CHAPTER 4

4.0 ENVIRONMENTAL CONSEQUENCES

Photo 4.a – Upper Shale Creek south and west of Fox Reservoir

4.1 WILDERNESS RESOURCE
(Issue 1.8.1 – Chapter 1)

The effects of the project on wilderness values will be assessed through the issues and indicators discussed in Chapter One.

ALTERNATIVE ONE – Proposed Action

Effects on the Resource

1. Use of motorized equipment and mechanical transportation conflicts with the basic tenets of the 1964 Wilderness Act. (Amount and duration of intrusion)

The proposed action would require several pieces of motorized equipment and access via helicopter for several trips in and out of the reservoirs area. The proposal called for, in addition to the use of the K-max helicopter for and estimated 20 round trips: one gas powered generator, one generator welder, two portable cement mixers, two wheelbarrows, two 2" water pumps, one hand operated compactor, and one Case 1838 skid steer loader or equivalent. The duration of the project under this alternative would be 35 days.

This level of motorized intrusion in an established wilderness would be a significant impact to the wilderness resource. The very ambiance of the wilderness character in the immediate area of Fox and Crescent Reservoirs (1.0 to 1.5 mile radius) would be changed for the 35 days of project activity. The lack of motorized intrusion, including the sight, sound, smell and activity is one of the basic fundamental tenets of wilderness and the expectation that any visitor hopes and expects to find in a wilderness setting. For the duration of the project this fundamental aspect of wilderness would be forfeit.

2. Sustained and perpetual maintenance will involve motorized equipment and mechanized transportation for the life of the reservoirs. (Number of motorized intrusions per decade)

The very activity of repairing the reservoirs to serve their intended purpose requires that maintenance activity would be required in the future for as long as the reservoirs were necessary to provide downstream irrigation water. These repair activities would require, from time to time, the use of some motorized and/or mechanical transport to the reservoirs sites. Several other reservoirs in the High Uintas Wilderness of a similar age to the Fox and Crescent Reservoirs have required some maintenance activity requiring the use of motorized tools and equipment or mechanical transport. Examples include repair of the outlet work at Superior and Bluebell Reservoirs, each of which required helicopter transport of materials that could not be reasonably transported by livestock. There would be every reason to expect that these kinds of activities would be required in the future at Fox and Crescent Reservoirs as long as they serve as draw down reservoirs for irrigation purposes.

Most maintenance work would be minor, would usually done annually, and could be accomplished with primitive means of access and non-motorized

hand tools. It is estimated that once every 10 to 15 years or so, there would be a requirement to do more major repair to spillways and the outlet works that would result in a request to use motorized equipment and/or mechanical access. This correlates to about one expected motorized intrusion per decade – perhaps a bit less.

Thus, the decision to repair the reservoirs would add some future needs for motorized tools and equipment and/or mechanical access that would again be an impact on the fundamental tenet of wilderness – that of being free of these kinds of intrusions. The significance of these future activities would depend on their scope and duration – but they would inevitably happen.

3. Impact to wilderness visitors including noise, dust, and opportunities for solitude. (Number of days of project duration)

The activity required for the repair of the reservoirs would generate considerable noise and dust, and therefore greatly affect the visitor's wilderness experience. The fundamental wilderness tenet of having opportunities for solitude would be compromised for one to one and a half miles from the reservoir sites. Noise travels fairly long distances in the normally silent backcountry, and winds and breezes carry dust and smoke from the equipment fairly long distances.

The impact of noise, dust and the visitor's opportunity for solitude would be a significant impact to the wilderness resource and the ambiance a visitor expects from a wilderness setting. This impact would last for the duration of the project – 35 days.

4. Impacts to the physical resources of the wilderness including trails. (Number of pack trips)

The impacts to the physical resources of the wilderness would be confined to the reservoir area itself and perhaps some old borrow sites. The exception to this would be the impact of the project on the trails accessing the reservoirs. This alternative would require about 20 pack trips over the 35-day period of the project. This number of pack trips equates to about 180 horse trips. This level of horse use on trails would be fairly significant given the generally poor condition of the trails. It would increase the need for maintenance of the trails to keep them up to acceptable standards for safety and insure adequate and proper erosion control would be maintained.

5. Impacts to established campsites. (Degree of change in Site Impact Index)

It is anticipated that personnel working on the project would use existing campsites whenever possible. It would generally be more desirable to use already impacted sites in the wilderness than expand out to new sites. This could result in some competition for the established sites with the visiting public, but visitation is expected to be down during the active phase of project work, so this anticipated conflict would not be significant.

Impacts to established campsites were determined by monitoring each campsite through our standard wilderness campsite monitoring techniques. The Forest Service already has baseline data collected through monitoring work. This data uses the Site Impact Index as the indicator of campsite condition. By monitoring the conditions during and after the project, the Forest Service could determine if the campsite conditions were worsening through the camping associated with the project. The number of personnel required – from six to fourteen personnel for 35 days – would be a substantial increase over normal visitation for a similar 35-day period. As mentioned above it is expect that normal visitation would decrease, but this would not make up for the increase from project personnel. It is anticipated that there would be an impact to each established campsite used, and that the impact would take the form of increased areas denuded of vegetation and increased level of soil compaction at each site. These impacts to the sites will not be significant in terms of changes from the baseline condition.

6. Impacts to the forage resource due to stock grazing. (Number of forage acres impacted)

Under this alternative, the impact to the forage base from grazing livestock would be about 45 acres. There are sufficient acres of available forage in and around the reservoir area to accommodate the livestock use associated with this project. There would be nearly 800 acres of suitable land in the project vicinity for use by project livestock. The utilization criterion for the Uinta Canyon Recreation Horse allotment is 40% to 60% of current years production by weight. If properly distributed through the suitable grazing sites, these utilization standards would not be compromised. Use of grazing areas by livestock associated with this project would be not significant, as all existing standards would be met.

7. Benefits of an Annual and Long-range Operation and Maintenance Plan, and Dam and Reservoir Restoration Plan.

By preparing O&M Plans and Restoration Plans in advance the need for major maintenance and possible reconstruction will be minimal in the future. The O&M Plan will be required under Alternatives 1, 2, and 3. The Reservoir Restoration Plan will be required under Alternative 4.

8. Long-term maintenance needs on the reservoirs as a result of the proposal (number of intrusions per decade).

Based on previous experience, it is estimated that one motorized intrusion per decade will be required to properly maintain the reservoirs.

Cumulative Impacts

There would be cumulative effects associated with four of the issues discussed above. Most have to do with the impacts of activities associated specifically with the repair projects and the same types of activities engaged in by the general public using the wilderness resource. For purposes of this cumulative effects discussion, the cumulative effects area is identified as the Uinta Canyon drainage and some non-wilderness areas east of Fox/Queant Pass in the West Fork of Whiterocks drainage on the Vernal Ranger District. This area was selected because of the recreation visitor use patterns, and the fact that there are three additional draw down reservoirs in the Uinta Canyon, albeit very much removed from the immediate vicinity of Fox and Crescent Reservoirs.

The issue that sustained and perpetual maintenance would be required on these reservoirs over time was discussed above, but it would be a cumulative effect spread over a timeline of several decades. Additionally, the other three reservoirs in the Uinta Canyon drainage would someday require repair work that would call for use of motorized tools and equipment or mechanical transport of equipment or supplies. The Uinta Canyon drainage could be subject to repeated intrusions of motorized or mechanical devices over the next few years – not only due to future maintenance needs for Fox and Crescent Reservoirs, but for Atwood Upper Chain and Lower Chain Reservoirs as well.

Impacts to the physical resources of the wilderness including trails would occur, in addition to those impacts caused by personnel associated with the repair project, but by regular wilderness visitors using the trails at the same time. Thus the impact to trails would consist of both types of users and would be substantially greater due to the project activities than would otherwise occur. The trails impacted include not only those in the wilderness, but those in the West Fork Whiterocks drainage, including a portion of the Fox/Queant Trail and the North Pole Pass Trail coming from the Reader Creek staging area.

The impact to established campsites would be a similar situation. Once again, it would be preferable to put personnel associated with the project and regular wilderness visitors in established campsites rather that impact new or pristine areas. The impacts to these sites that would be monitored would include both those from project personnel and regular visitors. The Forest Service would also monitor for any additional campsites that may show up.

The impact to the forage resource from stock grazing would also be cumulative from the use by project personnel and regular wilderness visitors. Impacts to forage areas would be within established standards even when these cumulative impacts were considered.

These cumulative impacts could be relieved through a planned effort to inform wilderness visitors of the activities at Fox and Crescent Reservoirs and encourage them to recreate elsewhere in the HUW. This would, in turn, would have some effect on other areas that would be impacted by the relocated use. Most of this relocated use is expected to be in other areas of Uinta Canyon. Because the canyon is so large, and other campsites abundant, it is expected that use would spread out over many square miles and impacts at any one site from relocated users would be negligible.

Mitigation Measures

The impacts that would be cumulative from project personnel and regular wilderness visitors could be greatly alleviated through signing and otherwise informing the wilderness visitor of these activities, and suggesting alternative areas to visit to maintain the wilderness experience they come to expect. A visitor information plan would be developed to minimize visitor access to the Fox and Crescent Reservoir areas during the work phase of the project. The plan would also include information on activities at the Reader Creek staging area and flight routes to and from the staging area to the reservoirs sites so those that wish to avoid these areas may do so.

Project personnel would be required to manage the grazing by livestock associated with the project to insure that animals were properly distributed over the suitable grazing areas and insure the established utilization standards were not exceeded.

Monitoring Guidelines

Trail condition surveys would need to be conducted to assess the impacts of the project on the trails used and help set maintenance priorities for the forest.

Campsite monitoring would occur at the campsite to assess changes from the baseline Site Impact Index.

Monitoring of the grazing areas would be done to insure established utilization standards would be met.

ALTERNATIVE TWO – Modified Proposed Action

Effects on the Resource

1. Use of motorized equipment and mechanical transportation conflicts with the basic tenets of the 1964 Wilderness Act. (Amount and duration of intrusion)

The effect of the use of motorized equipment and mechanical transportation on the wilderness resource would be the same as described in Alternative One. This alternative has the same equipment required and would take the same amount of time (35 days).

2. Sustained and perpetual maintenance would involve motorized equipment and mechanized transportation for the life of the reservoirs. (Number of motorized intrusions per decade)

The structure of this alternative is to directly alleviate some of the impacts in the future associated with maintenance needs over the long term. This alternative adds an annual and long-term Operation and Maintenance (O&M) Plan that sets some conditions for how future maintenance would occur. While future motorized incursion would happen on a timeframe of about one per decade, by setting some conditions now, future adverse impacts to the wilderness resource would be minimized.

The true value of adding the O&M plan to this alternative would be to minimize such future incursions by having an aggressive maintenance program on an annual or recurring basis that would preclude some needs for motorized tools and equipment or mechanical transport in future

years. Bases on the assumption that there would be one motorized access per decade, the impacts of this alternative would be the same as described in Alternative One.

3. Impact to wilderness visitors including noise, dust, and opportunities for solitude. (Number of days of project duration)

The effects of this alternative are the same as described in Alternative One.

4. Impacts to the physical resources of the wilderness including trails. (Number of pack trips)

This alternative uses the Queant Jeep Trail and the West Fork Whiterocks River Trail rather than Reeder Creek as the staging area. This keeps the personnel working on the projects somewhat separated from the recreating public as in Alternative One. This would change primary trail from the North Pole Pass Trail to the Fox/Queant Pass Trail. The Fox/Queant Pass Trail is in somewhat worse condition than the North Pole Pass Trail, but provides a good opportunity to separate the use for the first few miles (via a parallel trail) above the trailhead.

5. Impacts to established campsites. (Degree of change in Site Impact Index)

The effects of this alternative are the same as described in Alternative One.

6. Impacts to the forage resource due to stock grazing. (Number of forage acres impacted)

The effects of this alternative are the same as described in Alternative One.

7. Benefits of an Annual and Long-range Operation and Maintenance Plan, and Dam and Reservoir Restoration Plan.

By preparing O&M Plans and Restoration Plans in advance the need for major maintenance and possible reconstruction will be minimal in the future. The O&M Plan will be required under Alternatives 1, 2, and 3. The Reservoir Restoration Plan will be required under Alternative 4.

8. Long-term maintenance needs on the reservoirs as a result of the proposal (number of intrusions per decade).

Based on previous experience, it is estimated that one motorized intrusion per decade will be required to properly maintain the reservoirs.

Cumulative Impacts

The cumulative effects are the same as Alternative One for this alternative. The addition of the O&M plan would be an attempt to relieve or prevent future needs for motorized or mechanical incursions in the wilderness through an aggressive annual and routine maintenance program using primitive means of access and primitive tools.

Mitigation Measures

Mitigation measures would be the same as discussed in Alternative One.

DGIC would prepare a safety plan that addresses procedures for evacuation of personnel from work sites in the case of life threatening situations. This safety plan would meet OSHA requirements.

