register.

The regulations of the Advisory Council on Historic Preservation specify documentation standards to enable reviewers to understand the basis for findings of effect. There is more detail in these standards than in this EIS. For example, the effect of a rehabilitation project on a historic building cannot be evaluated until construction documents are available. The park will comply with the procedures outlined in 36 CFR Part 800 during the project planning phases.

CEQ regulations and the National Park Service's Conservation Planning, Environmental Impact Analysis and Decision-Making (Director's Order #12) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact (e.g., reducing the intensity of an impact from major to moderate or minor). Any resulting reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced.

Thresholds of impact for the purposes of this *Draft CSP and Draft EIS* are defined in Table 4.1.

### Archaeological and Ethnographic Resources

- *Negligible*: Impact would be at the lowest level of detection — barely measurable with no perceptible consequences. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- *Minor*: Disturbance of a site(s) would be confined to a small area with little, if any, loss of important information potential. For purposes of Section 106, the determination of effect would be *no adverse effect*.



- *Moderate:* Disturbance of the site(s) would not result in a substantial loss of important information potential. For purposes of Section 106, the determination of effect would be *no adverse effect* or *adverse effect*.
- *Major:* Disturbance of the site(s) would be substantial and would result in the loss of most or all of the site and its potential to yield important information. For purposes of Section 106, the determination of effect would be an *adverse effect*.
- *Short-term:* Would occur only during implementation.
- *Long-term:* Would be continual or permanent.

### Historic Resources

- *Negligible:* Impact(s) would be at the lowest level of detection — barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- *Minor:* Impact would alter a character defining feature(s) of a historic resource, but the work would be in accordance with the Secretary of the Interior's *Standards for the Treatment of Historic Properties*. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- *Moderate:* Impact would alter a character defining feature(s) of the historic resource, diminishing the integrity of the resource, but still maintaining its eligibility for the national register. For purposes of Section 106, the determination of effect would be *adverse effect*.
- *Major:* Impact would alter a character defining feature(s) of a national historic landmark, diminishing the integrity of the resource to the extent that its designation is threatened. For purposes of Section 106, the determination of effect would be *adverse effect*.
- *Short-term:* Would occur only during implementation
- *Long-term:* Would be permanent

### Impacts Common to All Alternatives

One of the purposes of the commercial services plan is to guide the general rehabilitation of historic concession facilities in the park. Consequently, rehabilitation of historic concession facilities under any of the alternatives would inevitably impact historic resources. Exact impacts on historic resources would depend on specific site and facility design plans, which would be developed in accordance with Section 106, the Secretary's Standards, and in consultation with the Montana State Historic Preservation Officer.

Both short-term and long-term impacts on historic resources would occur. Short-term impacts would include temporary changes to the historic setting of a historic district or to a historic building due to the presence of construction equipment and materials, or actual temporary changes to buildings during rehabilitation work. Such short-term impacts would be minor to moderate and adverse. Long-term impacts could be both positive and negative. Moderate to major long-term, positive impacts on historic

resources would result from the rehabilitation of deteriorating historic facilities. Long-term adverse impacts would only occur when no practical alternative is available. Potential long-term, adverse impacts would depend on specific design, but could include the introduction of non-historic materials into a facility, changing the historic design of a facility, altering the size, scale, or placement of a historic feature, or replacing a historic feature with a modern structure. Specific long-term, adverse impacts on historic buildings are not discussed in this EIS because none are anticipated (with the potential exception of the Lake McDonald Coffee Shop). The park intends to follow *The Secretary of the Interior's Standards for the Treatment of Historic Properties* when planning specific projects affecting historic properties.

Archaeological surveys have been conducted within and around the developed areas. Although a few sites have been found within the developed areas, no known sites would be affected by any of the alternatives. All new ground-disturbing activities would be monitored by an archaeologist, and if archaeological material is located, work would be stopped immediately at the affected area, and Section 106 procedures would be implemented.

The alternatives would not likely affect ethnographic resources in the park. The Blackfoot and the Confederated Salish and Kootenai Tribes have not raised concerns over projects in the park's developed areas in the past. Likewise, the tribes have not raised concerns over other services and guided activities that would occur throughout the park. However, Glacier National Park recognizes that the tribes hold a body of knowledge that may result in the identification of ethnographic resources in developed or other park areas in the future. The tribes have been notified of this project through the scoping process and Glacier National Park will invite comments on this EIS. Further consultation will occur in accordance with federal legislation and regulations and National Park Service policy, if ethnographic resources are identified in the future.

### Impact Analysis For Necessary and Appropriate Services Alternatives

#### *Granite Park Chalet*

- **Alternative A – Status Quo/No Action.** This alternative would maintain current conditions at Granite Park Chalet, and there would be no new impacts on the Granite Park Chalet and Dormitory National Historic Landmark or historic district.
- **Alternatives B (Preferred) and C.** Construction activities under alternatives B and C would have minor short-term, adverse impacts on the historic resources.
- **Conclusion.** Alternative A would have no impact. Alternatives B and C would have minor short-term, adverse impacts on historic resources during construction.

There would be no significant adverse impacts on historic resources whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of the park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the park's General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of historic resources as a result of the implementation of any of the alternatives.

***Apgar Village Developed Area***

No buildings or structures in the Apgar Village developed area are listed in the National Register of Historic Places. The Apgar Village School House, a privately owned gift store, and the Permit Office may be eligible for the national register; however, these buildings would not be affected by any of the alternatives.

***Lake McDonald Developed Area***

- **Alternative A – Status Quo/No Action.** Upgrading the historic buildings in the Lake McDonald developed area to comply with life safety, accessibility, and building codes would have both positive and negative impacts from rehabilitation of historic resources as described above for all alternatives.
- **Alternative B.** Impacts described for alternative A also apply to this alternative.

In addition, the Going-to-the-Sun Road National Historic Landmark and the Lake McDonald Lodge Historic District meet where the main entrance road intersects the Going-to-the-Sun Road. Modifying the main entrance road and reconfiguring parking on the promenade would have short-term adverse impacts on the historic district and national landmark during construction; however, long-term impacts would depend on final project design.

Constructing new parking lots in Areas I and II, a new laundry and maintenance facility in Area I, and a new employee housing village in Area II would add new development to the historic district. The new employee housing village would be designed to be architecturally compatible with the historic district. Long-term impacts on historic resources could be moderate to major and adverse.

Converting historic buildings from employee facilities to guest accommodations would be undertaken with minimal changes to the buildings' defining characteristics. This action should have no significant long-term, adverse impact on historic resources.

Impacts on historic resources from modifying the exterior of the Coffee Shop are unknown at this time. The park must prepare a Determination of Eligibility to determine if the Coffee Shop is eligible for the National Register of Historic Places. If it is determined to be eligible, this action would have a moderate, adverse impact on the Lake McDonald Lodge Historic District.

- **Alternative C (Preferred).** Applicable impacts described for alternatives A and B also apply to this alternative with the following exceptions.

If the Coffee Shop were determined eligible for the national register (as described above), demolishing it would have a moderate, adverse impact on the Lake McDonald Lodge Historic District.

- **Conclusion.** Alternatives A, B and C would all have moderate to major long-term, site-specific positive impacts from rehabilitating deteriorating historic resources. Alternatives B and C could also have moderate long-term, site-specific, adverse impacts from adding new development to the Lake McDonald Lodge Historic District. Specific long-term impacts would depend on final project design plans.

There would be no significant adverse impacts on historic resources whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of the park; 2) key to

the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the park's General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of historic resources as a result of the implementation of any of the alternatives.

### ***Rising Sun Developed Area***

- **Alternative A – Status Quo/No Action.** Upgrading the historic buildings in the Rising Sun developed area to comply with life safety, accessibility, and building codes would have both positive and negative impacts from rehabilitation of historic resources as described under impacts common to all alternatives.
- **Alternative B.** Impacts described for alternative A also apply to this alternative.

Additionally, constructing new guest cabins on the Upper Loop would add new buildings to the Rising Sun Historic District; however, the new cabins would be designed to closely match the historic cabin design and fill in areas where cabins once existed. This action should have no significant long-term, adverse impact on historic resources.

The construction of a new employee dormitory with parking and an outdoor recreation facility near the Lower Motel would occur outside of the historic district and should have no significant adverse impact on historic resources.

Rehabilitation of the General Store/Motel/Dormitory and Coffee Shop building would be undertaken with minimal changes to the building's defining characteristics. This should have no significant long-term, adverse impact on historic resources.

- **Alternative C (Preferred).** Impacts from alternative A also apply to this alternative. Although alternative C would construct more new guest cabins and an additional employee dormitory than would alternative B, impacts on historic resources would generally be the same for alternatives B and C. In addition, the rehabilitation of some historic buildings for new functions under alternative C would be designed with minimal changes to the buildings' defining characteristics, and no significant long-term, adverse impacts on historic resources would be expected.
- **Conclusion.** Alternatives A, B and C would all have negligible to minor, long-term, site-specific positive impacts from rehabilitating deteriorating historic resources. Specific long-term impacts would depend on final project design plans.

There would be no significant adverse impacts on historic resources whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of the park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the park's General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of historic resources as a result of the implementation of any of the alternatives.

### ***Two Medicine Developed Area***

- **Alternative A – Status Quo/No Action.** Upgrading the historic buildings in the Two Medicine developed area to comply with life safety, accessibility, and building codes would have both positive and negative impacts from rehabilitating historic resources as described under impacts common to all alternatives. Modifying the existing comfort station to be compatible with the



area's historic architectural character would have a minor long-term, positive impact on historic resources.

- **Alternative B (Preferred).** This alternative would also have both positive and negative impacts from upgrading historic buildings to comply with life safety, accessibility, and building codes as described above for all alternatives. In addition, this alternative would have moderate positive impacts on historic resources. Removing the existing comfort station and constructing a new one that is compatible with the area's historic architectural character, as well as restoring the historic character of the General Store exterior and landscape would have minor long-term, positive impacts on historic resources.
- **Conclusion.** Alternatives A and B would have an overall minor, long-term, positive, site-specific impact on historic resources.

There would be no significant adverse impacts on historic resources whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of the park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the park's General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of historic resources as a result of the implementation of any of the alternatives.