Monitoring Guidelines

Monitoring guidelines would be the same as described in Alternative One.

ALTERNATIVE THREE – Maximize Primitive Access and Tools

Effects on the Resource

1. Use of motorized equipment and mechanical transportation conflicts with the basic tenets of the 1964 Wilderness Act. (Amount and duration of intrusion)

This alternative decreases the amount of motorized tools and equipment onsite to do the repairs and decreases the number of K-max helicopter flights from the 20 round trips needed in Alternatives One and Two to 12 round trips. This alternative increases the time to complete the project from 35 days to 65 days.

The level of motorized intrusion under this alternative in the HUW would remain a significant impact to the wilderness resource. While the amount of intrusion would be decreased, the time of the project and therefore the length of the intrusion would nearly double. It is possible that it would take two seasons to complete the work under this alternative versus one season with Alternatives One and Two. The adverse impact on the wilderness character of the area would be greater under this alternative than in Alternatives One and Two. The 65 days required to complete the project under this alternative would affect the very ambiance of the wilderness in the Fox and Crescent Reservoir area for nearly the entire useable summer season. It would be imperative that the work would be done in a single season rather than two summer seasons to avoid additional impacts associated with two move in and move out scenarios – greatly increasing the number of helicopter flights as well as the expense of the project.

2. Sustained and perpetual maintenance would involve motorized equipment and mechanized transportation for the life of the reservoirs. (Number of Motorized intrusions per decade)

The operation and maintenance plan requirement and the effects of this alternative are the same as described under Alternative Two.

3. Impact to wilderness visitors including noise, dust, and opportunities for solitude. (Number of days of project duration)

Since the duration of the project under this alternative nearly doubles from 35 days to 65 days, the effects of noise, dust, and opportunities for solitude discussed under Alternative Two would last nearly twice as long. The impacts to the wilderness resource under this alternative would be very significant and would be the greatest of any alternative. The increase in the number of pack trips and horse days in this alternative would result in a large increase in encounters among visitors on the trails further reducing the feeling of solitude in the wilderness.

4. Impacts to the physical resources of the wilderness including trails. (Number of pack trips)

This alternative increases the number of pack trips from 20 pack trips and 180 horse days under Alternatives One and Two to 50 pack trips and 450 horse days. The impact to trails under this alternative would be nearly 2 ½ times that of Alternatives One and Two and would require even more maintenance on the trails to insure public safety and to prevent erosion.

This alternative would use the Queant Jeep Trail and the West Fork Whiterocks River Trail, as would Alternative Two. This would keep the personnel working on the projects somewhat separated from the recreating public as in Alternative Two, but would put nearly 2½ times the number of horse days on the trail.

5. Impacts to established campsites. (Degree of change in the Site Impact Index)

This alternative would require two established campsites rather than one as in Alternatives One and Two. This would be because the number of personnel would increase from 14 under Alternatives One and Two to 20 under this alternative. Because of the 14-person limit per group established for the HUW in the wilderness plan, two campsites would be required. The campsites must be at least one mile apart.

The impact at each campsite would be the same as described under Alternatives One and Two.

6. Impacts to the forage resource due to stock grazing. (Number of forage acres impacted)

This alternative would increase the number of forage acres impacted from 45 to 100 acres. There would be ample forage areas in the vicinity of Fox and Crescent Reservoirs to adequately handle this number of stock without compromising the utilization standards established for the Uinta Canyon Recreation Horse Allotment. Additional effort would be required to insure the stock would be well distributed in the grazing areas to insure the standards were met.

7. Benefits of an Annual and Long-range Operation and Maintenance Plan, and Dam and Reservoir Restoration Plan.

By preparing O&M Plans and Restoration Plans in advance the need for major maintenance and possible reconstruction will be minimal in the future. The O&M Plan will be required under Alternatives 1, 2, and 3. The Reservoir Restoration Plan will be required under Alternative 4.

8. Long-term maintenance needs on the reservoirs as a result of the proposal (number of intrusions per decade).

Based on previous experience, it is estimated that one motorized intrusion per decade will be required to properly maintain the reservoirs.

Cumulative Impacts

The cumulative effects for this alternative are the same as in Alternative Two with the exception of the increased level of personnel and horse days associated with this alternative, that exacerbates the cumulative effects of project personnel and horses with the visiting public.

Mitigation Measures

Mitigation measures would be the same as described in Alternative One.

Monitoring Guidelines

Monitoring guidelines would be the same as described in Alternative One.

ALTERNATIVE FOUR – No Action (Baseline Comparison)

Effects on the Resource

1. Use of motorized equipment and mechanical transportation conflicts with the basic tenets of the 1964 Wilderness Act. (Amount and duration of intrusion)

Under this alternative the repair work as described in the proposed action would not take place. Thus, the motorized intrusions described under the action alternatives would not happen and the character of the wilderness resource in the Fox and Crescent Reservoir areas would not be impaired.

Eventually, this alternative could lead to action at the reservoir site to implement storage restriction and at some point the area would need restoration. It is not anticipated at this time that these future activities would require any motorized tools or equipment or require mechanical transport.

2. Sustained and perpetual maintenance would involve motorized equipment and mechanized transportation for the life of the reservoirs. (Number of motorized intrusions per decade)

This alternative would not lead to future maintenance activities requiring anticipated future motorized tool and equipment or mechanical transport. Rather, future activities could be the need to implement storage restrictions and perform some site rehabilitation.

3. Impact to wilderness visitors including noise, dust, and opportunities for solitude. (Number of days of project duration)

Under this alternative the project would not take place. Noise and dust would not be created and the opportunity for solitude by the wilderness visitor would not be impaired.

4. Impacts to the physical resources of the wilderness including trails. (Number of pack trips)

There would be no pack trips attributed to this project, as it would not take place as proposed. Some future pack trips may be necessary to implement storage restriction or to do some site rehabilitation, but they would be very few and impacts would be minor.

5. Impacts to established campsites. (Degree of change in Site Impact Index)

There would be no impacts to established campsites under this alternative. Use of the campsites would be by the wilderness visitor as in the past and no differences to the Site Impact Index would occur.

6. Impacts to the forage resource due to stock grazing. (Number of forage acres impacted)

There would not be any stock use on the grazing areas in the vicinity of Fox and Crescent Reservoirs, as the project would not take place as planned. Use of the available grazing areas would be by the wilderness visitors as in the past. This level of use has been well within the utilization standards described in the Uinta Canyon Recreation Livestock Allotment Management Plan.

7. Benefits of an Annual and Long-range Operation and Maintenance Plan, and Dam and Reservoir Restoration Plan.

By preparing O&M Plans and Restoration Plans in advance the need for major maintenance and possible reconstruction will be minimal in the future. The O&M Plan will be required under Alternatives 1, 2, and 3. The Reservoir Restoration Plan will be required under Alternative 4.

8. Long-term maintenance needs on the reservoirs as a result of the proposal (number of intrusions per decade).

Future motorized intrusion for maintenance purposes will not be required as the reservoir site will eventually need to be reclaimed under this alternative.

Cumulative Impacts

There would be cumulative effects under this alternative, connected to potential failure of the dams. Potential failure of the dams would result in scoring of the stream course below the reservoirs and loss of riparian vegetation and fish habitat.

Mitigation Measures

No mitigation measures would be required for the project. A restoration plan would be prepared to implement should there be future storage restrictions needed at the reservoirs or should some site restoration work need to be undertaken.

Monitoring Guidelines

Monitoring of the conditions at the reservoirs would continue for the foreseeable future to determine if the reservoir could still be used for its intended purpose of supplying late season irrigation water. Should it be determined that either reservoir has failed, or that failure was imminent, the Forest Service would apply storage restrictions.

4.2 RECREATION

(Issue 1.8.2 – Chapter 1)

The purpose of this section is to describe the environmental effects to the existing recreational components for proposed action and alternatives within the area of consideration.

Effects on Resource by Alternative

The effects of the project on recreation values would be assessed through the issues and indicators discussed in Chapter One.

ALTERNATIVE ONE – Proposed Action

Issue – Effect of the project on recreation facilities and experiences outside and within the wilderness at associated sites and trails.

The effects to recreation users and uses would be those associated with the following:

a) 30 to 35 day project period
b) 18 to 20 round trip helicopter flights
c) 20 round trip horse pack trips, with nine horses in each pack string (180 horse trips) to and from Fox and Crescent reservoirs. If the 20 round trips were spread over 30 to 35 consecutive project days, there would be approximately 1 round trip per day
d) One gas-powered loader and other small gas- and non-gas-powered equipment use at the reservoirs
e) Storage of supplies and materials at the reservoirs

The magnitude of the effects would vary, depending the expectation and preference of recreationists.

Photo 4.b – Upper headwaters of Whiterocks River

<u>Whiterocks Drainage</u> –

Horse Pack Trips –
During project work, approximately one pack trip (round trip) per day for a five-week period would be staged out of Reader Creek meadows. Each round trip equates to one trip in and one trip out. Each pack trip could have up to nine horses in the pack string.

Anglers using the segment of Reader Creek between Chepeta Lake Road #110 and the junction of Reader Basin Trail #113 and Highline Trail #025 could be opposed to the additional horse traffic on Reader Basin Trail. Disturbance to fishing would be minimal since the majority of the trail length is located from 200 to 500 feet from Reader Creek.

The expectations of day use hikers and backpackers along Reader Basin Trail and/or Highline Trail could also be affected on the day of the week when the pack trips to the reservoirs occurred. This disturbance would be of short duration, lasting usually less than a few minutes to less than one half hour.

Disturbance to fishing and hiking along the Reader Basin Trail would not occur if the Chepeta Trailhead and Highline Trail 025d were used as the staging area and access.

Horseback riders and horsepackers would be the least affected by pack trip operations.

The horse pack trips would add additional use to the Reader Basin Trail and/or Highline Trail, and increase the wear and tear on these trails. The Highline Trail would be the impacted the most, due to the erosion and downcutting that already exists. Increased wear and tear would increase approximately 10 percent over normal use.

Helicopter Operations –
Eighteen to twenty round trips by a helicopter over a 30 to 35 day period would directly disturb anglers, hikers, backpackers, horsepackers, and horseback riders in the immediate vicinity of Reader Creek meadow and Chepeta Lake Road. This disturbance would consist of dust, noise and visual impacts. Indirect noise disturbance would occur to all recreation users within two or three miles of the helicopter staging area, including the Chepeta Lake and Westfork Whiterocks River areas. Disturbances from helicopter operations could last up to one to two hours at any one time.

A few parking areas for some recreationists would not be available at the Reader Creek meadow area during the helicopter and pack trip operations. Several other parking areas exist adjacent to the meadow area along Chepeta Lake Road.

Upper Uinta River Drainage –
Direct impacts from the maintenance operations would be limited to the Fox and Crescent Reservoir areas within this drainage.

Horsepackers and backpackers would see and hear maintenance activities over a 30 to 35 day period. The noise and dust from helicopter and equipment involved in the maintenance operations, and the materials and supplies stored onsite would be highly evident and disturbing. There would also be periodic use of the area by livestock (pack strings and other saddle horses) that would be tethered in the immediate vicinity of the reservoirs. These activities and uses could preclude or otherwise limit the use of the reservoir areas by most recreationists during the 30 to 35 day operations period.

Indirect impacts would occur to horsepacking and backpacking use within two miles of the reservoir areas. These impacts would be associated with helicopter and equipment noise and occasional sightings of the maintenance operations. Some recreationists within noise range and/or viewing distance might avoid Slate Creek altogether and use other sub-drainage areas in the western portion of the Upper Uinta River drainage during the 30 to 35-day operations period.

Cumulative Impact

The cumulative impacts of sustained and perpeutal maintenance of Fox and Crescent Reservoirs and the other three resevoirs in Upper Uinta Canyon drainage was discussed in Section 4.1 – Wilderness, page 3. The impacts from repeated intrusions of motorized or mechanical transport of equipment and supplies would have cumulative effects to recreation users and uses in both the upper end of West Fork Whiterocks River Drainage and the Upper Uinta River Drainage. There are no other past or proposed activities in the project area that would add cumulative impacts to those impacts discussed above.

Recreation use of the Chepeta Lake and Reader Creek meadow areas (including the Reader Basin and Highline Trails), and the trails and areas around and adjacent to Fox and Crescent Reservoirs could be substantially reduced during the helicopter, pack trip, and maintenance operations. Recreation users could also perceive that such operations would continue for most of the season in question and in to other seasons. This perception could affect their future recreation visits and uses for a period of time.

The horse pack trips (estimate 1 round trip/day for 5 weeks) over trails and high country passes along with the normal recreation uses could increase trail damage and wear, especially if conducted during wet weather.

There would also be cumulative impacts to popular dispersed campsites at the Fox and Crescent Reservoir areas. Such impacts would result from wilderness visitors and project workers using limited dispersed recreation sites around the reservoirs, with cumlative impacts to soil and vegetative resources.