### ***Many Glacier Developed Area***

- **Alternative A – Status Quo/No Action.** Upgrading the historic buildings in the Many Glacier developed area to comply with life safety, accessibility, and building codes would have both positive and negative impacts from rehabilitation of historic resources as described above for all alternatives.
- **Alternative B.** Impacts described for alternative A also apply to this alternative.

In addition, restoring the designed historic landscape of the area surrounding the hotel, based on a Cultural Landscape Report, would result in a minor long-term, positive impact on the historic district. Because historic use of the area between Many Glacier Hotel and Swiftcurrent Lake has not been documented, it is unknown how the area was used and developed. Due to lack of information, it cannot be determined at this time what the impacts would be on the historic landscape and use of this area.

Impacts from developing a trail around Swiftcurrent Lake are unknown at this time. The park must prepare a Determination of Eligibility to determine if the trail is eligible for the National Register of Historic Places. If it is determined eligible, this action would have a negligible to minor, adverse impact on historic resources, depending on actual project design.

Reconstructing the stairway and additional historic features in the Many Glacier Hotel lobby would have a minor long-term, positive impact on historic resources.

- **Alternative C (Preferred).** Applicable impacts described for alternatives A and B also apply to this alternative with the following additions.

Constructing a new dormitory and outdoor recreational facility near the Upper Dormitory in Area II would add new development to the Many Glacier Hotel Historic District. The new dormitory

would be constructed at the edge of the historic district and would be designed to be architecturally compatible with it; however, long-term, adverse impacts on historic resources could be minor.

The conversion of the Lower Dormitory to guest lodging would be designed with minimal changes to the building's defining characteristics. This action should have a minor long-term, adverse impact on historic resources.

- **Conclusion.** Alternatives A, B and C would all have negligible to minor long-term, site-specific positive impacts from improving historic resources. In addition, alternative C could also have minor long-term, site-specific, adverse impacts from adding new development to the Many Glacier Hotel Historic District. Specific long-term impacts would depend on final project design plans.

There would be no significant adverse impacts on historic resources whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of the park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the park's General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of historic resources as a result of the implementation of any of the alternatives.

#### ***Swiftcurrent Developed Area***

- **Alternative A – Status Quo/No Action.** Upgrading the historic buildings in the Swiftcurrent developed area to comply with life safety, accessibility, and building codes would have both positive and negative impacts from rehabilitating historic resources as described above for all alternatives.
- **Alternative B (Preferred).** Impacts described for alternative A also apply to this alternative.

Removing cabin parking from the cabin rings and relocating parking along the loop road would alter the historic district somewhat, resulting in potential negligible to minor, positive impacts on historic resources.

Filling in the existing cabin rings with new guest cabins would result in no significant adverse impacts on the historic district. The new cabins would be designed to closely match the historic cabin design and fill in areas where cabins were once located. Constructing new cabin rings outside of, but adjacent to the historic district on the former Motel 4 site should have no adverse impact on historic resources. In addition, constructing a fourth motel in Area I should not impact historic resources because it is outside of the historic district.

- **Alternative C.** Applicable impacts described for alternatives A and B also apply to this alternative, with the following exception. Constructing a new employee dormitory in Area II outside of the historic district should not adversely impact historic resources.
- **Conclusion.** Alternatives A, B and C would all have negligible to minor, long-term, site-specific positive impacts from improving historic resources. In addition, some alterations to the historic district under alternatives B and C could have negligible to minor, long-term, site-specific, adverse impacts.

There would be no significant adverse impacts on historic resources whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of the park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the park's General Management Plan or other relevant National Park Service planning documents. Consequently, there would be no impairment of historic resources as a result of the implementation of any of the alternatives.

### Cumulative Impacts

The Going-to-the-Sun rehabilitation project combined with the alternatives in the commercial services plan would have a moderate short-term, widespread, adverse cumulative impact on historic resources during construction, but a moderate to major widespread, positive cumulative impact on historic resources over the long term due to improvements of deteriorating historic buildings and structures. No cumulative impacts are anticipated for archaeological or ethnographic resources.

## VISUAL RESOURCES

### Methodology

Scenic/visual resources in the park were assessed through field visits and consultation with Glacier National Park staff. Alternatives were evaluated based on current views and information gathered from other environmental assessments and environmental impact statements.

Thresholds of impact are defined in Table 4.1.

- *Negligible:* Effects would not result in any perceptible changes to existing viewsheds.
- *Minor:* Effects would result in slightly detectable changes to a viewshed in a small area or would introduce a compatible human-made feature to an existing developed area.
- *Moderate:* Effects would be readily apparent and would change the character of visual resources in an area.
- *Major:* Effects would be highly noticeable or would change the character of visual resources by adding human-made features into a mostly undeveloped area or by removing most human-made features from a developed area.
- *Short-term:* Would be temporary during implementation
- *Long-term:* Would be permanent or continual

### Impacts Common to All Alternatives

The presence of maintenance and construction equipment for all alternatives involving construction and/or repair would result in minor short-term, site-specific, adverse impacts on visual resources.



## Impact Analysis For Necessary and Appropriate Services Alternatives

### *Granite Park Chalet, Public Showers and Boat Tours*

- **Alternatives B (Preferred) and C** for Granite Park Chalet and **alternative B (Preferred)** for public showers would have minor short-term, adverse impacts due to the presence of construction equipment in the Granite Park Chalet area and the Apgar, Rising Sun, Two Medicine and Many Glacier campground areas during construction. Long-term adverse impacts in these areas would be negligible because new facilities would be placed in existing developed areas and would not result in any perceptible changes to visual resources. The extension of the dock would result in a minor long-term, adverse impact on visual resources.

### **Conclusion**

Constructing new facilities under alternatives B and C for Granite Park Chalet and under alternative B under public showers would have overall negligible, long-term, site-specific, adverse impacts because new facilities would be placed in existing developed areas.

There would be no significant adverse impacts on visual resources whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the General Management Plan (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of visual resources as a result of the implementation of any of the alternatives.

### **Impacts Common to All Alternatives in the Developed Areas**

The presence of construction equipment in the Apgar Village, Lake McDonald, Rising Sun, Two Medicine, Many Glacier and Swiftcurrent developed areas during construction and maintenance under any of the alternatives would have short-term minor, adverse impacts on visual resources.

Constructing new guest and employee facilities or parking lots in any of the developed areas under any of the alternatives would result in minor to moderate changes to existing visual quality because the areas are already developed and contain existing human-made structures. All new facilities would be within existing developed areas and architecturally compatible with existing facilities there.

Depending on the size and location of new construction, adverse impacts in developed areas would be moderate to minor, long-term, and site-specific.

### *Apgar Village Developed Area*

- **Alternative B (Preferred).** Constructing a new, smaller turnaround at the terminus of the Apgar Loop Road, creating a pedestrian green space in Area I along the lakeshore, and constructing new parking lots in Areas I and II to replace parking along Apgar Loop Road would divert traffic away from the lakeshore and open up the viewshed of Lake McDonald from the road. Visual resources would be improved from Apgar Village, and positive impacts would be moderate.
- **Alternative C.** Impacts described for alternative B also apply to this alternative. In addition, removing the Village Inn and converting the site to a pedestrian green space would open up the viewshed across Lake McDonald, resulting in a major positive impact.
- **Conclusion.** Alternative A for the Apgar Village developed area would have only minor short-term, site-specific, adverse impacts from the presence of maintenance and construction equipment.

Alternative B would have moderate long-term, positive, site-specific impacts, while alternative C would have overall long-term, major, positive, site-specific impacts from improving the viewshed of Lake McDonald.

#### ***Lake McDonald Developed Area***

- **Alternative B.** Modifying the exterior of the Coffee Shop to make it more compatible with the historic district would result in a moderate positive impact on the visual quality of the Lake McDonald Lodge Historic District.
- **Alternative C (Preferred).** Demolishing the Coffee Shop and constructing a new restaurant would result in a major positive impact on the visual quality of the Lake McDonald Lodge Historic District because the new restaurant would be designed to complement the historic district, and its orientation would allow the historic green space north of the boulevard to be emphasized.
- **Conclusion.** Under alternative A for the Lake McDonald developed area, the presence of maintenance and construction equipment would cause only minor short-term, site-specific adverse impacts. Alternatives B and C would have both positive and negative impacts on visual resources: constructing facilities and parking lots would add new human-made features to the developed area, resulting in moderate long-term, site-specific, adverse impacts for both alternatives. However, alternative B would improve the visual quality of the historic district by modifying the exterior of the Coffee Shop, having moderate long-term, positive, site-specific impacts; constructing a new Coffee Shop under alternative C would have major long-term, positive, site-specific impacts.

#### ***Rising Sun Developed Area***

- **Conclusion.** Alternative A for Rising Sun would have minor short-term, site-specific, adverse impacts only during construction and maintenance activities. Alternatives B and C (Preferred) would construct new facilities in the developed area, resulting in overall moderate, long-term, site-specific, adverse impacts.

#### ***Two Medicine Developed Area***

- **Alternative B (Preferred).** Removing some of the parking from the lakefront would improve the viewshed of Two Medicine Lake, resulting in a moderate positive impact.

Removing the existing comfort station and constructing a new one at a new location in Area I, as well as restoring historic landscape features in front of the General Store, which is a National Historic Landmark, would improve its visual quality. The impacts on visual resources would be moderate and positive.

- **Conclusion.** Alternative A for Two Medicine would have negligible to minor short-term, site-specific, adverse impacts during construction and maintenance activities. Alternative B would improve the viewshed of Two Medicine Lake and the visual quality of the General Store National Historic Landmark. These actions would have a moderate long-term, positive, site-specific impact.

#### ***Many Glacier Developed Area***

- **Alternatives B and C (Preferred).** Screening service structures and yards along the approach road in Area I and improving the landscape of the Many Glacier Hotel site with native trees, shrubs and wildflowers would improve the visual quality of the developed area. These actions would have a moderate positive impact.