Mitigation Measures

- Dry Gulch Irrigation Company (DGIC) would be required to repair and rehabilitate trails and dispersed recreation areas damaged by their operations and activities. Such work would be done under the direction of the Forest Service.
- Prepare, post, and distribute flyers and other media notices that describe the purpose and need for the project work, location of helicopter and pack string staging areas, and the time frames for all operation activities. Publish notices in local and regional papers as needed, and recommend that wilderness visitors limit the stay or otherwise avoid the Fox and Crescent reservoir area during the project work period. (To be done by DGIC, under the direction of the Forest Service.)

Monitoring Guidelines

- Conduct inspection trips during and after the project work to insure the Dry Gulch Irrigation Company complies with special use permit terms and conditions.

ALTERNATIVE TWO – Modified Proposed Action

Issue – Effect of the project on recreation facilities and experiences outside and within the wilderness at associated sites and trails.

The effects to recreation users and uses would be those associated with the following:

a) 30 to 35 day project period
b) 18 to 20 round trip helicopter flights
c) 20 round trip horse pack trips, with nine horses in each pack string (180 horse trips) to and from Fox and Crescent reservoirs. If the 20 round trips were spread over 30 to 35 consecutive project days, there would be approximately 1 round trip per day
d) one gas-powered loader and other small gas- and non-gas-powered equipment use at the reservoirs
e) storage of supplies and materials at the reservoirs

The magnitude of the effects would vary, depending the expectation and preference of recreationists.

Whiterocks Drainage

Horse Pack Trips –
During project work, approximately one pack trip (round trip) per day for a five-week period would be staged out of the site north and west of the junction of Chepeta Lake Road #110 and Queant Lake Jeep Trail. Each round trip equates to one trip in and one trip out. Each pack trip could have up to nine horses in the pack string.

The expectations of day use hikers, backpackers, and horseback riders along Queant Lake Jeep Trail, Queant Lake Trail #048, and West Fork of Whiterocks Trail #047 could also be affected on the day of the week pack trips to the reservoirs occurred. This disturbance would be of short duration, lasting usually less than one or two hours.

The horse pack trips conducted by DGIC would add additional use to the trails, and increase the erosion and downcutting that already exists. These trails would be more impacted than the trail system for Alternative One, due to the extent of erosion and number of wet areas crossed or adjacent to the trails.

Helicopter Operations –
Eighteen to twenty round trips by a helicopter over a 30 to 35 day period would directly disturb anglers, hikers, backpackers, horsepackers, and horseback riders using Queant Jeep Trail and/or West Fork of Whiterocks Trail and Queant Lake Trail. This disturbance would consist of dust, noise and visual impacts. Indirect noise disturbance would occur to all recreation users within two or three miles of the helicopter staging area. Disturbances from helicopter operations could last up to one hour at any one time.

Upper Uinta River Drainage –
Direct impacts from the maintenance operations would be limited to the Fox and Crescent Reservoir areas within this drainage.
Horsepackers and backpackers would see and hear maintenance activities over a 30 to 35 day period. The noise and dust from helicopter and equipment involved in the maintenance operations, and the materials and supplies stored onsite would be highly evident and disturbing. There would also be periodic use of the area by livestock (pack strings and other saddle horses) that would be tethered in the immediate vicinity of the reservoirs. These activities and uses could preclude or otherwise limit the use of the reservoir areas by most recreationists during the 30 to 35 day operations period.

Indirect impacts would occur to horsepacking and backpacking use within two miles of the reservoir area. These impacts would be associated with helicopter and equipment noise and occasional sightings of the maintenance operations. Some recreationists within noise range and/or viewing distance might avoid Slate Creek altogether and use other sub-drainage areas in the western

portion of the Upper Uinta River drainage during the 30 to 35-day operations period.

Cumulative Impacts

The cumulative impacts of sustained and perpetual maintenance of Fox and Crescent reservoirs and the other three reservoirs in Upper Uinta Canyon drainage was discussed in Section 4.1 – Wilderness. The impacts from repeated intrusions of motorized or mechanical transport of equipment and supplies would have cumulative effects to recreation users and uses in both the upper end of West Fork Whiterocks River Drainage and the Upper Uinta River Drainage. There are no other past or proposed activities in the project area that would add cumulative impacts to those impacts discussed above.

Recreation use of the West Fork of Whiterocks River Trail #047 and Queant Lake Trail #048, and the trails and areas around and adjacent to Fox and Crescent Reservoirs could be substantially reduced during the helicopter, pack trip, and maintenance operations. Recreation users could also perceive that such operations would continue for most of the season in question and on in to other seasons. This perception could affect their future recreation visits and uses for a period of time.

The horse pack trips (estimate 1 round trip/day for 5 weeks) over trails and high country passes along with the normal recreation uses could increase trail damage and wear, especially if conducted during wet weather.

There would also be cumulative impacts to popular dispersed campsites in the Fox and Crescent reservoir area. Such impacts would result from wilderness visitors and project workers using limited dispersed recreation sites around the reservoirs, with cumulative impacts to soil and vegetative resources.

Mitigation Measures

The mitigation measures would be the same as those developed for Alternative One.

Monitoring Guidelines

The guidelines would be the same as those developed for Alternative One.

ALTERNATIVE THREE – Maximize Primitive Access and Tools

Issue – Effect of the project on recreation facilities and experiences outside and within the wilderness at associated sites and trails.

The effects to recreation users and uses would be those associated with:

a) 60 to 65 day project period *(30 to 35 days longer than Alternatives One and Two.*
b) 10 to 12 round trip helicopter flights *(eight round trips less than with Alternatives One and Two).*
c) 50 round trip horse pack trips (450 pack loads) to and from Fox and Crescent reservoirs. *(30 pack trips or 220 pack loads more than Alternative One and Two).*

   If the 50 round trips were spread over 60 to 65 consequtive project days, there would be approximately 1 round trip per day. *(Same number of round trips per day as Alternatives One and Two.)*
d) small gas- and non-gas-powered equipment use at the reservoirs *(excludes the gas-powered loader that would be used with Alternatives One and Two*).
e) storage of supplies and materials at the reservoirs *(same as Alternatives One and Two).*

As with Alternatives One and Two, the magnitude of the effects would vary, depending the expectation and preference of recreationists.

Whiterocks Drainage

Horse Pack Trips –
During project work, approximately one pack trip (round trip) per day for a nine to ten-week period would be staged from, staging area site located north and west of the junction of Chepeta Lake Road #110 and Queant Lake Jeep Trail. Each pack trip could have up to 14 horses in the pack

string. Each pack trip equates to one trip to and from the Fox/Crescent Reservoir areas.

The expectations of day use hikers, backpackers, and horseback riders along Queant Lake Jeep Trail, Queant Lake Trail #048, and West Fork of Whiterocks Trail #047 could also be affected on the day of the week pack trips to the reservoirs occurred. This disturbance would be of short duration, lasting usually less than one or two hours. Depending on conditions, pack strings might also use Trail #048 to access Highline Trail #025 and the reservoir areas, with potential conflicts of use also occurring on this route.

The horse pack trips conducted by DGIC would add additional use to the trails, and increase the erosion and downcutting that already exists. These trails would become more impacted than the trail system for Alternative One, due to the extent of erosion and number of wet areas crossed or adjacent to the trails. Also, due to the increased number of horses and longer operations period, this alternative would increase trail impacts substantially over Alternative Two.

Helicopter Operations –
Ten to twelve round trips by a helicopter over a 60 to 65 day period would directly disturb anglers, hikers, backpackers, horsepackers, and horseback riders in using the above mentioned trail system. This disturbance would consist of dust, noise and visual impacts. As with Alternatives One and Two, indirect noise disturbance would occur to all recreation users within two or three miles of the helicopter staging area, including the Reader West Fork of Whiterocks River areas. Disturbances from helicopter operations could last up to one hour at any one time.

Upper Uinta River Drainage
Direct impacts from the maintenance operations would be limited to the Fox and Crescent reservoir areas within this drainage.

Horsepackers and backpackers would see and hear maintenance activities over a 60 to 65 -day period. As with Alternatives One and Two, the noise and dust from helicopter and equipment involved in the maintenance operations, and the materials and supplies stored onsite would be highly evident and disturbing. There would also be periodic use of the area by livestock (pack strings and other saddle horses) that would be tethered in the immediate vicinity of the reservoirs. These activities and uses could preclude or otherwise limit the use of the reservoir areas by most recreationists during the 60 to 65 -day operations period.

Indirect impacts would also occur to horsepacking and backpacking use within two miles of the reservoir area. These impacts would be associated with helicopter and equipment noise and occasional sightings of the maintenance operations. Some recreationists within noise range and/or viewing distance might also avoid Slate Creek altogether and use other sub-drainage areas in the western portion of the Upper Uinta River drainage during the 60 to 65-day operations period.

Cumulative Impacts

The cumulative impacts for this alternative would be the same as in Alternatives One and Two with the exception of the increased level of personnel and horse days.

Recreation use of the Westfork Whiterocks River corridor and associated trail system, and the trails and areas around and adjacent to Fox and Crescent Reservoirs could be substantially reduced during the helicopter, pack trip, and maintenance operations. Recreation users could also perceive that such operations would continue for most of the season in question and on in to other seasons. This perception could affect their future recreation visits and uses for a period of time.

The horse pack trips (estimated at one round trip/day for 9 to 10 weeks) over trails and high country passes along with the normal recreation uses could increase trail damage and wear, especially if conducted during wet weather. Increased horse traffic could heavily impact trails conditions that are already rated as fair to poor, especially those trail segments across non rocky areas such as meadow and wet areas.

Mitigation Measures

The measures would be the same as Alternatives One and Two.

Monitoring Guidelines

The guidelines would be the same as Alternatives One and Two

ALTERNATIVE FOUR – No Action (Baseline Comparison)

There would be no new effects or cumulative impacts on the recreation resource with this alternative.

Mitigation Measures

No new mitigation measures would be needed for the Dam and Reservoir Restoration Plan that would be developed for this Alternative. Existing special user permit provisions would suffice.

Monitoring Guidelines

Monitoring guidelines for the recreation resource would be those in the existing special use permit, which include annual inspections and requirements for correction of deficiencies with the dam and reservoir infrastructure.

Photo 4.c – meadow area near Fox Reservoir

4.3 VEGETATION
(Issue 1.8.4 – Chapter 1)

ALTERNATIVE ONE – Proposed Action

Effects on the Resource

1. Use of Existing borrow areas, and the associated impact from re-disturbing the recovering sites (number of the borrow sites impacted).

It is expected that disturbance and horse use under Alternative One would have minimal long-term impacts on vegetation. Reopening and excavation of original borrow sites or the excavation of new borrow sites would be necessary to obtain materials needed to shore up the dams and provide material for concrete mixtures. If borrow sites were located within the reservoir area, no impacts to vegetation due to excavation would occur. If the borrow sites were located outside the reservoir, excavation would remove existing vegetation from past disturbed surface areas. The plant communities expected to be impacted at these borrow sites would be common and well represented across the Uinta Mountains. Plant species that would be impacted in well-drained upland borrow sites include glaucous willow, timber oatgrass, tufted hairgrass, Canada singlespike sedge, spike trisetum, and other secondary plant species. If wet borrow sites are used, planeleaf willow, water sedge, elephant head, and marsh-merigold plant community would be negatively impacted. A few encroaching Engelmann spruce or lodgepole pine trees also could be removed from these sites during excavation. No Threatened, Endangered or Sensitive, rare, or uncommon plants species associated with the Uinta Mountains are known to be growing at or in the vicinity of these borrow sites. It is expected that the surface area disturbance of these borrow sites would be less than ½ acre. Due to elevation (ca. 10,800 ft), adequate revegetation of these borrow sites would take a longer period of time ***(i.e., 70 plus years)*** than disturbed sites at lower elevations.

2. Impacts to the forage resource due to livestock grazing (number of forage acres impacted).

Production on the great majority of AM3 and UB8 Ecological Units indicates capability to support forage requirements for the number of horses and the days of use proposed under Alternative One. Based upon proper use standards, only about ½ of the production should be considered as available forage. About 85 lbs per acre should be included as available forage for dry areas. In the wet meadows, about 290 lbs/acre might be included in proper grazing use **(refer to Table 3.a).** Approximately 180 horse days were estimated under Alternative One to complete the Fox and Crescent Reservoir maintenance project. Forage consumed by horses is equivalent to about 15 lbs of total dry matter per day. With available forage in the dry areas at 85 lbs/acre, approximately 50 acres of suitable range would be required to satisfy forage needs of construction horse use. Approximately 772 acres of available forage within 1.5 miles of Fox Reservoir would support the number of horses proposed under this alternative as well as the expected recreational horse use.