- **Conclusion.** Under Alternative A for the Many Glacier developed area, the presence of maintenance and construction equipment would only cause minor short-term, site-specific adverse impacts. Alternatives B and C would have both positive and negative impacts. Under alternative B, constructing a new employee recreation facility at the edge of the developed area would cause minor long-term, site-specific, adverse impacts, while constructing a new employee housing and recreation facility under alternative C would cause moderate long-term, site-specific, adverse impacts. However, improving the cultural landscape of the area would have moderate long-term, positive, site-specific impacts on visual resources.

#### *Swiftcurrent Developed Area*

- **Conclusion.** Alternative A for the Swiftcurrent developed area would have minor short-term, site-specific, adverse impacts during construction and maintenance activities. Alternatives B and C would have overall moderate, long-term, site-specific, adverse impacts on visual resources from the construction of new guest and visitor facilities and parking in the developed area.

#### **Cumulative Impacts**

All of the impacts on visual resources from the alternatives discussed in the commercial services plan would be either short-term, or long-term but site-specific. There would not be any cumulative impacts on visual resources caused by projects outside of the park. Other reasonably foreseeable future projects inside the park, including the Going-to-the-Sun Road rehabilitation, and small-scale maintenance and construction projects throughout the park would have an overall minor, adverse cumulative impact on visual resources in the park.

### **REGIONAL AND LOCAL COMMUNITIES**

#### **Methodology**

Local and regional communities are situated in the area defined as the three-county region of Flathead, Glacier and Lake Counties. Impacts on these local and regional communities were assessed using both qualitative and quantitative analyses of the alternatives. The analyses were made with respect to construction spending; employment during construction and on-going operation and maintenance; visitor spending; the addition of guest accommodations and employee housing; the extension of the operating season; and impacts of various concession operation enhancements.

Information was obtained through consultation with professional economists, park staff, the architectural and planning consultant for the commercial services plan, and research of State of Montana and national studies. Specific methods for evaluating topical areas were used as appropriate and are described in the following discussion.



Thresholds of impact are defined in Table 4.1.

- *Negligible:* Effects would be below or at the level of detection. The effect would be slight.
- *Minor:* Effects would be detectable, but would be slight.

- *Moderate:* Effects would be readily apparent.
- *Major:* Effects would be readily apparent and would cause substantial changes to socioeconomic conditions in the region.
- *Short-term:* Would occur only during implementation (varies by site to a maximum of 10 years).
- *Long-term:* Would be continued beyond the duration of construction or would be permanent.

In comparison with other impact topics, socioeconomic impacts involve economic, employment and social concerns that affect not only individual sites within Glacier National Park, but also the surrounding local and regional areas. In particular, money spent and employment generated affect the general regional and local economy and should be examined on a larger scale as well as by each of the developed areas. For this reason, each impact was evaluated at the local and regional level for each alternative as well as for the combined set of actions.

### **Impacts Common to All Alternatives**

#### *Construction Spending and Employment*

Construction spending consists of expenditures for design services, construction management, and labor and materials. Prior experiences with National Park Service facilities projects in Glacier National Park and Mesa Verde National Park were evaluated in order to estimate generalized project cost breakouts. Cost breakouts vary by project, depending on such factors as proximity to and availability of a construction employment force and materials, prevailing wages, building standards, delays and seasonal constraints. For the purpose of this study, it is assumed that project costs are divided as follows: architectural/engineering and construction management services (25%), labor (45%) and materials (35%). Project cost breakouts will be refined through more detailed cost estimating to be prepared later in the design process, and may differ from breakouts presented here.

Under alternatives for the six developed areas, construction funds would be spent on various components of design and construction in the three-county area, elsewhere in the state and out of the state. Based on the Many Glacier Hotel Stabilization Project, an ongoing project comparable to work proposed in the commercial services plan, assumptions were made about the employment and funds spent in the local and regional economy compared to total employment and spending (pers. com. from Jason Casperson, DPS, to ARC, Oct. and Nov. 2002.) It is assumed that approximately 20% of the architectural/engineering and construction management services would be local and 80% would be out-of-state. Half of the construction workers would be local, while half would come from out-of-state. Out-of-state employees would spend 10% of their wages per diem in the area. It is assumed that nearly all construction firms and workers would come from the United States; consequently, Alberta or British Columbia, Canada would not be impacted. Virtually all of the materials would come through local and state vendors. An estimated 15% of the value of goods would be captured in the local and regional communities, including wages, overhead and profit, while the remaining 85% would be expected to pay for the materials imported from outside the region.

The following table summarizes the anticipated economic impacts of the investments by alternative.

**TABLE 4-3 ESTIMATED PROJECT COSTS AND  
CONSTRUCTION-BASED LOCAL AND REGIONAL SPENDING BY ALTERNATIVE**

Locations	Alternative	Estimated Investment	Estimated Funds Spent in Local and Regional Communities
<b>Necessary &amp; Appropriate Services</b>			
Granite Park Chalet			
	Alternative A	\$ -	\$ -
	Alternative B	\$ 1,650,000	\$ 374,000
	Alternative C	\$ 2,380,000	\$ 539,000
Public Showers (various locations)			
	Alternative A	\$ -	
	Alternative B	\$ 900,000	\$ 204,000
<b>Developed Areas</b>			
Apgar			
	Alternative A	\$ 481,000	\$ 109,000
	Alternative B	\$ 1,995,000	\$ 452,000
	Alternative C	\$ 7,082,000	\$ 1,603,000
Lake McDonald			
	Alternative A	\$ 6,372,000	\$ 1,443,000
	Alternative B	\$ 14,870,000	\$ 3,365,000
	Alternative C	\$ 28,595,000	\$ 6,470,000
Rising Sun			
	Alternative A	\$ 3,998,000	\$ 905,000
	Alternative B	\$ 7,233,000	\$ 1,637,000
	Alternative C	\$ 10,345,000	\$ 2,340,000
Two Medicine			
	Alternative A	\$ 858,000	\$ 194,000
	Alternative B	\$ 1,419,000	\$ 321,000
Many Glacier			
	Alternative A	\$ 24,194,000	\$ 5,474,000
	Alternative B	\$ 27,624,000	\$ 6,250,000
	Alternative C	\$ 37,037,000	\$ 8,380,000
Swiftcurrent			
	Alternative A	\$ 2,684,000	\$ 607,000
	Alternative B	\$ 9,521,000	\$ 2,154,000
	Alternative C	\$ 9,369,000	\$ 2,120,000

For purposes of this analysis, it is assumed that the commercial services plan improvements could be implemented over a ten-year period of time. In the first three years, a higher level of construction-based activity is assumed to occur, during which 56% of total project funds would be expended. During the next seven years, the level of activity would taper off to completion of the plan. The schedule is assumed to be the same under all alternatives. It must be noted that this hypothetical schedule is subject to funding availability. Numerous variables could extend the time frame beyond ten years and lead to different sequences of high and low-activity years.



Investments that generate jobs provide a positive contribution to the regional and local economies. The relative significance of the contribution of construction-based spending to the local and regional communities can be approximately measured by comparing annual funds spent in the local and regional economies to the total annual wages in the three-county region. Total construction wages for general building in the three-county region were estimated at \$21.8 million in 2001 (Montana Dept. of Labor & Industry 2001a, 2001b, and 2002). The estimated contribution to the regional general building construction wages by the commercial services plan alternatives would be between 4.1% to 10.0% per year during the highest three years over ten years of construction activities. In relation to the overall economy of Flathead, Glacier and Lake Counties, the capital investments for the plan would be fairly small. In 2001, the most recent year for which data is available, the annual wages paid for all industries in the three-county region exceeded \$1 billion (Montana Dept. of Labor & Industry 2001a, 2001b, and 2002). The range of total local spending for the plan is estimated to be between \$8.73 million and \$22.01 million over the construction period, and between \$896,000 and \$2,184,629 per year during the highest three years of construction activities. Construction-based spending for improvements described in the commercial services plan would increase the three counties' total annual wages by between 0.08% to 0.20% during the three peak years of construction activities. Table 4-4 below shows the total wages paid in year 2001 in the region by county. Table 4-5 shows the estimated construction-based spending in local and regional communities in comparison to the three-county region's annual wages.

**TABLE 4-4 TOTAL WAGES PAID IN LOCAL AND REGIONAL COMMUNITIES**

	Annual Wages Paid 2001 for General Building Construction	Annual Wages Paid - 2001 for All Industries
Glacier	\$ 1,185,802	\$ 88,613,531
Lake	\$ 3,060,944	\$ 181,188,961
Flathead	\$ 17,567,111	\$ 811,970,021
Total	\$ 21,813,857	\$ 1,081,772,513

**TABLE 4-5 ESTIMATED TOTAL LOCAL AND REGIONAL IMPACTS FROM CONSTRUCTION-BASED SPENDING**

	Total Local & Regional Spending	Total Local & Regional Construction Wages	High Year Annual Local and Regional Construction Wages	Portion of Total Local & Regional Spending to Regional Total Wages - High Years	Portion of Local & Regional Construction Wages to Regional General Building Wages - High Years
Alternative A - Status Quo (Least Costly)	\$8,732,000	\$4,775,000	\$896,802	0.08%	4.11%
Preferred Alternatives	\$20,695,000	\$11,002,500	\$2,066,401	0.19%	9.47%
Combination of Most Costly Alternatives	\$22,011,000	\$11,632,000	\$2,184,629	0.20%	10.01%

*Direct and Indirect Spending*

Per capita retail sales vary considerably across counties, since residents of small communities often cross county lines to shop in larger towns and cities. It is estimated that “completely rural counties” in Montana – including Lake and Glacier Counties – capture 60% of their residents’ retail expenditures, indicating that 40% of their retail expenditures are spent outside the county of residence. On the other hand, “urbanized nonmetro counties” having at least 10,000 people living in urban places – including Flathead County – attract per capita sales estimated to be 15% greater than expenditures by their residents (U.S. Department of Agriculture 2000).

The indirect benefit — sometimes called the “multiplier effect” — of spending construction dollars in the local and regional economies for design, labor and materials consists of the recirculation of “new money” exported from outside the local and regional economies. The multiplier of direct to indirect spending depends on characteristics of the local and regional economies regarding the level of local “leakage” in buying goods and services supplied from outside the local and regional area (Ellard et al). The indirect benefits would likely contribute to the local and regional economies from 118% to 140% of the direct spending, based on the methodology used in the *Draft Going-to-the-Sun Rehabilitation Plan/Environmental Impact Statement* (NPS 2002). The indirect benefits accrued from the commercial services plan construction activities would vary by county since smaller rural counties capture fewer retail expenditures than larger, more urban counties.