Increased horse use in the Fox and Crescent Reservoir areas, due to the repair work, would have minimal long-term effect on the vegetative resource. This is indicated by the history of grazing in the area and by established long-term trend studies in the area. Historically, thousands of sheep grazed and trailed across the Fox and Crescent Reservoir areas, annually. Sheep grazing of that magnitude and duration reduced vigor of some forage plants and probably increased bare ground. However, recovery of vegetation and ground cover was rapid with rest from grazing. This is demonstrated at the Kidney Lake Exclosure, which is about 3.5 miles west of Fox Reservoir. Information from the Kidney Lake Exclosure indicates recovery could be expected within a year following use (U.S Department of Agriculture, Monitoring Studies Inventory).

Established long-term trend studies within the Fox and Crescent Reservoir area indicate satisfactory vegetative conditions with stable to upward trends under present recreational horse use. Ground cover percentages and plants species composition for the dry and wet meadows currently meet desired condition. Increased horse use in the meadows near Fox Reservoir for a short period of time (1-2 years) would be well within the capability of the area; however, temporary competition for available forage between construction and recreational horses in preferred meadows within the immediate Fox Reservoir vicinity could result in the allowable use standard for livestock in the High Uinta Wilderness Area (40%) being exceeded.

Cumulative Impacts

Historically, thousands of sheep grazed and trailed annually across the Fox Lake Area. Sheep grazing was discontinued in the early 1970s due to the economic feasibility of grazing sheep in the area and sheep grazing and recreational horse use conflicts. According to the Uinta Recreational Horse Allotment Management Plan (1988), "the majority of the suitable [acres] were classified in fair-good condition" during the years of sheep grazing (U.S Department of Agriculture, Management Plan 1988). Recreational horse, elk, and deer forage use in the Fox Lake area is also cumulative, especially during dam construction.

Mitigation Measures

Vegetative reclamation of borrow sites outside the reservoir could be indicated. At the dry borrow sites, a seed mix of timber oatgrass, tufted hairgrass, sheep fescue, and Canada singlespike sedge could be manually applied to disturbed soils or parent materials. At the wet sites, water sedge, elephant head, and other riparian species should establish naturally in disturbed soils of the borrow site.

The utilization standards for recreation stock use in the High Uintas Wilderness apply to stock used for the proposed action. Since competition for available forage between construction and recreational horses within the immediate vicinity of Fox Reservoir and the staging area could result in the allowable use standard of 40% being exceeded in preferred forage areas. During the maintenance work on the reservoirs, the Forest

Service would monitor utilization and move horses if utilization surpasses the 40% standard. This would be done to adequately distribute and comfortably accommodate both recreation and construction horse forage use.

Invasive species and noxious weed monitoring of disturbed areas and FS-authorized treatment by DGIC would be done for a minimum of three years or until weed infestations are eradicated. This project is not expected to increase invasive species. Weed free hay will be in accordance with Forest Service requirements.

Monitoring Guidelines

Seven long-term trend studies currently are established within 1 mile of the project area (U.S. Department of Agriculture, Monitoring Studies Inventory). Some of these studies, with 2 to 3 new ones, would be used to monitor condition and trend of the impacted forage areas prior to and immediately following construction horse use. To determine actual use in the impacted forage areas, utilization of forage would be estimated following horse use at the selected study sites.

ALTERNATIVE TWO – Modified Proposed Action

Effects on the Resource

1. Use of existing borrow areas, and the associated impact from re-disturbing the recovering sites (number of the borrow sites impacted).

Since the borrow areas would be located within the confines of the reservoir, no impacts would occur to vegetation.

2. Impacts to the forage resource due to livestock grazing (number of forage acres impacted).

The effects on the vegetation due to horse use under Alternative Two would be the same as those described in Alternative One (refer to Effects on the Resource in Alternative One).

Cumulative Impacts

The cumulative impacts associated with Alternative Two would be the same as those identified in Alternative One (refer to Cumulative Impacts in Alternative One).

Mitigation Measures

No mitigation measures are proposed for the borrow sites. The mitigation measures for livestock grazing in Alternative Two would be the same as those proposed in Alternative One (refer to Mitigation Measures in Alternative One).

Monitoring Guidelines

The monitoring guidelines for Alternative Two would be the same as those outlined in Alternative One (refer to Monitoring Guidelines in Alternative One).

ALTERNATIVE THREE – Maximize Primitive Access and Tools

Effects on the Resource

1. Use of Existing borrow areas, and the associated impact from re-disturbing the recovering sites (number of the borrow sites impacted).

Since the borrow areas would be located within the confines of the reservoir, no impacts would occur to vegetation.

2. Impacts to the forage resource due to livestock grazing (number of forage acres impacted).

The number of horses and the days of use required to complete dam construction would nearly triple under Alternative Three. Approximately 142 acres of suitable range would be required to satisfy forage needs of construction horse use, however, the total suitable acres (772 acres) identified within 1.5 miles of Fox Lake would accommodate both construction horse use and expected recreational horse use under this alternative. Increased horse use under Alternative Three would be well within the capability of the

Fox and Crescent Reservoir area and would have minimal long-term effect on the condition and trend of the vegetative resource.

The distribution of horses into outlying forage areas would be greater under Alternative Three than the horse distribution required under Alternatives One and Two. Temporary competition for available forage between construction and recreational horses in preferred meadows within the immediate Fox Reservoir vicinity would be more intense under this alternative. The allowable use standard of 40% would more likely be exceeded and a greater number of suitable acres effected.

Cumulative Impacts

The cumulative impacts associated with Alternative Three are similar to those identified in Alternatives One and Two, but the increase of the number of construction horses and days of use under Alternative Three substantially adds to those impacts.

Mitigation Measures

No mitigation measures are proposed for the borrow sites. The mitigation measures for livestock grazing would be the same as those proposed in Alternatives One and Two.

Monitoring Guidelines

The monitoring guidelines for Alternative Three would be the same as those outlined for Alternatives One and Two (refer to Monitoring Guidelines in Alternative One).

ALTERNATIVE FOUR – No Action (Baseline Comparison)

Effects on the Resource

1. Impacts to the forage resource due to livestock grazing (number of forage acres impacted).

Negligible effects on the vegetation would be expected under Alternative Four. Forage for three to four horses and approximately 10 horse days were estimated under this alternative. Less than 1 acre of suitable range would be required to satisfy forage needs for these horses.

Cumulative Impacts

The cumulative impacts associated with Alternative Four would be similar to those identified in Alternative One (refer to Cumulative Impacts in Alternative One), but the significant decrease in the number of horses and days of use under Alternative Four would substantially lessen the impacts.

Mitigation Measures

No mitigation measures are proposed.

Monitoring Guidelines

The studies in the Fox and Crescent Reservoir area would be used to continue long-term monitoring of impacts, due to recreational horse use, and to monitor overall condition and trend for the area.

4.4 WILDLIFE

(Issue 1.8.3 – Chapter 1)

This section discusses potential effects, from the proposed project and alternatives, to terrestrial wildlife species federally listed or proposed as threatened or endangered and species the Forest Service has identified as sensitive. It also addresses species listed in the Ashley's Forest Plan as management indicators for the habitats present in the project area, US F&WS Birds of Conservation Concern, and Utah Partners in Flight Priority Species that may potentially be affected by the proposal. Additional information and references on threatened, endangered, and sensitive species can be found in the Biological Assessment and in the Biological Evaluation prepared for this project (on file at the Roosevelt Ranger District Office). For a quick reference to species occurrence in the project area please refer to Appendix B, Items 1 and 4.

Cumulative impacts are analyzed within the Chepeta/Whiterocks and Uinta LAUs for all terrestrial wildlife species discussed in this

chapter. These LAU's were selected as the cumulative effects area for consistency purposes in analyzing effects to wildlife, and because the area is large enough to capture effects that may cumulatively affect wildlife.

ALTERNATIVE ONE – Proposed Action

Federally Threatened, Endangered, and Proposed Species

Canada Lynx –
The proposed project occurs within the Chepeta/Whiterocks LAU and the Uinta LAU.

Direct and Indirect Effects

There may be some noise disturbance associated with the repair work, campsites, and use of trails that could cause some avoidance of the area by lynx. However, this disturbance is temporary and would not result in any long-term effects to lynx. Increased use of trails from proposed pack stock and increased use of campsites is not anticipated to adversely affect the Canada lynx. Use of trails and campsites would be during summer/fall and would not be during the critical winter period.

According to the Lynx Conservation Assessment and Strategy (LCAS), forage use levels may reduce forage resources available to snowshoe hares. Browsing or grazing can have a direct effect on snowshoe hare (prey species for lynx) habitat if it alters the structure and composition of native plant communities (Ruediger et al. 2000). A standard in the LCAS specifies to manage livestock grazing in riparian areas and willow carrs (patches) to maintain or achieve mid seral or a higher condition to provide cover and forage for prey species (Reudiger 2000). Grazing of meadows in the designated areas in the proposal may reduce some forage resources available to snowshoe hare. However, according to Section 4.3 (Vegetation) of this FEIS, one season of concentrated grazing from pack horses in these designated areas would have minimal long-term effects on the condition and trend of the vegetative resource, and recovery could be expected within a year. Therefore, it is unlikely that grazing and browsing in the designated areas would have adverse affects to lynx or lynx habitat.

Cumulative Impacts

The proposed project occurs within the Chepeta/Whiterocks LAU and the Uinta LAU. The Lynx Conservation Assessment and Strategy (LCAS) states, if more than 30% of lynx habitat within a LAU is currently in unsuitable condition, no further reduction of suitable conditions shall occur as a result of vegetation management activities by federal agencies (Reudiger 2000). Another standard states that management actions shall not change more than 15% of lynx habitat within an LAU to an unsuitable condition within a 10-year period (Reudiger 2000). Within the Chepeta/Whiterocks LAU the only disturbance or man-made features are the Chepeta complex and the West Fork of Whiterocks Trailhead, which consists of approximately 120 disturbed acres of a total of 25,972 acres of total primary lynx habitat. This is approximately 0.5% (less than 1%) of lynx habitat within the LAU that has been changed to unsuitable. This is far below the 15% and 30% standards. To calculate temporary noise disturbance that would occur within the LAU from the proposed project, the Reeder Creek helicopter path was buffered ¼ mile on each side (approximately 1,600 acres. Adding the 120 acres of existing disturbed acres gives a total disturbance of 1,720 acres. This would constitute approximately 6.6% temporary disturbance within this LAU. The disturbance from the helicopter would only be for the duration of the project and would be intermittent.

The Fox/Crescent Lake area is within the Uinta LAU, which consists of 31,952 acres of primary lynx habitat. The only preexisting man-made feature is the dam/reservoir complex, which consists of approximately 160 acres. This is approximately 0.5% (less than 1%) of lynx habitat within the LAU that has been changed to unsuitable. This is far below the 15% and 30% standards in the LCAS. Temporary noise disturbance that would occur within the LAU from the proposed project was calculated by adding the total acres of the dam/reservoir complex, borrow pit site (½ acre), helipad, and the helicopter path. This totals 777 acres or 2.43% disturbance. Because management actions are rare in this LAU, there would be no impact on

lynx habitat connectivity either between or within this LAU. Due to this LAU being bordered by wilderness and roadless areas, there is a very low proportion of lynx habitat affected by human alteration of habitat, permanent development, and other disturbances.

Essentially, there would be very little additional long-term cumulative impacts associated with improving the dam's current condition on Canada lynx habitat. Due to the fact that the dam/reservoir complex is not a natural complex means that the continued use of the reservoir would perpetually keep that area out of primary lynx habitat. Activities related to this action would occur during summer/fall and would avoid the more stressful periods (denning and winter foraging periods) for lynx (Reudiger 2000).

Due to the use of the trail system being seasonal (summer/fall), the project being temporary in nature, and activity use in the area not being considered high, this alternative has little negative effects to lynx habitat connectivity either between or within the LAUs. Lynx will still be able to move between and through the LAUs.

Due to the rationale above and compliance of this Alternative with the LCAS, it is determined that the direct, indirect, and cumulative impacts discussed above may affect, but is not likely to adversely affect the Canada lynx.

Mitigation/Monitoring

None applicable.

Forest Sensitive Species

Northern Goshawk –

Direct and Indirect Effects

From the data given in Chapter 3, it is possible that goshawks may be within the project area. The proposed campsites, strings of pack stock, staging areas, borrow pits, and repair work of the dams in this alternative would not alter goshawk habitat. These activities would, however, result in some noise disturbance to habitat near the project. Noise from motorized equipment would be the most foreign in the area, and could therefore have the greatest potential of disturbance. According to Section 4.1 (Wilderness) of this FEIS, 14 people camped in this area for a 35-day period would be a substantial increase from normal use of the area. This would likely result in a substantial increase of noise disturbance to goshawks in the area. Also, according to Section 4.2 (Recreation) of this FEIS, wear and tear of trails from the proposed pack strings would increase by 10%. It can therefore be assumed that the use of the proposed pack stock (20 round trips, 9 horses in a string) along the trails under this alternative would increase normal pack stock use by 10%. This 10% increase would not substantially change the overall current disturbance to habitat along the proposed trails (#133 and #025). Due to recreational use of the area, goshawks may presently avoid the area, or have become habituated to the current level of disturbance. The increased activity at the campsites and from repair work on the dams could be substantial enough to elevate the disturbance in these areas to a level that may temporarily displace some individual goshawks for the duration of the project.

Under this Alternative, there would be approximately 50 acres of open meadows affected by horse grazing. Because goshawks primarily forage in closed canopy forests with moderate tree densities (Graham et al. 1999), there would be no anticipated affects to goshawks or their prey species from grazing by pack stock.

There is potential for disturbance to nesting goshawks from helicopter flights. Frequent helicopter flights over an active nest could cause nest abandonment and may affect the foraging habits of goshawks. However, project implementation would not occur until August 1st. According to the data in Section 3.4 of this FEIS, this would be after or at the end of the fledgling period. Goshawk surveys will be conducted during the nesting season near the staging areas and along the helicopter flight path prior to implementation of the project. If a goshawk nest is found in the area, a helicopter flight path will be selected that does not occur within ½ mile of any goshawk nest. This would eliminate impacts to nesting goshawks in the area. According to the same goshawk data in Section 3.4 of this EIS,

helicopter flights would occur during the fledgling's dependence on the PFA and may disturb foraging patterns for the duration of the project. Another mitigation measure for this project would require helicopter flights to stay at an altitude of at least 1000 feet (above potential habitat) and require a minimum speed of at least 30 mph be maintained. This would provide additional protection to goshawks that may occur in the project area and reduce impacts to foraging areas.

There would be no removal of vegetation at the Reader Creek staging area. Impacts to goshawks would be similar to those discussed above for helicopter flights and pack strings. However, since this staging area is in close proximity to the road and trailhead, existing disturbances would be greater than those described above. Therefore, the activities associated with the staging area would be less likely to affect goshawks. Impacts to goshawks from the proposed Chepeta Trailhead staging area would be similar to those discussed for the Reader Creek staging area.

Considering these potential affects to goshawks from the proposed action, it is possible that some individual goshawks may be displaced. Given a goshawks home range of 6,000 acres (Reynolds et al. 1992), and assuming that all goshawk habitat near the project area was within an occupied goshawk territory, the project has the potential to temporarily affect three territories (one in the Fox Lake area, one in the Reader Creek area, and one in the Queant Lake area). Adding these three territories to the number of goshawk territories currently known on the Forest, gives a total of 59. These three territories would be approximately 5% of the total (59) number of territories on the Forest. This is a relatively small percentage compared to the total. Also, the mitigations would protect the nesting areas in these territories from disturbances incurred by the proposed project during the nesting season. Therefore, the displacement of individuals in these three hypothetical territories would not affect the goshawk population on the Forest. These territories, though possible, are purely hypothetical and are referenced only to help quantify potential effects from the project.

Cumulative Impacts

Cumulative impacts to the goshawk from the proposed project would consist of repair work on the dam, helicopter disturbance, disturbance at staging areas, forage use by horses, elk and deer use, and recreational use in the area. According to Section 4.1 (Wilderness) of this FEIS, it is anticipated that normal visitation in the area of the campsites would decrease during the duration of the project. Therefore, cumulative impacts in the area of campsites would be unlikely during the project.

The proposed project is temporary in duration (30 – 35 days), proposes no modification of goshawk habitat, and would follow the mitigation measures below. Therefore, it is determined that the direct, indirect and cumulative impacts discussed above may impact individual goshawks but is not likely to cause a trend toward federal listing of the species.

Mitigation/Monitoring

The U.S. Fish and Wildlife Service's *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances* (US Fish and Wildlife Service 1999) would be followed for the use of helicopters in raptor habitat. An altitude of at least 1000 feet (above potential habitat) and a minimum speed of at least 30 mph would be maintained. This would provide additional protection to goshawks that may occur in the project area.

Implementation of the project would not start before August 1st. This would reduce impacts from the proposed project, to possible goshawk nesting and post fledgling areas.

Goshawk surveys will be conducted during the nesting season near the staging areas and along the helicopter flight path prior to implementation of the project (June or July of the same season of project implementation). If a goshawk is detected and a nest is found in the area, a helicopter flight path will be selected that does not occur within ½ mile of any goshawk nest. This would eliminate impacts to nesting goshawks in the area.

The Ashley National Forest annually monitors and surveys known goshawk territories on the Forest. These surveys and monitoring will continue.

Boreal Owl and Great Gray Owl –

Direct and Indirect Effects

Boreal owls have usually fledged by early July and great gray owls have usually fledged and are able to fly by mid June (Hayward 1994, Duncan and Hayward 1994). The proposed project would not begin until August 1, which is after the fledging dates for both of these species. Therefore the proposed project would not affect these species during the breeding and nesting season.

The proposed campsites, strings of pack stock, borrow pits, and repair work of the dams in this alternative would not alter habitat for these species. These activities would, however, result in some noise disturbance to habitat near the project. Noise from motorized equipment would be the most foreign in the area, and could therefore have the greatest potential for displacing individual owls. The helicopter path along North Pole Pass and Reader Creek crosses over mostly open meadows. The open meadows along this path might be foraging areas for great gray owls, however owls would be foraging at night and the helicopter flights would take place during the day. The noise from the flights may temporarily displace roosting owls, thereby indirectly displacing foraging owls the night following the initial disturbance. As discussed under the "goshawk section" (e.g., 10% disturbance increase on trails, and substantial increase of disturbance at campsites) the pack strings would not substantially increase disturbance, but disturbance at the campsites would be substantial. Due to these owls being active at night, increased disturbance at the campsites may temporarily displace roosting owls and may indirectly displace foraging the night following the initial disturbance. It has been documented that boreal owls are relatively tolerant of human and mechanical disturbance (Hayward et al. 1994) and therefore may not be affected by this disturbance.

Under this Alternative, there would be approximately 50 acres of open meadows affected by horse grazing. Forage use by horses may decrease the availability and abundance of voles and other prey species of the great gray owl. However, according to Section 4.3 (Vegetation) of this FEIS, one season of concentrated grazing from pack horses in these designated areas would have minimal long-term effects on the condition and trend of the vegetative resource, and recovery could be expected within a year. It is therefore anticipated that the impacts to great gray owl prey species related to grazing would be temporary, likely only for one growing season (same season as project implementation). Because boreal owls primarily forage in mature and older spruce/fir forests (Hayward 1994), there would be no anticipated effects to boreal owls or their prey species from grazing by pack stock.

There would be no removal of vegetation at the Reader Creek staging area. Impacts to these owl species at the staging area would be similar to those discussed above for helicopter flights and pack strings. However, since this staging area is in close proximity to the road and trailhead, existing disturbances would be greater than those described above. Therefore, the activities associated with the staging area would be less likely to affect owls. Impacts to the boreal and great gray owl from the proposed Chepeta Trailhead staging area would be similar to those discussed for the Reader Creek staging area.

Considering these potential effects to these owl species from the proposed action, it is possible that some individual owls may be displaced. Given the home range of the boreal owl of approximately 1,400 hectares (3,460 acres) (Hayward 1994) and the home range of the great gray owl of approximately 3.2 square km (2,530 acres) (Duncan and Hayward 1994), and assuming that all owl habitat near the project area was occupied, the project has the potential to temporarily displace five individuals of each species (one in the Fox Lake area, two in the Reader Creek area, and two in the Queant Lake area). The displacement of five individuals of these species would not affect their populations since the project would not occur during the breeding and nesting season. This analysis,

though possible, is purely hypothetical and is referenced only to help quantify potential effects from the project.

Cumulative Impacts

Cumulative impacts to the boreal and great gray owl from the proposed project would consist of repair work on the dam, helicopter disturbance, disturbance at staging areas, forage use by horses, elk and deer use, and recreational use in the area. Adding elk and deer use and recreational stock use in the area to the proposed stock use would increase the amount of grazing in the area (loss of vegetation). However, according to Section 4.3 (Vegetation) of this FEIS, increased horse use in the designated areas for a short period of time would be well within the capability of the area and would only affect 50 acres. Therefore, long-term impacts to great gray owl prey species from increased grazing of vegetation would be minimal. According to Section 4.1 (Wilderness) of this FEIS, it is anticipated that normal visitation in the area of the campsites would decrease during the duration of the project. Therefore, cumulative impacts in the area of campsites would be unlikely during the project.

The proposed project is temporary in duration (30 – 35 days), would not occur during the breeding or nesting season, proposes no modification of these species habitat, and would follow the mitigation measures below. Therefore, it is determined that the direct, indirect and cumulative impacts discussed above may impact individual boreal and great gray owls but is not likely to cause a trend toward federal listing of these species.

Mitigation/Monitoring

The U.S. Fish and Wildlife Service's *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances* (US Fish and Wildlife Service 1999) would be followed for the use of helicopters in raptor habitat. An altitude of at least 1000 feet (above potential habitat) and a minimum speed of at least 30 mph would be maintained. This would not only allow additional protection to goshawks that may occur in the project area, but to boreal and great gray owls as well.

Implementation of the project would not start before August 1st. This would eliminate impacts to the boreal owl and great gray owl during the breeding and nesting periods.

The Ashley National Forest will continue to monitor these species on the Forest.

Three-toed Woodpecker –

Direct and Indirect Effects

The primary factor affecting three-toed woodpeckers and their habitat is clearing forests without snag retention (Parrish et al. 2002). No action proposed under this alternative would result in this kind of disturbance. This project would not directly affect any standing or down woody vegetation.

The proposed project would not begin until August 1st, which would likely be after young have fledged (Nature Serve 2003). Therefore the proposed project would not likely affect this species during the breeding and nesting season. However, there may be late nesters that may not fledge until early August. In this case, late nesters could be affected during the first week or two of the project. Disturbance from helicopter flights during this period could cause nest abandonment of late nesters.

The proposed campsites, strings of pack stock, borrow pits, and repair work of the dams in this alternative would not alter habitat for the three-toed woodpecker. These activities would, however, result in some noise disturbance to habitat near the project. Noise from motorized equipment would be the most foreign in the area, and could therefore have the greatest potential for displacing individual woodpeckers. As discussed under the "goshawk section" (e.g., 10% disturbance increase on trails, and substantial increase of disturbance at campsites) the pack strings would not substantially increase disturbance, but disturbance at the campsites would be substantial. This would likely result in a substantial increase of noise disturbance to three-

toed woodpeckers in the area. Due to recreational use of the area, three-toed woodpeckers may have become habituated to the current level of disturbance. The increased activity at the campsites and from repair work on the dams could be substantial enough to elevate the disturbance in these areas to a level that may temporarily displace some individual three-toed woodpeckers for the duration of the project.

Impacts to three-toed woodpeckers at the staging area would be similar to those discussed above for helicopter flights and pack strings. However, since this staging area is in close proximity to the road and trailhead, existing disturbances would be greater than those described above. Therefore, the activities associated with the staging area would be less likely to affect woodpeckers. Impacts to the three-toed woodpecker from the proposed Chepeta Trailhead staging area would be similar to those discussed for the Reader Creek staging area.

Because their primary food source is wood boring insects (Parrish et al. 2002), there would be no anticipated affects to three-toed woodpeckers from grazing of pack stock.

Cumulative Impacts

Cumulative impacts to three-toed woodpeckers from the proposed project would consist of repair work on the dam, helicopter disturbance, disturbance at staging areas, and recreational use in the area. According to Section 4.1 (Wilderness) of this FEIS, it is anticipated that normal visitation in the area of the campsites would decrease during the duration of the project. Therefore, cumulative impacts in the area of the proposed campsites would be unlikely during the project.

The proposed project is temporary in duration (30 – 35 days), would likely occur after the breeding and nesting season, proposes no modification of this species habitat, and would follow the mitigation measures below. Therefore, it is determined that the direct, indirect and cumulative impacts discussed above may impact individual three-toed woodpeckers but is not likely to cause a trend toward federal listing of this species.

Mitigation/Monitoring

The U.S. Fish and Wildlife Service's *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances* (US Fish and Wildlife Service 1999) would be followed for the use of helicopters in raptor habitat. An altitude of at least 1000 feet (above potential habitat) and a minimum speed of at least 30 mph would be maintained. This would not only allow additional protection to goshawks that may occur in the project area, but to three-toed woodpeckers as well.

Implementation of the project would not start before August 1st. With the exception of late nesters, this would eliminate impacts to the three-toed woodpecker during the breeding and nesting periods.

The Ashley National Forest will continue to monitor this species on the Forest.

Management Indicator Species

Elk and Mule Deer -

Direct and Indirect Effects

Due to the activities related to this alternative it is possible that some deer and elk will be temporarily displaced. This alternative would not modify the amount of escape and hiding cover for deer and elk, however there may be foraging competition with pack horses in the designated foraging areas. Under this Alternative, there would be approximately 50 acres affected by horse grazing. However, according to Section 4.3 (Vegetation) of this FEIS, one season of concentrated grazing from pack horses in these designated areas would have minimal long-term effects on the condition and trend of the vegetative resource, and recovery could be expected within a year. It is therefore anticipated that the effects to vegetation from horse grazing would not have long-term effects to elk and deer foraging habitat. Short-term effects would occur during project implementation. This would likely temporarily displace elk and deer to other areas

within the drainage during project implementation.