*Visitation and Visitor Spending*

The total number of visitors to Glacier National Park is projected to increase at a slow rate, amounting to approximately 2% total over a ten-year period and an average of 0.23% per year, as shown in Chapter 3 Affected Environment. Additionally, the increase in guest accommodations also would be minor.

Visitor spending would not increase measurably for any of the alternatives, although it is likely that park visitors and hotel guests would spend more money for commercial services due to enhancements to the developed areas and the modest increase in accommodations. Increased prices for lodging, food or any other services could result in some additional spending.

It should also be noted that lack of investment in commercial services facilities and allowing the facilities to substantially degrade would result in minor to moderate, negative impacts on visitation and visitor spending. Commercial services facilities improvements would avert a decline in visitation and visitor spending that could result from neglect or lower service levels.

Concessioner operations could be impacted during construction and rehabilitation, potentially causing a short-term decline in visitation and visitor spending. If construction occurs during the visitor season, impacts on concessioner operations could be minor to moderate, adverse and short-term. If construction occurs during the off-season, concessioner operations would not be impacted. The construction and rehabilitation of guest units and conversion of employee housing to guest units would be coordinated to minimize the loss of guest rooms at any one time, eliminating short-term impacts on concessioner operations. However, construction and rehabilitation could cause an overall loss of guest rooms during any single visitor season, resulting in minor to moderate, negative, but short-term impacts on concessioner operations. Depending on location, if these impacts occur, a negligible to minor, short-term decrease in visitor spending could also occur.

*Addition of Guest Accommodations*

The total number of guest rooms available in the park would not increase substantially under the alternatives, growing from 512 to a target maximum of 540 rooms. The impacts on accommodations vary by alternative. During the highest visitation period of the tourist season, when there are no lodging vacancies, the addition of 28 guest rooms would likely add to the total number of guests staying in the park. During periods when lodging occupancy is low, additional capacity might not result in additional overnight stays in the park. Table 4-6 below shows the number of guest rooms by alternatives.

**TABLE 4-6 GUEST ACCOMMODATIONS (ROOMS)**

Facility Area	Existing/ Alternative A	Alternative B	Alternative C	Preferred Alternatives
Apgar	36	Approx. 36	Approx. 36	Approx. 36
Lake McDonald	100	Approx. 90 - 100	Approx. 110 - 120	Approx. 110 - 120
Rising Sun	72	Approx. 75 - 80	Approx. 75 - 80	Approx. 75 - 80
Two Medicine	0	0	0	0
Many Glacier	216	Approx. 210 - 220	Approx. 230 - 240	Approx. 230 - 240
Swiftcurrent	88	Approx. 75 - 80	Approx. 85 - 95	Approx. 75 - 80
Total	512	486 - 516	536 - 571 <sup>1</sup>	540 <sup>1</sup>
Net Change from Existing	No Change	26 Fewer to 4 Additional Rooms	24 to 28 Additional Rooms	14 to 28 Additional Rooms <sup>1</sup>

<sup>1</sup> The National Park Service has set a park-wide maximum of 540 guest rooms, not including the backcountry chalets and private lodging. Consequently, the net change under the preferred alternative is limited to no more than 28 additional rooms. See Appendix 4, Comparative Site Alternatives Analysis Supplemental Information.

A 4% State Lodging Facility Use Tax, commonly called the “bed tax,” is collected on all lodging accommodations. Additional bed tax revenues would result from occupancy of the added guest rooms and generate more advertising funding for local chambers of commerce and other regional non-profit tourism corporations. In turn, enhanced advertising would likely increase visitation to the area, having a negligible to minor, long-term positive impact on visitor spending in local and regional communities.

*Addition of Employee Housing Accommodations*

The impacts on employee housing accommodations vary by alternative, as shown in Table 4-7 below.

**TABLE 4-7 EMPLOYEE HOUSING (BEDS)**

Facility Area	Alternative A — Status Quo/No Action	Alternative B	Alternative C	Preferred Alternatives
Apgar <sup>1</sup>	Approx. 2	Approx. 2	Approx. 2	Approx. 2
Lake McDonald Area	Approx. 169	Approx. 166	Approx. 181	Approx. 181
Rising Sun	Approx. 61	Approx. 72	Approx. 85	Approx. 85
Two Medicine	Approx. 14	Approx. 14	Approx. 14	Approx. 14
Many Glacier	Approx. 223	Approx. 223	Approx. 243	Approx. 243 <sup>2</sup>
Swiftcurrent	Approx. 55	Up to 120	Up to 118	Up to 120 <sup>2</sup>
Granite Park Chalet	Approx. 2	Approx. 2	Approx. 8	Approx. 2
Sperry Chalet	Approx. 8	N/A	N/A	N/A
Total	Approx. 534	Approx. 599	Approx. 651	605 - 607
Net Change from Existing	No Change	Approx. 65	Approx. 117	Approx. 121

<sup>1</sup> Housing for approximately 8 horse concession employees is provided outside the Apgar Village at the stables.

<sup>2</sup> If Many Glacier employee housing were reduced to offset the gain of new employee housing at Swiftcurrent then the net gain would be smaller than the range presented.

See Appendix 4, Comparative Site Alternatives Analysis Supplemental Information.

Maintaining and enhancing the employee facilities would provide a greater number of beds and more desirable living arrangements for employees. This improvement would allow concessioners to retain a diverse, qualified staff, resulting in an overall minor, positive long-term impact. Currently, some employees live in nearby communities and must drive considerable distances. The current primary concessioner hires approximately 25 local employees who live outside the park, amounting to roughly 4% of their total work force in Glacier National Park. The substantial distance from employee pools has affected the concessioner's ability to recruit and retain sufficient locally hired employees at many of the developed areas in the past. Consequently, the expanded concessioner housing provided under the alternatives may further affect the concessioner's incentive to hire locally. However, given the limited number of employees affected and the park's policy of encouraging concessioners to recruit and hire from local communities (including Blackfeet and Confederated Salish and Kootenai Tribe members), the alternatives would have negligible, negative, short-term impacts on local and regional communities.

#### *Extension of Operating Season*

Extending the operating season of various lodge facilities and associated accommodations would allow visitors increased opportunities to stay in Glacier National Park and increase revenues and employment opportunities, resulting in minor increases in visitor and employee spending that would result in a positive, long-term benefit for the local and regional economies. In addition, the longer operating season would shorten the off-season when many of the maintenance and new construction activities occur, resulting in negligible negative, long-term impacts. The operating season of individual facilities might require temporary seasonal adjustments to avoid interfering with necessary maintenance and construction projects.

#### **Impact Analysis for Necessary and Appropriate Services Alternatives**

Expanding commercial services would increase employment opportunities, resulting in negligible to minor, positive long-term impacts on regional and local communities.

Alternatives that would develop new business opportunities include a private vehicle shuttle service and guided underwater diving. Alternatives that would enhance existing services include: expanding boat tours and transportation on Lake McDonald and Two Medicine Lake, and expanding guided horseback riding in the Two Medicine and St. Mary areas. Providing firewood sales in campgrounds and additional public showers would increase revenue opportunities. These new business opportunities and enhanced services might increase visitation and visitor spending, resulting in negligible long-term, positive impacts on local and regional communities.

New interpretive services that would provide increased revenue opportunities include step-on guide services, guided underwater diving and guided motorcycle tours. Increased opportunities would also be provided by enhancing these existing services: guided interpretive vehicle tours, commercially guided bicycle tours, natural history and cultural day hiking opportunities, and the proposed doubling of the current day hiking use level. Increases in opportunities for interpretive services would result in negligible to minor, positive, long-term impacts on local and regional economies.

Improvements to Granite Park Chalet and the development of additional public showers both entail construction activities resulting in positive, short-term impacts on regional and local communities. A total of \$374,000 would be spent locally and regionally on the construction of Granite Park Chalet improvements under alternative B, resulting a negligible positive, short-term impact. A total of \$539,000 would be spent locally and regionally on the construction of Granite Park Chalet

improvements under alternative C, resulting a negligible positive, short-term impact on regional or local communities. Similarly, \$204,000 would be spent locally and regionally on the construction of public showers improvements under alternative B, resulting a negligible positive, short-term impact on regional or local communities.

### **Conclusion**

The alternatives for expanding commercial services would result in negligible to minor, positive long-term impacts on regional and local communities from increased revenue opportunities, associated employment, and increased visitation and visitor spending. Those alternatives that require construction activities (i.e., Granite Park Chalet and additional public showers) would also result in negligible positive, short-term impacts on regional and local communities from spending and employment generated.

### ***Apgar Developed Area***

- **Alternative A – Status Quo/No Action.** An estimated total of \$109,000 would be spent locally and regionally on improvements to the Apgar developed area and have a negligible positive, short-term impact on regional or local communities because the proposed spending level is relatively low.
- **Alternative B (Preferred).** A total of \$452,000 would be spent locally and regionally on the Apgar developed area, and would result in a negligible positive, short-term impact on regional or local communities because the proposed spending level is relatively low.

Extending the operation season of the Village Inn by eight weeks could result in negligible to minor, positive long-term benefits from increased revenue opportunities for all the concessioners, although it might increase shoulder season competition with businesses outside the park.

- **Alternative C.** A total of \$1,603,000 in spending locally and regionally would have a minor positive, short-term impact on regional or local communities because the proposed spending level is more substantial. Extending the operation season would have the same impacts as under alternative B.
- **Conclusion.** None of the alternatives would change the numbers of guest accommodations and employee housing capacity at the Apgar developed area; however, extending the season under alternatives A and B would have a positive, long-term impact from increased revenue opportunities. Construction-based investments would impact the regional and local communities because some of the investment amounts would be spent in the region. While the impacts from alternatives A and B on the local economy are negligible, impacts from the higher spending level in alternative C would have a minor, positive impact.