Disturbance from repair work on the dam, helicopter flights, borrow pits, and campsites may reduce the availability of some habitat for a short period of time (through the duration of the project). Noise from motorized equipment would be the most foreign in the area, and could therefore have the greatest potential for displacing elk and deer. As discussed under the "goshawk section" (e.g., 10% disturbance increase on trails, and substantial increase of disturbance at campsites) the pack strings would not substantially increase disturbance, but disturbance at the campsites would be substantial. This would likely result in a substantial increase of noise disturbance to elk and deer in the area. Due to recreational use of the area, elk and deer likely avoid the immediate area at the reservoirs and reside in areas with less human interaction.

Implementation of the project would not occur until August 1st, which would be long after the fawning and calving season (UDWR 2003; and Nature Serve 2003). Project activities would be concluded before the rutting season for deer, but may occur during the rutting season for elk (UDWR 2003; and Nature Serve 2003). The amount of elk and deer habitat that would be affected by the proposed project is a small amount, when compared to the overall amount (100,000+ acres) of elk and deer habitat throughout the drainage. Therefore, it is likely that the only effects to rutting elk would be displacement to other areas in the drainage.

Cumulative Impacts

The disturbance from repair work of the dam, the campsites, helicopter flights, and recreational use, coupled with foraging competition with horses may have some short-term impacts to elk and deer. Forage competition alone may displace elk and deer from the area. The area is likely to continue to function as a popular wilderness recreation area and may thereby continue to displace some deer and elk.

The anticipated effects to elk and deer from the proposed project would not change the current trends of their populations. The project could temporarily displace some individuals from the area, however this would not affect their survival. Displacing some individuals from the area could have an effect of the harvest in the area or may displace harvesting to another area. Given the small scale of the proposed project and the large landscape elk and deer use, it is very unlikely that the proposed project would fragment a significant amount of habitat or have a significant effect on elk and deer migration.

The proposed project is temporary in duration (30 – 35 days), would not occur during the calving or fawning season, and would follow the mitigation measures below. Considering these facts and the previous rationale, it is determined that the direct, indirect and cumulative impacts discussed above would not affect the viability of elk and deer populations or impair the ability of the Forest to provide well-distributed habitat for elk and deer. Because of the same rationale above, it is also determined that direct, indirect, and cumulative impacts previously discussed are not likely to affect the trend in elk and deer populations on the Forest.

Mitigation/Monitoring

The U.S. Fish and Wildlife Service's *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances* (US Fish and Wildlife Service 1999) would be followed for the use of helicopters in raptor habitat. An altitude of at least 1000 feet (above potential habitat) and a minimum speed of at least 30 mph would be maintained. This would not only allow additional protection to goshawks but to most bird species, as well as deer and elk, which may occur in the project area.

Implementation of the project would not start before August 1st. This mitigation would eliminate disturbances to elk and deer during the calving and fawning season.

Generally the Utah Division of Wildlife Resources monitors elk and deer populations, sex ratios, and recruitment. This monitoring would continue.

Northern Goshawk –

Direct and Indirect Effects

From the data given in Chapter 3, it is possible that goshawks may be within the project area. The proposed campsites, strings of pack stock, staging areas, borrow pits, and repair work of the dams in this alternative would not alter goshawk habitat. These activities would, however, result in some noise disturbance to habitat near the project. Noise from motorized equipment would be the most foreign in the area, and could therefore have the greatest potential of disturbance. According to Section 4.1 (Wilderness) of this FEIS, 14 people camped in this area for a 35-day period would be a substantial increase from normal use of the area. This would likely result in a substantial increase of noise disturbance to goshawks in the area. Also, according to Section 4.2 (Recreation) of this FEIS, wear and tear of trails from the proposed pack strings would increase by 10%. It can therefore be assumed that the use of the proposed pack stock (20 round trips, nine horses in a string) along the trails under this alternative would increase normal pack stock use by 10%. This 10% increase would not substantially change the overall current disturbance to habitat along the proposed trails (#133 and #025). Due to recreational use of the area, goshawks may presently avoid the area, or have become habituated to the current level of disturbance. The increased activity at the campsites and from repair work on the dams could be substantial enough to elevate the disturbance in these areas to a level that may temporarily displace some individual goshawks for the duration of the project.

Under this Alternative, there would be approximately 50 acres of open meadows affected by horse grazing. Because goshawks primarily forage in closed canopy forests with moderate tree densities (Graham et al. 1999), there would be no anticipated affects to goshawks or their prey species from grazing by pack stock.

There is potential for disturbance to nesting goshawks from helicopter flights. Frequent helicopter flights over an active nest could cause nest abandonment and may affect the foraging habits of goshawks. However, project implementation would not occur until August 1st. According to the data in Section 3.4 of this FEIS, this would be after or at the end of the fledgling period. Goshawk surveys will be conducted during the nesting season near the staging areas and along the helicopter flight path prior to implementation of the project. If a goshawk nest is found in the area, a helicopter flight path will be selected that does not occur within ½ mile of any goshawk nest. This would eliminate impacts to nesting goshawks in the area. According to the same goshawk data in Section 3.4 of this EIS, helicopter flights would occur during the fledgling's dependence on the PFA and may disturb foraging patterns for the duration of the project. Another mitigation measure for this project would require helicopter flights to stay at an altitude of at least 1000 feet (above potential habitat) and require a minimum speed of at least 30 mph be maintained. This would provide additional protection to goshawks that may occur in the project area and reduce impacts to foraging areas.

There would be no removal of vegetation at the Reader Creek staging area. Impacts to goshawks would be similar to those discussed above for helicopter flights and pack strings. However, since this staging area is in close proximity to the road and trailhead, existing disturbances would be greater than those described above. Therefore, the activities associated with the staging area would be less likely to affect goshawks. Impacts to goshawks from the proposed Chepeta Trailhead staging area would be similar to those discussed for the Reader Creek staging area.

Considering these potential affects to goshawks from the proposed action, it is possible that some individual goshawks may be displaced. Given a goshawks home range of 6,000 acres (Reynolds et al. 1992), and assuming that all goshawk habitat near the project area was within an occupied goshawk territory, the project has the potential to temporarily affect three territories (one in the Fox Lake area, one in the Reader Creek area, and one in the Queant Lake area). Adding these three territories to the number of goshawk territories currently known on the Forest, gives a total of 59. These three territories would be approximately 5% of the total (59) number of territories on the

Forest. This is a relatively small percentage compared to the total. Also, the mitigations would protect the nesting areas in these territories from disturbances incurred by the proposed project during the nesting season. Therefore, the displacement of individuals in these three hypothetical territories would not affect the goshawk population on the Forest. These territories, though possible, are purely hypothetical and are referenced only to help quantify potential effects from the project.

Cumulative Impacts

Cumulative impacts to the goshawk from the proposed project would consist of repair work on the dam, helicopter disturbance, disturbance at staging areas, forage use by horses, elk and deer use, and recreational use in the area. Adding elk and deer use and recreational stock use in the area to the proposed stock use would increase the amount of grazing in the area (loss of vegetation). However, according to Section 4.3 (Vegetation) of this FEIS, increased horse use in the designated areas for a short period of time would be well within the capability of the area and would only affect 50 acres. Therefore, cumulative impacts to goshawk prey species from increased grazing of vegetation would be minimal. According to Section 4.1 (Wilderness) of this FEIS, it is anticipated that normal visitation in the area of the campsites would decrease during the duration of the project. Therefore, cumulative impacts in the area of campsites would be unlikely during the project.

The proposed project is temporary in duration (30 – 35 days), proposes no modification of goshawk habitat, and would follow the mitigation measures below. Therefore, it is determined that the direct, indirect, and cumulative impacts discussed above are not likely to affect the viability of goshawks populations or impair the ability of the Forest to provide well-distributed habitat for this species. Because of the same rationale above, it is also determined that the direct, indirect, and cumulative impacts previously discussed are not likely to affect the trend in goshawk populations on the Forest.

Mitigation/Monitoring

The U.S. Fish and Wildlife Service's *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances* (US Fish and Wildlife Service 1999) would be followed for the use of helicopters in raptor habitat. An altitude of at least 1000 feet (above potential habitat) and a minimum speed of at least 30 mph would be maintained. This would provide additional protection to goshawks that may occur in the project area.

Implementation of the project would not start before August 1st. This would reduce impacts from the proposed project, to possible goshawk nesting and post fledgling areas.

Goshawk surveys will be conducted during the nesting season near the staging areas and along the helicopter flight path prior to implementation of the project (June or July of the same season of project implementation). If a goshawk is detected and a nest is found in the area, a helicopter flight path will be selected that does not occur within ½ mile of any goshawk nest. This would eliminate impacts to nesting goshawks in the area.

The Ashley National Forest annually monitors and surveys known goshawk territories on the Forest. These surveys and monitoring will continue.

Lincoln's Sparrow and Song Sparrow –

Direct and Indirect Effects

Lincoln's sparrows occasionally have two broods a year and song sparrows have two broods and sometimes three a year (Nature Serve 2003). The proposed project would not begin until August 1st, which would likely be after young have fledged from the first and second broods (Nature Serve 2003). However, the project may occur during the nesting period of the third brood and late nesting second broods. Disturbance from helicopter flights during the nesting period could cause nest abandonment of some second nests and third nests. If birds are displaced before second nesting occurs, then it is likely that the bird would nest in an area away from the disturbance.

Since breeding territories for these species are approximately 208 feet wide (0.4 hectares or 1 acre) (Nature Serve 2003) and trails are 200 to 500 feet away from the riparian area along Reader creek, these species are not likely to be affected by pack stock use on the trail.

The project work on the dam would be adjacent to riparian grass and shrubs, which is preferred habitat for the Lincoln's sparrow. Noise disturbance from work on the dam could also cause displacement of individuals. Borrow pits would remove ½ acre of these species habitat. Due to the amount of available habitat in the area, removal of ½ acre would not likely affect these species. The campsites would not be in these habitats and would not disturb these species.

In Section 2.1.1 (Hydrology) of this FEIS, a mitigation measure directs that concentrated stock use would be conducted a minimum of 200 feet from a wetland, stream bank, or high waterline. Since Lincoln's and song sparrows are generally found along streams, wet meadows, and riparian thickets (Nature Serve 2003), it is unlikely that grazing from pack stock would affect these species.

Cumulative Impacts

Cumulative impacts to Lincoln's sparrows and song sparrows from this alternative would include disturbance from helicopter flights, repair work on the dam, staging areas, horse grazing, elk and deer use, and recreational use. Since Lincoln's and song sparrows are generally found in riparian areas and stock grazing is restricted from these areas, the combined effect from grazing of recreational stock, elk and deer, and the proposed pack stock, is unlikely to affect these species. The combined effects from the other cumulative impacts may temporarily displace individuals or may cause nest abandonment of late second nesters and third nesters. It is possible that displaced individuals may nest in undisturbed habitat, if displacement was prior to nesting. Due to the Lincoln's sparrow only occasionally having second nests, it is anticipated that the loss of late second nests within the project area would not be a substantial loss of recruitment into the Lincoln's sparrow population. Also, due to the song sparrow only occasionally having third nests, it is anticipated that the loss of third nests within the project area would not be a substantial loss of recruitment into the song sparrow population.

The proposed project is short in duration (30 – 35 days) and the mitigations below. Considering these facts and the previous rationale, it is determined that the direct, indirect, and cumulative impacts discussed above are not likely to affect the viability of Lincoln's and song sparrow populations on the Forest or impair the ability of the Forest to provide well-distributed habitat for these species. Because of the same rationale above, it is also determined that direct, indirect, and cumulative impacts previously discussed are not likely to affect the trend in their populations.

Mitigation/Monitoring

The U.S. Fish and Wildlife Service's *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances* (US Fish and Wildlife Service 1999) would be followed for the use of helicopters in raptor habitat. An altitude of at least 1000 feet (above potential habitat) and a minimum speed of at least 30 mph would be maintained. This would not only allow additional protection to goshawks but also to Lincoln's and song sparrows.

Implementation of the project would not start before August 1st. This would reduce impacts from the proposed project during breeding and nesting periods.

Generally, the North American Breeding Bird Survey and Partners in Flight monitor these bird populations in cooperation with the Ashley National Forest. The Forest does point count surveys to determine habitat use and preference by species.

White-tailed Ptarmigan -

Direct and Indirect Effects

White-tailed ptarmigan are usually done nesting by early July (DeGraaf et al. 1991; and Nature

Serve 2003). The proposed project would not begin until August 1st, which is after the nesting period. Therefore the proposed project would not affect these species during the breeding and nesting season.