### ***Lake McDonald Developed Area***

- **Alternative A – Status Quo/No Action.** A total of \$1,443,000 would be spent locally and regionally on improvements to the Lake McDonald developed area, resulting in a minor positive, short-term impact on regional or local communities because the proposed spending level is relatively low.
- **Alternative B.** A total of \$3,365,000 would be spent locally and regionally, having a minor positive, short-term, impact on the regional and local economy.

Extending the operation season of the Lake McDonald Lodge, General Store, food services, and other visitor accommodations five weeks could result in negligible to minor, positive long-term benefits from increased revenue opportunities for all concessioners, although the extended season might increase shoulder season competition with businesses outside the park.

- **Alternative C (Preferred).** The slight increase in guest and employee accommodations would have minor positive, long-term impacts on the local and regional economy. A total of \$6,470,000 would be spent locally and regionally. Construction-based expenditures would have a minor positive, short-term impact on the regional and local economy. Extending the operating season would have the same impacts as under alternative B.
- **Conclusion.** Alternative B would have a negligible negative, long-term impact on the regional and local economy from reducing guest accommodations by 0 to 10 rooms, resulting in reduced visitor spending. Alternative C would have a negligible positive, long-term impact by adding 10-20 guest rooms. Both alternatives would have a negligible to minor, positive, long-term impact from an extended season. All alternatives would have a minor positive, short-term impact on the regional and local economies.

#### *Rising Sun Developed Area*

- **Alternative A – Status Quo/ No Action.** A total of \$905,000 would be spent locally and regionally on improvements to the Rising Sun Developed Area. Construction-based spending would have a negligible positive, short-term impact on regional or local communities because the proposed spending level is relatively low.
- **Alternative B.** The addition of 11 employee housing beds would have a negligible positive, long-term impact on local and regional communities. A total of \$1,637,000 would be spent locally and regionally. This construction project would have a minor positive, short-term impact on the regional and local economy.

Extending the operating season of the Rising Sun Motor Inn, Coffee Shop, and General Store/Motel/Dormitory five weeks could result in negligible to minor, positive, long-term benefits from increased revenue opportunities for all concessioners, although the extended season might increase shoulder season competition with businesses outside the park.

- **Alternative C (Preferred).** The addition of 3-8 guest rooms and 24 employee housing beds would have a negligible positive, long-term impact on local and regional communities. A total of \$2,340,000 would be spent locally and regionally. This spending would have a minor positive, short-term impact on the regional and local economy. Extending the operating season would have the same impacts as under alternative B.
- **Conclusion.** Alternatives B and C would have negligible positive, long-term impacts on the regional and local economies from changes to guest accommodations, and negligible to minor positive, long-term impacts from extending the operating season. Alternative C would have a minor positive, long-term impact from the increase in employee housing. All alternatives would have a positive, short-term impact on the regional and local economy from construction activity, varying in magnitude from negligible to minor.

***Two Medicine Developed Area***

- **Alternative A – Status Quo / No Action.** A total of \$194,000 would be spent locally and regionally on the Two Medicine developed area. The construction-based spending would have a negligible positive, short-term impact on regional or local communities because the proposed spending level is relatively low.
- **Alternative B (Preferred).** A total of \$321,000 would be spent locally and regionally on the Two Medicine developed area. The expenditures under Alternative B would have a negligible positive, short-term impact on regional or local communities from construction activity.

Extending the operating season for the General Store four weeks could provide a negligible positive, long-term benefit due to increased revenue opportunities for all concessioners, although the extended season might increase shoulder season competition with businesses in East Glacier.

- **Conclusion.** Both alternatives would entail negligible positive, short-term and long-term impacts on the regional and local communities from construction-based spending, and extended operating seasons. Alternative B would also have a negligible positive, long-term benefit from extending the operating season.

***Many Glacier Developed Area***

- **Alternative A – Status Quo/No Action.** A total of \$5,474,000 would be spent locally and regionally on improvements to the Many Glacier developed area. The construction-based expenditures would have a minor positive impact on regional and local communities.
- **Alternative B.** The increase of 4 to 14 guest rooms would result in a negligible positive, long-term impact. A total of \$6,250,000 would be spent locally and regionally on the Many Glacier developed area. Spending under this alternative would have a minor, positive impact on regional or local community economies.

Extending the operating season of the Many Glacier Hotel and other accommodations two weeks could result in negligible, positive long-term benefits from increased revenue opportunities for all concessioners, although the extended season might increase shoulder season competition with businesses outside the park and the Blackfoot Indian Reservation.

- **Alternative C (Preferred).** Adding 14 to 24 guest rooms would result in a minor positive, long-term impact. An increase of as many as 20 employee beds and improvements in employee living conditions would have a minor positive, long-term impact. An estimated \$8,380,000 would be spent on construction at the Many Glacier developed area, having a minor, positive impact on the local and regional economies. Extending the operating season would have the same impacts as under alternative B.
- **Conclusion.** Alternatives B and C add guest accommodations to the Many Glacier developed area, having a negligible to minor, positive impact on local and regional economies from the increase in visitor spending. Extending the operating season would have negligible positive, long-term benefits. Construction-based spending under all alternatives would have a minor positive, short-term impact on the regional and local economy.

***Swiftcurrent Developed Area***

- **Alternative A – Status Quo/No Action.** A total of \$607,000 would be spent locally and regionally on the Swiftcurrent developed area. These expenditures would have a negligible positive, short-term impact on regional or local communities.
- **Alternative B (Preferred).** Employee housing would increase by up to 65 additional beds, entailing a minor positive, long-term impact. A total of \$2,154,000 would be spent locally and regionally within the Swiftcurrent developed area. The spending would have a minor positive, short-term impact on regional or local communities.

Extending the operating season of the visitor accommodations and Restaurant/Store three weeks could result in negligible positive, long-term benefits from increased revenue opportunities for all concessioners, although the extended season might increase shoulder season competition with businesses outside the park and the Blackfeet Indian Reservation.

- **Alternative C.** Up to 63 additional employee housing beds would result from improvements, having a minor positive, long-term impact. A total of \$2,120,000 would be spent locally and regionally on the Swiftcurrent developed area. Spending under alternative C would have a minor positive, short-term impact on the local and regional economies. Extending the operating season would have the same impacts as under alternative B.
- **Conclusion.** Both alternatives B and C would have a minor positive, long-term impact on local and regional economies from increased spending in the area. Construction-based spending under these alternatives would have minor positive, short-term impacts, while alternative A would have a negligible positive, short-term impact on the regional and local economy. Extending the season would have negligible positive, long-term benefits.

**Summary Conclusion**

Between 14 and 28 additional guest rooms would be added under alternative C and the preferred alternative for all developed areas. The added number of rooms represents a range increase in lodging capacity of 2.7% to 5.4%. For all developed areas combined, the impact from increased lodging is negligible and positive. However, impacts for the alternatives vary among sites, from negligible to minor and positive, and all impacts would be long-term.

The employee housing capacity could increase by a range of 65 to 121 beds, or as much as 22% over the existing number of beds. However, it is possible that the employee housing needs for Many Glacier and Swiftcurrent could be significantly reduced by the combination of alternatives selected for those two areas.

All of the preferred alternatives would result in a moderate positive, long-term impact from enhancing the quality, safety and capacity of employee housing. This improvement would allow concessioners to retain a diverse, qualified staff allowing for the extension of the operating season and resulting in a minor positive, long-term impact on local and regional communities. While improved employee housing might affect the concessioners' incentive to hire locally, this would affect a small number of prospective employees, based on the size of the local workforce currently working for concessioners in the park. To offset this potential negative impact, concessioners are encouraged to recruit and hire locally, including Blackfeet and Confederated Salish and Kootenai Tribe members.



The extension of the developed areas' operating seasons would result in positive, long-term impacts on revenues and employment opportunities; although shortening the off-season when much of the maintenance and construction work occurs could result in a negligible negative, long-term impact on local and regional communities.

Estimated construction-based spending in regional and local communities would be in the range of \$8.7 million to \$22.0 million, depending on the alternative selected for each site. Including both direct and indirect spending, a range of \$9.9 million to \$30.8 million would be spent in the regional and local communities. An increase in construction spending and employment during the implementation of the alternatives would have a minor positive, short-term impact on regional and local communities. A potential increase in wages of the regional and local general building construction workforce by 4.1% to 10.0% would be significant during the peak construction period. However, the peak construction period would be expected to last about three years, diminishing over the remaining years of the plan's implementation. The modest magnitude of construction-based spending in the regional local economy relative to the size of the surrounding communities indicates that impacts on the overall economy would likely be negligible. Direct construction-based spending would amount to a range of 0.08% to 0.20% of the total regional wages during the three peak years of construction.

Expanding commercial services could increase employment opportunities and cause negligible to minor positive, long-term impacts. If construction and rehabilitation work takes place during the visitor season, minor to moderate adverse, short-term impacts on concessioner operations would occur. If concessioner operations are adversely affected and a decrease in guest rooms occurs during any single visitor season, a negligible to minor, short-term impact to regional and local economies would result from a decrease in visitor spending.

Overall, it is not anticipated that the commercial services plan would have a significant impact on visitor spending, although the opportunity for higher spending levels per visitor would be enhanced through the commercial services improvements. The short-term, positive impacts created by construction work and the long-term preservation of visitor use facilities together prevent any negative long-term impact on the local and regional communities. Otherwise, if the commercial services plan were not implemented, a negative impact could result from neglect and lower levels of service.

### **Cumulative Impacts**

Cumulative impacts are anticipated from the commercial services plan in combination with the anticipated Going-to-the-Sun Road Rehabilitation project, the continuing Many Glacier Hotel renovation and the expected continuation in strong regional construction activities associated with population growth in the three-county region. A regionwide increase in construction spending and employment associated with other construction projects would have a moderate positive, short-term impact on regional and local communities. The local construction workforce might be expanded in the short-term, or alternately, additional workers from outside local and regional communities might take advantage of job opportunities from these additive projects.

## **THE BLACKFEET AND THE CONFEDERATED SALISH AND KOOTENAI TRIBES**

### **Methodology**

Impacts on the Blackfeet Nation and Confederated Salish and Kootenai Tribes were qualitatively assessed based on information obtained through consultation with park staff.

Thresholds of impact are defined in Table 4.1.

- *Negligible*: Effects from changes would be below or at the level of detection.
- *Minor*: Effects would be detectable but changes in employment rates or cultural impacts would be slight.
- *Moderate*: Effects would cause an apparent change in employment rates or would have apparent cultural impacts.
- *Major*: Effects would have an important impact on employment rates or park resources that have religious or cultural significance to the Blackfoot or Confederated Salish and Kootenai Tribes.
- *Short-term*: Would occur during construction
- *Long-term*: Would be continual or permanent

### **Impact Analysis For Necessary and Appropriate Services Alternatives**

#### ***All Services and Developed Areas***

None of the alternatives would be expected to have any adverse socioeconomic impacts on the Blackfoot and the Confederated Salish and Kootenai Tribes (Salish and Kootenai). The alternatives are not expected to alter the current level of recruiting and hiring of members of the Blackfoot and the Salish and Kootenai for concessioner- and construction-related employment in the developed areas. Service and guided activity alternatives that propose to add additional operators or concessioners, however, could have a positive socioeconomic impact on the Blackfoot, and the Salish and Kootenai by creating more employment opportunities. Although additional operator and concessioner contracts would not be offered or awarded solely to the Blackfoot or the Salish and Kootenai, opportunities to bid on and receive contracts and additional employment opportunities for the tribal members would be created.

Additionally, it is anticipated that the alternatives would have no impact on park resources that have religious or cultural significance to the Blackfoot or the Salish and Kootenai.

#### **Conclusion**

None of the alternatives would be expected to have any adverse socioeconomic or cultural impacts on the Blackfoot or the Confederated Salish and Kootenai Tribes of the Flathead Reservation. Service and guided activity alternatives that propose to add operators or concessioners would create additional contract or employment opportunities and could have moderate long-term, positive impacts on the Blackfoot and the Confederated Salish and Kootenai Tribes.

#### **Cumulative Impacts**

No cumulative impacts are anticipated.

## VISITOR USE AND EXPERIENCE

### Methodology

Impacts on visitor use and experience were assessed using data and information obtained through consultation with park staff and the architectural and planning consultant for the commercial services plan. Information gathered from park files, review comments by park staff, and other environmental assessments and environmental impact statements was also used in the analysis.

Thresholds of impact are defined in Table 4.1.

- *Negligible*: Changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the impacts.
- *Minor*: Changes in visitor use and/or experience would be detectable, although the changes would be slight.
- *Moderate*: Changes in visitor use and/or experience would be apparent.
- *Major*: Changes in visitor use and/or experience would be readily apparent and would have important consequences.
- *Short-term*: Would occur during implementation
- *Long-term*: Would be continual or permanent

### Impacts Common to All Action Alternatives

**Operating seasons.** Extending the operating seasons for the developed areas would provide visitor services earlier and later than has been typical during the past few years. For visitors, there will be more days available for visits during the early and late seasons. These extended seasons provide opportunities to visit key areas of the park without crowds and in cool weather, and to experience late spring and early fall in the high country. The result is a minor positive, long-term benefit for visitors who are free of school schedules.

**Impacts from construction.** All alternatives involving construction or rehabilitation would result in short-term, site-specific, adverse impacts on visitors if work occurs during the visitor season. Increased noise, the presence of construction equipment and potential temporary closure of some guest accommodations or services during construction would have minor site-specific, adverse, short-term impacts on visitor use and experience.

### Impact Analysis For Necessary and Appropriate Services Alternatives

**Alternative A – Status Quo/No Action.** Alternative A for the services discussed below would have no new effects on visitor use and experience.

#### Action Alternatives

**Granite Park Chalet: Alternative B (preferred)** would have minor positive, long-term impacts from improved restroom facilities, availability of potable water in the chalet and consequent improved sanitation



levels for food preparation and hygiene. Alternative C would have the same impact as alternative B, but would have a longer negative impact from major construction.

**Commercially Guided Day Hiking: Alternative B (preferred)** limits the size of guided hiking groups both in day use and backcountry zones. The effect on visitors would be minor, positive and long-term by providing trails in better condition, and opportunities to experience the wilderness of the park with fewer hikers. This alternative would also enable visitors to be in closer proximity to guides giving interpretive talks.

**Guided Underwater Diving Tours: Alternative B (preferred)** would add the new educational benefit of studying underwater lake environments, enabling visitors to appreciate the rich variety of ecosystems in Glacier National Park. The result would be a negligible to moderate, positive, and long-term effect.

**Firewood Sales: Alternative B (preferred)** would increase the availability of firewood, enabling visitors to be comfortable in the cool evenings and erratic weather that are part of the experience in northern parks. It would also provide more opportunities for visitors to use fire pits and fireplaces, enhancing the experience of the park's rustic setting. These actions would have a negligible, positive, long-term impact. However, experiencing the pristine park environment could be affected by smoke from additional fires, having a minor negative, short-term effect for some visitors.

**Public Showers:** The effects of **alternative B (preferred)** would be moderate positive, and long-term for visitors who camp or stay in the cabins at Swiftcurrent by providing easy access to showers and improved sanitation at campgrounds. Overall, because more visitors use hotel or motel accommodations, the effect would be negligible, site-specific and long-term.

**Boat Tours and Transportation (Boat Taxi):** In **alternative B (preferred)**, the effect would be minor positive, and long-term for visitors seeking the historic boat trip experience to Lake McDonald Lodge; with its historic views and cultural resource education. Shuttle trips between Apgar and the lodge for shopping or dining would also have a negligible positive, long-term effect.

**Guided Interpretive Motor Vehicle Tours and Public Transportation:** These services would continue to affect visitation in a negligible, positive, and long-term manner. In alternative B, providing new services for vehicle drop-off and pick-up, allowing visitors to unload gear and leave their vehicles in security while touring, riding or hiking would have a minor positive, long-term effect. For sightseers who use the parking lots, freeing valuable parking spaces at popular destination locations under this alternative would provide a moderate positive, long-term benefit.

**Horseback Riding and Horse packing services:** The effect of **alternative C (preferred)** on visitors seeking a western horse experience would be minor positive, long-term. For other visitors, the continued occurrence of flies, waste on trails and odors in developed areas would have moderate negative, short-term effects.

**Commercially Guided Bicycle Tours:** Under **alternative B (preferred)**, the bicyclists, particularly first-time riders, would experience less crowding and safer riding conditions, resulting in minor, positive, and long-term impacts. For motoring visitors, safer lane traffic and shorter waits on uphill road sections would result in negligible positive, and long-term impacts during the occasional encounter with cycling groups.

**Commercial Step-On Guide Services:** In **alternative B**, skilled guides for bus and private vehicle tours in the park would personalize the visitor experience, resulting in minor positive, and long-term impacts. Seniors, foreign visitors, and persons with disabilities would benefit from the flexibility and convenience of this service.

## Conclusion

Construction would cause some minor short-term, adverse impacts during implementation. All preferred alternatives would have an overall minor, positive, long-term effect on visitor use and experience. Commercially guided day hiking, bicycling, motorcycle, and commercial step-on tours would have a parkwide impact along transportation corridors, while impacts from the remaining services would be local or random. Alternative A for horseback riding / packing would have both positive and negative effects.

There would be no significant adverse impacts on visitor services or opportunities whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the *General Management Plan* (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of visitor services as a result of the implementation of any of the alternatives.

**Alternative A – Status Quo/No Action for all developed areas:** For all the developed areas discussed below, visitors would continue to benefit from continued services maintained under alternative A. In addition, this alternative would include changes to facilities to resolve needed building life/safety and code compliance issues. Besides minor to moderate, negative, short-term impacts because of inconvenience and noise, these construction projects would impose few constraints on visitors since the work would be scheduled over more than ten years and would affect only a few sites during any one year. Impacts under alternative A also apply to the other alternatives.

## Action Alternatives

### *Apgar Developed Area*

- **Alternative B (Preferred).** For visitors staying in Apgar Village, improving Village Inn room privacy, separating pedestrians and traffic, expanding opportunities for bicycling, and creating an enhanced lakeshore experience for pedestrians would result in moderate, positive, long-term effects. Extending the operating season of the Village Inn eight weeks (three weeks earlier and five weeks later) would result in increased opportunities for visitors to stay overnight. Day use visitors might experience increased activity and noise, less wildlife and some degradation of resources. There would be moderate positive and negative, long-term effects. For visitors who briefly sightsee in Apgar, the impact would be negligible.
- **Alternative C.** Increased pedestrian/bicycling opportunities, modern accommodations, and a dramatic sense of entry to the lakeshore and mountain views in this gateway community for the park would create a major positive, and long-term impact. The impact on visitors who anticipate lakeshore room accommodations with a view, this alternative's effect would be major negative, and long-term. Impacts from expanding the operating season in alternative B also apply to this alternative.
- **Conclusion.** Alternative A has only a negligible, positive, long-term effect on visitors since proposed actions are enhancements rather than a change to the Apgar experience. The alternative B (preferred) effect is more moderate long-term, and positive since actions provide lodging privacy, create better pedestrian / traffic separation, expand the opportunities for cycling.

Alternative C expands this effect by radically changing the village experience. A visitor whether first-time or returning would experience a markedly different lakeshore and lodging experience.

There would be no significant adverse impacts on visitor services or opportunities whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the *General Management Plan* (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of visitor services as a result of the implementation of any of the alternatives.

#### ***Lake McDonald Developed Area***

- **Alternative B.** Making services more readily available and reducing pedestrian/traffic congestion would have positive impacts. Extending the operating season of Lake McDonald Lodge, the General Store, and other visitor accommodations by five weeks (two weeks earlier and three weeks longer) would allow visitors to stay overnight and utilize the commercial facilities. The extended season would help offset the minor reduction in accommodations. The effects of these actions would be positive, minor to moderate and long-term. Current off-season visitors might be affected by an increase in traffic, noise and activity from current levels. There could be less wildlife and some possible increase in resource degradation. For these visitors, there would be a negative moderate, and long-term affect.
- **Alternative C (Preferred).** Adding a boat trip from Apgar to Lake McDonald would allow visitors to enjoy a leisurely trip and experience the historical approach to the area. In addition, increasing accommodation options, visually unifying the site architecture, and improving traffic capacity and safety would benefit visitors. Effects would be major long-term, and positive on the general visitor experience. The impacts from extending the operating season under alternative B also apply to this alternative.
- **Conclusion.** Much of the construction under all alternatives could be scheduled during the non-peak and closed months, resulting in a negligible, adverse, short-term impact on the early or late season visitor experience. However, the extensive building program under alternative C would entail limited food services and dormitory work. Alternative B, and to a greater extent alternative C (preferred), would enhance the historic setting, allow for greater comfort amenities, and return the site area to day and overnight use by guests only. The effect of these actions would be major, positive, and long-term.