White-tailed ptarmigan summer habitat does not exist near the campsites, the reservoirs, staging areas, or horse grazing areas and therefore would not be affected by increased disturbance from those activities. Disturbance to this species would be from pack stock use of trails and helicopter flights.

Alpine meadows, preferred white-tailed ptarmigan habitat, are present along the helicopter flight path near North Pole Pass and Fox Queant Pass and the trails that would be used by the pack string. As discussed under the "goshawk section" increased disturbance from pack stock use on trails would be 10%. This 10% increase would not substantially change the overall current disturbance to white-tailed ptarmigan habitat along the proposed trail (#025). Therefore there are no anticipated impacts to ptarmigan from this disturbance. Helicopter flights over alpine meadows would not occur during the breeding or nesting periods. Therefore impacts from helicopter flights would likely be temporary displacement of some individuals and broods.

Cumulative Impacts

There are very few human made disturbances to this habitat type and cumulative impacts to this species habitat and population would therefore be minimal. Possible cumulative impacts to white-tailed ptarmigan under this alternative would include disturbance from helicopter flights, horse pack strings, and recreational use.

It is possible that cumulative impacts to white-tailed ptarmigan under this alternative may temporarily displace some individuals. However, these cumulative impacts would not occur during the nesting or breeding season and would not affect the survival of chicks or adults.

The proposed project is short in duration (30 – 35 days), would not occur during the breeding and nesting season, and would follow the mitigations below. Considering these facts and the previous rationale, it is determined that the direct, indirect, and cumulative impacts discussed above would not affect the trend in this species population on the Forest. Because of the same rationale above, it is also determined that direct, indirect, and cumulative impacts previously discussed are not likely to affect the viability of white-tailed ptarmigan populations or impair the ability of the Forest to provide for well-distributed white-tailed ptarmigan populations across the limited habitat on the Forest.

Mitigation/Monitoring

The U.S. Fish and Wildlife Service's *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances* (US Fish and Wildlife Service 1999) would be followed for the use of helicopters in raptor habitat. An altitude of at least 1000 feet (above potential habitat) and a minimum speed of at least 30 mph would be maintained. This would not only allow additional protection to goshawks but also to the white-tailed ptarmigan.

Implementation of the project would not start before August 1st. This would eliminate impacts from the proposed project during the breeding and nesting period.

Generally the Utah Division of Wildlife Resources monitors populations for game species, including the white-tailed ptarmigan. No additional monitoring would be required.

Birds of Conservation Concern (Migratory Birds)

Williamson's Sapsucker -

Direct and Indirect Effects

The proposed project would not begin until August 1st, which would likely be after young have fledged (Dobbs et al. 1997). Therefore the proposed project would not likely affect these species during the breeding and nesting season.

The proposed campsites, strings of pack stock, borrow pits, and repair work of the dams in this

alternative would not alter habitat for the Williamson's sapsucker. These activities would, however, result in some noise disturbance to habitat near the project. Noise from motorized equipment would be the most foreign in the area, and could therefore have the greatest potential for displacing individuals of this species. As discussed under the "goshawk section" (e.g., 10% disturbance increase on trails, and substantial increase of disturbance at campsites) the pack strings would not substantially increase disturbance, but disturbance at the campsites would be substantial. This would likely result in a substantial increase of noise disturbance to Williamson's sapsuckers in the area. Due to recreational use of the area, sapsuckers may have become habituated to the current level of disturbance. The increased activity at the campsites and from repair work on the dams could be substantial enough to elevate the disturbance in these areas to a level that may temporarily displace some individual Williamson's sapsuckers for the duration of the project. Helicopter flights may also cause displacement of individual Williamson's sapsuckers.

Impacts to Williamson's sapsuckers at the staging area would be similar to those discussed above for helicopter flights and pack strings. However, since this staging area is in close proximity to the road and trailhead, existing disturbances would be greater than those described above. Therefore, the activities associated with the staging area would be less likely to affect this species. Impacts to the Williamson's sapsucker from the proposed Chepeta Trailhead staging area would be similar to those discussed for the Reader Creek staging area.

Because their primary food source is sap, cambium, and ants (Nature Serve 2003), there would be no anticipated affects to Williamson's sapsuckers from grazing by pack stock.

Cumulative Impacts

Cumulative impacts to Williamson's sapsuckers from the proposed project would consist of repair work on the dam, helicopter disturbance, disturbance at staging areas, and recreational use in the area. According to Section 4.1 (Wilderness) of this FEIS, it is anticipated that normal visitation in the area of the campsites would decrease during the duration of the project. Therefore, cumulative impacts in the area of the proposed campsites would be unlikely during the project.

The proposed project is temporary in duration (30 – 35 days), would likely occur after the breeding and nesting season, proposes no modification of these species habitat, and would follow the mitigation measures below. Therefore, it is unlikely that the direct, indirect and cumulative impacts discussed above would adversely affect the Williamson's sapsucker or its population.

Mitigation/Monitoring

The U.S. Fish and Wildlife Service's *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances* (US Fish and Wildlife Service 1999) would be followed for the use of helicopters in raptor habitat. An altitude of at least 1000 feet (above potential habitat) and a minimum speed of at least 30 mph would be maintained. Although not a raptor, this would allow additional protection to the sapsucker and to most bird species that may occur in the project area.

Implementation of the project would not start before August 1st. This mitigation would eliminate disturbances to the Williamson's sapsucker during the nesting period.

The North American Breeding Bird Survey (Sauer et al. 2003) generally monitors bird populations, including the Williamson's sapsucker. No additional monitoring would be required.

Utah Partners in Flight Priority Species

Black Rosy-Finch -

Direct and Indirect Effects

Black rosy-finch breeding habitat does not exist near the campsites, the reservoirs, staging areas, or horse grazing areas and therefore would not be affected by increased disturbance from those activities. Disturbance to this species would be

from pack stock use of trails and helicopter flights.

Alpine meadows, grassy areas, and barren rock areas are preferred black rosy-finch habitat (Parrish et al. 2002). These areas are present along the helicopter flight path near North Pole Pass and Fox Queant Pass and the trails that would be used by the pack string. As discussed under the "goshawk section" increased disturbance from pack stock use on trails would be 10%. This 10% increase would not substantially change the overall current disturbance to black rosy-finch habitat along the proposed trail (#025). Therefore there are no anticipated impacts to the black rosy-finch from this disturbance.

The black rosy-finch is usually done nesting between the end of July and late August (Parrish et al. 2002;Nature Serve 2003). Helicopter flights over alpine meadows would occur during part of the nesting period and may cause stress to black rosy-finches that may be nesting in the area. This could result in nest abandonment. A mitigation measure for this project would require helicopter flights to stay at an altitude of at least 1000 feet (above potential habitat) and require a minimum speed of at least 30 mph be maintained. This would provide additional protection to nesting finches that may occur in the project area.

Cumulative impacts

There are very few human made disturbances to this habitat type and cumulative impacts to this species habitat and population would therefore be minimal. Possible cumulative impacts to the black rosy-finch under this alternative would include disturbance from helicopter flights, horse pack strings, and recreational use.

It is possible that cumulative impacts to the black rosy-finch under this alternative may temporarily displace some individuals. It is also possible that helicopter flights could cause nest abandonment of possible nearby nests. A mitigation measure for this project would require helicopter flights to stay at an altitude of at least 1000 feet (above potential habitat) and require a minimum speed of at least 30 mph be maintained. This would provide additional protection to nesting finches that may occur in the project area.

Due to the rationale above, the mitigation measures, and short life of the project (30 – 35 days), it is determined that the direct, indirect, and cumulative impacts discussed above would not adversely affect the black rosy-finch or its populations.

Mitigation/Monitoring

The U.S. Fish and Wildlife Service's *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances* (US Fish and Wildlife Service 1999) would be followed for the use of helicopters in raptor habitat. An altitude of at least 1000 feet (above potential habitat) and a minimum speed of at least 30 mph would be maintained. Although not a raptor, this would allow additional protection to the black rosy-finch and to most bird species that may occur in the project area.

Implementation of the project would not start before August 1st. This mitigation would reduce impacts from the proposed project to late nesting black rosy-finches.

The North American Breeding Bird Survey (Sauer et al. 2003) and Partners in Flight (Parrish et al. 2002) generally monitor bird populations, including the black rosy-finch. No additional monitoring would be required.

Broad-tailed Hummingbird –

Direct and Indirect Effects

The proposed campsites, strings of pack stock, staging areas, and repair work of the dams in this alternative would not alter broad-tailed hummingbird habitat. These activities would, however, result in some noise disturbance to habitat near the project. Noise from motorized equipment would be the most foreign in the area, and could therefore have the greatest potential of disturbance. As discussed under the "goshawk section" (e.g., 10% disturbance increase on trails, and substantial increase of disturbance at campsites) the pack strings would not

substantially increase disturbance, but disturbance at the campsites would be substantial. This would likely result in a substantial increase of noise disturbance to broad-tailed hummingbirds in the area. Due to recreational use of the area, broad-tailed humming birds may presently avoid the area, or have become habituated to the current level of disturbance. The increased activity at the campsites and from repair work on the dams could be substantial enough to elevate the disturbance in these areas to a level that may temporarily displace some individual broad-tailed hummingbirds for the duration of the project.

Borrow pits under this alternative would only remove ½ acre of broad-tailed hummingbird habitat. Due to the amount of available habitat in the area, removal of ½ acre would not likely affect this species.

Under this Alternative, there would be approximately 50 acres affected by horse grazing. Forage use by horses in these designated areas in the proposal may reduce wildflowers and insects available to broad-tailed hummingbirds. However, according to Section 4.3 (Vegetation) of this FEIS, one season of concentrated grazing from pack horses in these designated areas would have minimal long-term effects on the condition and trend of the vegetative resource, and recovery could be expected within a year. It is therefore anticipated that the impacts to broad-tailed hummingbirds related to grazing would be temporary, likely only for one growing season (same season as project implementation) and would only affect 50 acres of their habitat.

There is potential for disturbance to late nesting broad-tailed hummingbirds from helicopter flights. Frequent helicopter flights over an active nest could cause nest abandonment and may affect the foraging habits of this species. However, project implementation would not occur until August 1st and the majority of the project is above 10,400 feet in elevation. Broad-tailed hummingbirds usually are done nesting by mid August and are not known to nest above 10,400 ft. (Parrish et al. 2002). Therefore nests potentially affected by helicopter flights would most likely occur in the lower part of the Reader Creek route, lower part of the Queant route, and at the staging areas. Disturbance to these nests from helicopter flights could cause nest abandonment. Helicopter flights may also cause displacement of individual broad-tailed hummingbirds. A mitigation measure for this project would require helicopter flights to stay at an altitude of at least 1000 feet (above potential habitat) and require a minimum speed of at least 30 mph be maintained. This would provide additional protection to nesting hummingbirds that may occur in the lower part of the project area.

There would be no removal of vegetation at the Reader Creek staging area. Impacts to broad-tailed hummingbirds would be similar to those discussed above for helicopter flights and pack strings. However, since this staging area is in close proximity to the road and trailhead, existing disturbances would be greater than those described above. Therefore, the activities associated with the staging area would be less likely to affect broad-tailed hummingbirds. Impacts to broad-tailed hummingbirds from the proposed Chepeta Trailhead staging area would be similar to those discussed for the Reader Creek staging area.

Cumulative Effects

Cumulative impacts to the broad-tailed hummingbird from the proposed project would consist of repair work on the dam, helicopter disturbance, disturbance at staging areas, forage use by horses, forage use by deer and elk, and recreational use in the area. Adding deer and elk use and recreational stock use in the area to the proposed stock use would increase the amount of grazing in the area (loss of vegetation). However, according to Section 4.3 (Vegetation) of this FEIS, increased horse use in the designated areas for a short period of time would be well within the capability of the area. Therefore, cumulative impacts to broad-tailed hummingbird foraging areas, from increased grazing of vegetation would be minimal. According to Section 4.1 (Wilderness) of this FEIS, it is anticipated that normal visitation in the area of the campsites would decrease during the duration of the project. Therefore, cumulative impacts in the area of campsites would be unlikely during the project.

Due to the rationale above, the mitigation measures, and short life of the project (30 – 35 days), it is determined that the direct, indirect, and cumulative impacts discussed above would not adversely affect the broad-tailed hummingbird or its populations.

Mitigation/Monitoring

The U.S. Fish and Wildlife Service's *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances* (US Fish and Wildlife Service 1999) would be followed for the use of helicopters in raptor habitat. An altitude of at least 1000 feet (above potential habitat) and a minimum speed of at least 30 mph would be maintained. Although not a raptor, this would allow additional protection to the broad-tailed hummingbird and to most bird species that may occur in the project area.

Implementation of the project would not start before August 1st. This mitigation would reduce impacts from the proposed project to late nesting broad-tailed hummingbirds.