There would be no significant adverse impacts on visitor services or opportunities whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the *General Management Plan* (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of visitor services as a result of the implementation of any of the alternatives.

#### ***Rising Sun Developed Area***

- **Alternative B.** Extending the operating season of the Coffee Shop and General Store/Motel/Dormitory and visitor overnight accommodations five weeks (three weeks earlier and two weeks longer) would also increase the opportunities for visitors to stay in the Rising Sun area and utilize the facilities. Visitors might experience an increase in noise, traffic and activity from current levels. There would be less wildlife and some possible increase in resource degradation. In addition, this alternative would add cabins and expand shopping, public showers, and self-service

laundry services. Impacts would be positive and negative, moderate and long-term.

- **Alternative C (Preferred).** Changing the current mixture of motel rooms and cabins combined with the separation of employee and visitor areas would result in higher room availability and a quieter experience with moderate long-term, and positive effects on visitors. Impacts from expanding the season under alternative B also apply to this alternative.
- **Conclusion.** Strategic scheduling under alternative A could result in negligible short-term, adverse impacts from construction. Other actions under this alternative would have minor long-term, positive impacts on the typical visitor. Alternative B would expand the services, resulting in moderate long-term, positive and negative impacts. Under alternative C, an increase in accommodations and quiet would have a moderate long-term, positive impact.

There would be no significant adverse impacts on visitor services or opportunities whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the *General Management Plan* (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of visitor services as a result of the implementation of any of the alternatives.

#### ***Two Medicine Developed Area***

- **Alternative B (Preferred).** An enhanced lakeshore, historically appropriate architecture / site design, and safe connections to camping areas in this alternative would result in major positive, long-term impacts. Extending the operating season for the General Store four weeks (one week earlier and three weeks later) would provide extended services to visitors using the area. The affects would be positive, minor and long term.
- **Conclusion.** Strategic scheduling under alternative A could result in negligible negative, short-term impacts from construction. A similar impact during construction in alternative B would be expected. Visitors would be able to enjoy unencumbered natural views, lakeshore educational opportunities, and safe, accessible pathways between trails, campground, store, and lakefront activity areas. The effects on the visitor would be major, long-term, and positive.

There would be no significant adverse impacts on visitor services or opportunities whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the *General Management Plan* (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of visitor services as a result of the implementation of any of the alternatives.

#### ***Many Glacier Developed Area***

- **Alternative B.** Extending the operating dates of the Many Glacier Hotel and other accommodations two weeks (one week earlier and one week later) would increase the opportunities for visitors to stay in the Many Glacier area and utilize the facilities. This extension, combined with opportunities to experience the most scenic views, learn about the area's history, and enjoy the original hotel lobby experience would have a positive, moderate and long-term effect. There could be some moderate negative, long-term effects with less wildlife and some possible increase in resource degradation due to an increases in noise, traffic and activity during

extended season weeks.

- **Alternative C (Preferred).** Replicating additional hotel interior spaces and providing interpretive guides would enhance educational opportunities for visitors. Removing all employee activities from the hotel and the rehabilitated Lower Dormitory would increase room opportunities for guests and create a formal resort atmosphere, with separation between employees and visitors. Together, all of these actions would have major long-term, positive effects on the visitor experience. There would be some negative, moderate, and long-term affects on wildlife and possible increases in resource degradation due to additional noise, traffic and activity from new dormitory areas. The impacts under alternative B from extending the season would also apply to alternative C.
- **Conclusion.** Although alternative A would have localized, minor to moderate, adverse impacts during construction, the completed improvements would preserve the hotel's historic integrity and have a moderate positive, long-term, effect on the visitor experience. Impacts under alternative B would also have moderate positive, long-term impacts by further enhancing the character defining features of the area's cultural landscape and the hotel. Alternative C would have the greatest impact on visitor use by revitalizing additional historic elements of the hotel, adding guest accommodations and separating the employee area from guests. These actions would result in a major positive, long-term impact.

The action alternatives would have some negative, moderate, and long-term affects on wildlife, with possible increases in resource degradation due to additional noise, traffic and activity.

There would be no significant adverse impacts on visitor services or opportunities whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the *General Management Plan* (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of visitor services as a result of the implementation of any of the alternatives.

### ***Swiftcurrent Developed Area***

- **Alternative B (Preferred).** Emphasizing the historic cabin ring setting, providing safer walk paths, and lowering noise levels in guest areas in conjunction with new cabin-only guest accommodations would result in moderate negative, long-term impacts for some bus tour groups who prefer motel rooms with individual bathrooms or a block of rooms grouped together. In contrast, the availability of more 1930s-style cabins would provide many visitors with an historic, rustic experience and result in moderate positive, long-term impacts. Extending the operating dates of the Restaurant/Store and visitor accommodations three weeks (two weeks earlier and one week later) would increase the opportunities for visitors to stay in the Swiftcurrent area and utilize the facilities. Visitors might experience an increase in noise, traffic and activity from current levels. There would be less wildlife and some possible increase in resource degradation. The effects would be positive and negative, moderate and long-term.
- **Alternative C.** Preserving the current mixture of motel rooms and cabins, adding new accommodations, and improving safety in cabin areas would result in a minor, long-term positive impact on visitor experiences. Impacts from extending the operating season in alternative B also



apply to alternative C.

- **Conclusion.** Strategic scheduling under alternative A could result in negligible short-term, adverse effects from construction. Under alternative B, overall improvements would have a moderate positive, long-term effect on visitors by preserving the rustic experience of cabin rings and improving visitor safety. Other than adding rooms, alternative C would have less impact on the visitor experience, and impacts would therefore be minor long-term, and positive. With an extended season, there could be less wildlife and some possible increase in resource degradation. These effects could be negative, moderate and long-term for some early and late season visitors.

There would be no significant adverse impacts on visitor services or opportunities whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the *General Management Plan* (NPS 1999) or other relevant National Park Service planning documents. Consequently, there would be no impairment of visitor services as a result of the implementation of any of the alternatives.

### Cumulative Impacts

Visitor services have changed over the years in response to the use of automobiles, a desire for educational opportunities, accessibility requirements, and the demand for camping options. Impacts on visitor experiences extend beyond the boundaries of the park where demand for dining, sales, and accommodations increases with cycles of visitation. However, with the park as the destination goal, the overall effect on the visitor experience outside the park would be minor, positive, and long-term as long as the quality of facilities in the park is maintained.

Continuing repairs and improvements to existing facilities, especially at Many Glacier and Lake McDonald, would further preserve the historic assets and affect future visitor experiences in a minor to moderate, long-term, positive manner. Planned improvements in all developed areas would resolve current building condition and code problems. Upgrading of sewer and water utilities at key locations would result in safer and more environmentally sensitive facilities, and improve visitor accommodations and services. Reasonably foreseeable projects for improving facilities would have localized impacts on the visitor experience, but a cumulatively moderate, positive, long-term effect. The combined impact of all actions both inside and outside the park for any of the alternatives would have a minor to moderate, positive, long-term, regional effect on visitor experience and use.

## ENERGY CONSUMPTION

### Methodology

Current energy sources and requirements were assessed through consultation with Glacier National Park staff. Assessments of potential impacts on energy consumption were based on comparison between existing conditions and anticipated future conditions associated with implementation of the alternatives.

Thresholds of impact are defined in Table 4.1.

- *Negligible:* Effects would be below or at the level of detection. The effect would be slight.



- *Minor:* The effects would be detectable, but impacts would be small and would not have an appreciable effect on parkwide energy consumption.
- *Moderate:* The effects would result in readily apparent and widespread changes in energy consumption.
- *Major:* The effects would be readily apparent and would cause substantial changes to energy requirements on a regional scale.
- *Short-term:* Would occur during implementation
- *Long-term:* Would be continual or permanent

### **Impact Analysis For Necessary and Appropriate Services Alternatives**

#### ***Granite Park Chalet***

- **Alternative A – Status Quo/No Action.** This alternative would have no new impact on energy consumption. Sanitary waste would continue to be flown out by helicopter, and propane would continue to be the available energy source.
- **Alternatives B (Preferred) and C.** Improving the sanitary system under the Preferred Alternative would allow sanitary waste treatment to occur on-site, and energy requirements to haul wastes by helicopter would be eliminated. Under alternative C, providing full service dining and lodging accommodations would result in a minor increase in non-grid energy consumption from the current level of use at the chalet. The proposed addition of a photovoltaic system to the chalet under alternatives B and C, however, would reduce propane use.

#### ***Boat Tours and Transportation (Boat Taxi)***

- **Alternative A – Status Quo/No Action.** Current interpretive boat tours and transportation services would have no new impact on energy consumption.
- **Alternative B (Preferred).** Added tour boat services on Lake McDonald would result in a negligible increase in energy consumption.

#### ***Guided Interpretive Motor Vehicle Tours and Public Transportation***

- **Alternative A – Status Quo/No Action.** Assuming that motor vehicle tours, and shuttle and taxi services reduce the overall number of vehicles on park roads, continuing to provide these services under alternative A would continue to reduce overall energy consumption by vehicles in the park.
- **Alternative B (Preferred).** Expanding these services and providing private vehicle shuttle services under alternative B would have a negligible influence on the amount of vehicles currently on park roads and would result in a negligible decrease in energy consumption.

#### ***Horseback Riding and Horse Packing Services***

- The addition of guided horse trips on the Dry Fork, Mt. Henry and Autumn Creek - East Glacier trail could result in a slight increase in energy consumption from stock shuttles.

**Conclusion**

Equipment and vehicles used for construction and maintenance under all alternatives would result in a negligible short-term increase in park-wide energy consumption.

Alternative A for Granite Park Chalet would have no new impact on energy consumption. Alternatives B and C would result in a minor, long-term decrease in energy consumption because sanitary waste would be treated on-site, and helicopters would no longer be required to haul sanitary waste from the chalet. Under alternative C, providing full service accommodations would result in a negligible, long-term increase in energy consumption.

Alternative A for tour boat and transportation services would have no new impact on energy consumption. Under alternative B, added services would have only a negligible, long-term increase on energy consumption.

Alternative A for interpretive motor vehicle tours and public transportation would continue to reduce overall energy consumption from vehicles. Under alternative B, expanded services would cause a negligible, long-term decrease in energy consumption.

***All Developed Areas***

*Construction and maintenance activities:* Equipment and vehicles used during the construction and repair of visitor service facilities would result in a negligible short-term increase in park wide energy consumption.

*Long-term operation of developed areas:* The operation of new guest and employee facilities in Lake McDonald, Rising Sun, Many Glacier and Swiftcurrent developed areas would result in a negligible increase in energy consumption. Energy-conserving technology would be incorporated in the design of new facilities. Improvements to existing facilities in the developed areas such as electrical upgrades and the replacement of older heating units, as well as the installation of new windows, would improve energy efficiency in some existing buildings. Overall, any increase in energy consumption from the developed area alternatives would be negligible.

**Conclusion**

Equipment and vehicles used for construction and maintenance under all alternatives would result in a negligible short-term increase in park-wide energy consumption.

Overall impacts from actions proposed in the Apgar Village, Lake McDonald, Rising Sun, Many Glacier and Swiftcurrent developed areas would result in a negligible, long-term, park wide increase in energy consumption.

There would be no significant adverse impacts on energy resources whose conservation is 1) necessary to fulfill specific purposes identified in the establishing legislation of Glacier National Park; 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or 3) identified as a goal in the 1999 *General Management Plan* or other relevant National Park Service planning documents. Consequently, there would be no impairment of energy resources as a result of the implementation of any of the alternatives.

### **Cumulative Impacts**

Reasonably foreseeable future projects outside of the park, including road and bridge improvement projects, as well as U.S. Forest Service timber salvage and resource rehabilitation projects, would result in short-term increases in energy consumption by construction equipment. Going-to-the-Sun Road rehabilitation work inside the park would also cause increased energy consumption during construction. Additive impacts from energy use for future projects outside and inside the park combined with any of the alternatives would result in a minor short-term, regional increase in energy consumption. No long-term cumulative impacts on energy resources are anticipated.

## **LANDOWNERS IN AND ADJACENT TO PARK BOUNDARIES**

### **Methodology**

Alternatives were evaluated on the basis of data and other information gathered from consultation with park staff, and from examining Geographic Information System (GIS) thematic layers (available through the park's GIS coordinator), and survey reports. There are no private lands in Two Medicine, Many Glacier, Swiftcurrent or Rising Sun. Therefore, no impact analyses of these areas were conducted.

Thresholds of impact are defined in Table 4.1.

- *Negligible*: Changes would be below or at the level of detection.
- *Minor*: Changes would be detectable, although the changes would be slight.
- *Moderate*: Changes would be apparent.
- *Major*: Changes would be readily apparent and would have important consequences.
- *Short-term*: Would occur during implementation
- *Long-term*: Would be permanent

### **Impact Common to All Alternatives**

Temporary inconveniences to landowners, such as increased noise and congestion from construction vehicles and equipment might occur from nearby construction and rehabilitation activities; however, these adverse impacts would be short-term and minor. Disrupted quiet and decreased natural environment surrounding private lands due to potential increased development adjacent to private lands would cause minor to moderate long-term, adverse impacts.

Although the commercial services plan alternatives are not expected to significantly increase the total number of visitors to the park, improving the developed areas and providing additional visitor opportunities could attract more park visitors to developed areas or could increase the average amount of time visitors spend in developed areas. A potential increase in visitors in the Apgar Village developed area could increase the commercial value of private property. Impacts from a potential increase in commercial value of private property would depend on the alternative but would be long-term and positive. The Apgar Village developed area contains private land that has been developed for residential and commercial uses, whereas the Lake McDonald developed area is primarily residential.

There would be no impacts on private lands from necessary and appropriate commercial services that occur outside the developed areas, such as guided hiking, backpacking and boat tours, etc.

### **Impact Analysis For Necessary and Appropriate Services Alternatives**

#### ***Apgar Village Developed Area***

- **Alternatives A – Status Quo/No Action, B (Preferred) and C** would have short-term adverse impacts during construction as described above for all alternatives. In addition, alternatives B and C could disrupt quiet and natural environment surrounding private lands as described above for all alternatives if new parking lots and/or lodging are constructed adjacent to private land. This would cause minor long-term, adverse impacts on private landowners. All alternatives would improve parking and circulation, which would have moderate positive, long-term impacts on landowners. Under alternative C, if the Village Inn is removed from the lakeside, the private land currently situated behind the Village Inn (southwest of the Village Inn) would become lakefront property. This action would significantly increase the commercial value of this private property and would have a major long-term, positive impact on the landowners.
- **Conclusion.** Both negative and positive impacts on private landowners would result from the action alternatives. Construction activities would cause short-term adverse impacts. Disruption of quiet resulting from new buildings and/or parking lots located closer to current residential properties would cause minor long-term, site-specific negative impacts. The potential increase in commercial property value through enhanced lakefront visibility, accessibility, circulation and parking would have a major long-term, positive impact for landowners.

#### ***Lake McDonald Developed Area***

- **Alternatives A – Status Quo/No Action, B and C (Preferred)** would have short-term adverse impacts during construction as described under impacts common to all alternatives. Adaptive use of Stewart Motel for management-level employee housing in alternative B would have negligible, adverse impacts on adjacent landowners. Employee recreational and support facilities would be located away from private lands behind the existing Coffee Shop and should have no direct effect on the private landowners. The reconstruction of motel facilities at the Stewart Motel site in alternative C would have minor short term, adverse impacts on the adjacent landowners.
- **Conclusion.** Impacts on landowners in all alternatives would be minor and adverse. Alternatives B and C would disrupt the quiet that is adjacent to private lands during construction, resulting in minor short-term, site specific, adverse impacts on landowners.

### **Cumulative Impacts**

There would be no cumulative impacts from projects occurring outside the park combined with any of the alternatives. Additive impacts from the Going-to-the-Sun Road rehabilitation and the commercial services plan alternatives could cause minor short-term, adverse cumulative impacts on private landowners in the park during construction.

## **RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY**

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This section describes whether any long-term management possibilities or the productivity of park resources are being traded for the immediate use of land under any of the alternatives.

Approximately 14-20 acres of land would be committed to a long-term use within the existing developed areas under all the action alternatives. New development would cause soil compaction, displaced wildlife and removal of vegetation. Noise and construction activities would also displace wildlife and disrupt visitors in the short term, but would not affect long-term productivity. Rehabilitation of historic facilities during the short term would result in enhanced long-term productivity of historic resources by preserving them. Upgrading facilities to comply with life safety, accessibility and building codes in the short term would also result in enhancement of long-term productivity to resources and visitors.

None of the commercial service alternatives would affect long-term productivity of park resources because they are not consumptive uses and do not require additional development in the park.

## **UNAVOIDABLE ADVERSE IMPACTS**

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This section summarizes unavoidable adverse impacts. An impact is unavoidable if the action would result in impacts that cannot be fully mitigated.

Short-term adverse impacts on water quality, soils, vegetation, wildlife, natural sound, air quality, historic resources, visual resources, energy consumption, and landowners in the park would be unavoidable for all alternatives. An increase in sedimentation from erosion of disturbed soils associated with construction and/or repair would cause minor to negligible short-term, adverse impacts on water quality. Soil erosion and compaction from equipment would cause unavoidable negligible, short-term, adverse impacts on soils. Temporary disturbance and vegetation trampling during all construction work would have negligible to minor, short-term adverse impacts on vegetation. All alternatives involving construction and/or repair would introduce temporary but increased noise into the park during construction, and unavoidable adverse impacts on natural sound would be minor and short-term. An increase in dispersed dust and exhaust emissions would cause unavoidable negligible to minor short-term, adverse impacts on air quality during construction, rehabilitation and maintenance. Unavoidable minor to moderate short-term, adverse impacts on historic resources would include temporary changes to the historic setting of a historic district or a historic building due to either the presence of construction equipment and materials, or actual temporary changes to buildings during rehabilitation work. Similarly, the presence of construction equipment would result in minor short-term, adverse impacts on visual resources. Equipment and vehicles associated with construction would cause a negligible but unavoidable short-term increase in parkwide energy consumption. Temporary inconveniences to landowners from nearby construction and rehabilitation activities would cause minor short-term, unavoidable impacts.

Adverse impacts on water quality from an increased amount of hardened surfaces in the developed areas would be unavoidable. Hardened, impermeable surfaces would reduce the amount of soil and vegetation available to filter runoff, thereby increasing pollution; however, drainage control measures

would be implemented to minimize impacts on water quality. The construction of new guest and employee facilities as well as new parking lots would cause unavoidable adverse impacts on soils, vegetation, and wildlife habitat. Long-term loss of soil productivity where new facilities and parking lots would be placed would be unavoidable. Similarly, some vegetation clearing, loss or degradation of wildlife habitat, and placement of new facilities in wildlife corridors would be unavoidable.

## **IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

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This section summarizes the irreversible and irretrievable commitments of resources that are associated with alternatives. Irreversible commitments cannot be changed over the long-term or are permanent. An impact to a resource is irreversible if the resource cannot be reclaimed, restored or otherwise returned to its condition before the disturbance. Irretrievable commitments are those that result in the loss of production or use of a resource. An impact to a resource is irretrievable if, once gone, the resource cannot be replaced.

The permanent placement of new buildings, parking lots and hardened pathways would result in an irreversible loss of between 14–20 acres of soil resources due to the long period of time that would be required to restore productivity to affected soils. The removal of a total of between 14–20 acres of vegetation for all alternatives together would cause an irretrievable commitment of vegetation as well as a loss in wildlife habitat, including federally and state-listed wildlife habitat. These are the only actions that would result in an irreversible and irretrievable commitment of resources. These are the only resources that would be irreversibly and irretrievably committed.

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