The North American Breeding Bird Survey (Sauer et al. 2003) and Partners in Flight (Parrish et al. 2002) generally monitor bird populations, including the broad-tailed hummingbird. No additional monitoring would be required.

ALTERNATIVE TWO – Modified Proposed Action

Federally Threatened, Endangered, and Proposed Species

Canada Lynx –

Direct and Indirect Effects

Helicopter flights in this alternative would be in a different location than described in Alternative One. The staging area and pack trips will be in a different location as well. Though these locations are different than in Alternative One, the effects to lynx and lynx habitat will be very similar to those discussed in Alternative One. The staging area in this alternative would require some ground disturbance, but no lynx habitat would be disturbed.

The borrow material for this alternative would be taken from within the reservoirs and would not disturb any lynx habitat.

Grazing by pack stock under this alternative would have the same affects to lynx as those described in Alternative One (refer to Alternative One for further discussion).

Cumulative Impacts

Cumulative impacts would be similar to those discussed in Alternative One. Temporary noise disturbance within the Chepeta/Whiterocks LAU may be slightly different. To calculate temporary noise disturbance that would occur within the Chepeta/Whiterocks LAU from the proposed project under this alternative, the helicopter path was buffered ¼ mile on each side (approximately 1,632 acres). Adding the 120 acres of existing disturbed acres gives a total disturbance of 1,752 acres. This would constitute approximately 6.75% temporary disturbance within this LAU. The disturbance from the helicopter would only be for the duration of the project and would be intermittent.

The Uinta LAU would be impacted roughly the same as Alternative One.

Essentially, there would be very little additional long-term cumulative impacts associated with improving the dam's current condition on Canada lynx habitat. Due to the fact that the dam/reservoir complex is not a natural complex means that the continued use of the reservoir would perpetually keep that area out of primary lynx habitat. The area considered for the staging area was clearcut in the early 1970's. Currently, some of these clearcuts are providing good snowshoe hare habitat. Activities related to this action would occur during summer/fall and would avoid the more stressful periods (denning and winter foraging periods) for lynx (Reudiger 2000).

Due to the use of the trail system being seasonal (summer/fall), the project being temporary in nature, and activity use in the area not being

considered high, this alternative has little negative effects to lynx habitat connectivity either between or within the LAUs. Lynx will still be able to move between and through the LAUs.

Due to the rationale above and compliance of this Alternative with the LCAS, it is determined that the direct, indirect, and cumulative impacts discussed above may affect, but is not likely to adversely affect the Canada lynx.

Mitigation/Monitoring

None applicable.

Forest Sensitive Species

Northern Goshawk –

Direct and Indirect Effects

Effects to goshawks with this alternative would be similar to those discussed in Alternative One (refer to Alternative One). However, this alternative proposes a different location for the staging area and a different route (Queant route) for helicopter flights and the pack string. Those impacts to goshawks discussed in Alternative One would shift to the Queant route and Queant route staging area. The types and amounts of impacts under this alternative would be the same as in Alternative 1.

Cumulative Impacts

Cumulative impacts would be the same as discussed in Alternative One (refer to Alternative One) with the exception of change in location of the staging areas and helicopter and pack string routes. The types and amounts of cumulative impacts under this alternative would be the same as in Alternative 1.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Boreal Owl and Great Gray Owl –

Direct and Indirect Effects

Effects to boreal owls and great gray owls in this alternative would be very similar to those discussed in Alternative One (refer to Alternative One). However, this alternative proposes a different location for the staging area and different route (Queant route) for helicopter flights and the pack string. Impacts to these species would shift to the Queant route and staging area. The types and amounts of impacts under this alternative would be the same as in Alternative 1. Both boreal owls and great gray owls have been observed within the staging area proposed for this Alternative (Ashley NF unpub. data).

Cumulative Impacts

Cumulative impacts would be the same as discussed in Alternative One (refer to Alternative One) with the exception of change in location of the staging areas and helicopter and pack string routes. The types and amounts of cumulative impacts under this alternative would be the same as in Alternative 1.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Three-toed Woodpecker –

Direct and Indirect Effects

Effects to three-toed woodpeckers with this alternative would be similar to those discussed in Alternative One (refer to Alternative One). However, this alternative proposes a different location for the staging area and different route (Queant route) for helicopter flights and the pack string. Impacts to the three-toed woodpecker would shift to the Queant route and staging area. The types and amounts of impacts under this alternative would be the same as in Alternative 1. Three-toed woodpeckers have been observed within the staging area proposed for this Alternative (Ashley NF unpub. data).

Cumulative Impacts

Cumulative impacts would be the same as discussed in Alternative One (refer to Alternative One) with the exception of change in location of the staging areas and helicopter and pack string routes. The types and amounts of cumulative impacts under this alternative would be the same as in Alternative 1.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Management Indicator Species

Elk and Mule Deer -

Direct and Indirect Effects

Although, the helicopter route and staging locations proposed for this alternative are different than Alternative One, the effects to elk and mule deer would be the same. The types and amounts of impacts under this alternative would also be the same as in Alternative 1. Refer to Alternative One for a complete discussion of those effects. The only change would be in the location of those effects. Elk and mule deer in the West Fork Whiterocks area would be affected by the project, instead of those in the Reader Creek area.

Cumulative Impacts

Cumulative impacts would be the same as discussed in Alternative One (refer to Alternative One) with the exception of change in location of the staging areas and helicopter and pack string routes. The types and amounts of cumulative impacts under this alternative would be the same as in Alternative 1.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Northern Goshawk –

Direct and Indirect Effects

Effects to goshawks with this alternative would be similar to those discussed in Alternative One (refer to Alternative One). However, this alternative proposes a different location for the staging area and a different route (Queant route) for the pack string and helicopter flights. Those impacts to goshawks discussed in Alternative One would shift to the Queant route and Queant route staging area. The types and amounts of impacts under this alternative would be the same as in Alternative 1.

Cumulative Impacts

Cumulative impacts would be the same as discussed in Alternative One (refer to Alternative One) with the exception of change in location of the staging areas and helicopter and pack string routes. The types and amounts of cumulative impacts under this alternative would be the same as in Alternative 1.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Lincoln's Sparrow and Song Sparrow -

Direct and Indirect Effects

Although, the helicopter and pack string route, and staging locations proposed for this alternative are different than Alternative One, the effects to Lincoln's sparrows and song sparrows would be the same. The types and amounts of impacts under this alternative would be the same as in Alternative 1. Refer to Alternative One for a complete discussion of those effects. The only change would be in the location of those effects. Lincoln's sparrows and song sparrows in the West Fork Whiterocks area would be affected by the project, instead of those in the Reader Creek area.

Cumulative Impacts

Cumulative impacts would be the same as discussed in Alternative One (refer to Alternative One) with the exception of change in location of the staging areas and helicopter and pack string routes. The types and amounts of cumulative impacts under this alternative would be the same as in Alternative 1.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

White-tailed Ptarmigan -

Direct and Indirect Effects

Same as Alternative One.

Cumulative Impacts

Same as Alternative One.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Birds of Conservation Concern (Migratory Birds)

Williamson's sapsucker –

Direct and Indirect Effects

Effects to Williamson's sapsucker in this alternative would be similar to those discussed in Alternative One (refer to Alternative One). However, this alternative proposes a different location for the staging area and different route (Queant route) for helicopter flights and pack strings. Impacts to the Williamson's sapsucker would shift to the Queant route and staging area. The types and amounts of impacts under this alternative would be the same as in Alternative 1.

Cumulative Impacts

Cumulative impacts would be the same as discussed in Alternative One (refer to Alternative One) with the exception of change in location of the staging areas and helicopter and pack string routes. The types and amounts of cumulative impacts under this alternative would be the same as in Alternative 1.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Utah Partners in Flight Priority Species

Black Rosy-Finch -

Direct and Indirect Effects

Same as Alternative One.

Cumulative Impacts

Same as Alternative One.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Broad-tailed Hummingbird –

Direct and Indirect Effects

Effects to broad-tailed hummingbirds with this alternative would be similar to those discussed in Alternative One (refer to Alternative One). However, this alternative proposes a different location for the staging area and different route (Queant route) for helicopter flights and the pack string. Impacts to the broad-tailed hummingbirds in Alternative One would shift to the Queant route and staging area. The types and amounts of impacts under this alternative would be the same as in Alternative 1.

Cumulative Impacts

Cumulative impacts would be the same as discussed in Alternative One (refer to Alternative One) with the exception of change in location of the staging areas, and helicopter and pack string routes. The types and amounts of cumulative impacts under this alternative would be the same as in Alternative 1.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

ALTERNATIVE THREE – Primitive Tool and Access

Federally Threatened, Endangered, and Proposed Species

Canada Lynx –

Direct and Indirect Effects

Helicopter flights would be reduced by nearly half under this alternative. This would be a 50 percent reduction of noise disturbance from helicopter flights to lynx habitat from Alternative One. However, this alternative would also nearly triple the amount of horses and horse days needed to complete the project and would increase the amount of acres grazed from 50 acres to 142 acres. This would nearly triple the amount of acres affected by grazing, thus tripling the affects to lynx prey species. However, according to Section 4.3 (Vegetation) of this FEIS, increased horse use under this alternative would be well within the capability area and would have minimal long-term effects on the condition and trend of the vegetative resource. Therefore, the anticipated increase in grazing in the designated areas under this alternative may reduce the amount of cover and forage available to lynx prey species (snowshoe hare) for the season of project implementation, but is not expected to change the availability of forage and cover in the long term.

The duration of the project under this alternative would increase (35 days-65 days). This would increase the amount of time temporary disturbance would occur in lynx habitat. The amount of people needed to complete the project would increase from 14 to 20, and two campsites would be used at one time instead of one. There would be some reduction in motorized equipment. Increasing the amount of people and the number of campsites used at one time would increase the amount of human caused disturbance at the project site. However, since lynx would likely be avoiding the area with the level of disturbance described in Alternative One, increasing the human caused disturbance would not result in a change of lynx behavior. The reduction in motorized equipment may reduce some noise disturbance to the area. However it is not expected to be enough to reduce the effects of increasing the time to complete the project.

Cumulative Impacts

Helicopter flights would be reduced by nearly half under this alternative. This would be a 50 percent reduction of noise disturbance from helicopter flights to lynx habitat from Alternative Two. However this would not change the number of acres within the Chepeta/Whiterocks LAU or the Uinta LAU that would receive temporary disturbance from helicopter flights. The increased amount of acres affected by horse grazing under this alternative, combined with recreational horse grazing would reduce forage and cover for lynx prey species. Combining recreational use with the increase of campsites, personnel, and pack trips would not change the anticipated behavior of lynx described in Alternative One. This alternative does not propose any actions that would change suitable lynx habitat to unsuitable. Therefore, there would be no change to the calculation of unsuitable habitat with in the LAUs.

Due to the rationale above and compliance of this Alternative with the LCAS, it is determined that the direct, indirect, and cumulative impacts discussed above may affect, but is not likely to adversely affect the Canada lynx.

Mitigation/Monitoring

None applicable.

Forest Sensitive Species

Northern Goshawk –

Direct and Indirect Effects

Helicopter flights would be reduced by nearly half under this alternative. This would be a 50 percent reduction of noise disturbance from helicopter flights to late nesting goshawks. This would reduce the potential of nest abandonment by 50 percent.

This alternative would decrease the amount of motorized/mechanical equipment that would be used in repair work at the dam by at least 50 percent. This would also decrease the potential of displacing individual goshawks by 50 percent.

This alternative would increase pack loads and pack trips by 2.5 times. This would change the percent increase of disturbance to habitat along trails from 10 percent to 25 percent. This is a substantial increase in disturbance and may then disturb goshawk foraging patterns along the trails.

This alternative would nearly triple the amount of horses and horse days needed to complete the project and would increase the amount of acres grazed in open meadows from 50 acres to 142 acres. Because goshawks primarily forage in closed canopy forests with moderate tree densities (Graham et al. 1999), there would be no anticipated affects to goshawks or their prey species from increased grazing by pack stock.

This alternative would increase personnel from 14 to 20, double the campsites (two in use at one time), and increase the time (35 days-65 days) needed to complete the project. This would increase disturbance in the area and increase the potential for displacement of goshawks. This would also increase the time goshawks would receive disturbance from the project.

Cumulative Impacts

The increased amount of acres (50 acres-142 acres) of open meadows affected by horse grazing under this alternative, combined with elk and deer use and recreational horse grazing, would have no effects to goshawks or their prey species from increased grazing by pack stock. Increasing the campsites, personnel, and pack trips, combined with recreational use would increase the potential for displacement of goshawks in the area. Increasing the amount of time to complete the project would increase the effects from cumulative impacts on the goshawk and would also increase the potential for displacing individuals.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Boreal Owl and Great Gray Owl –

Direct and Indirect Effects

Helicopter flights would be reduced by nearly half under this alternative. This would be a 50 percent reduction of noise disturbance from helicopter flights to roosting boreal and great gray owls.

This alternative would decrease the amount of motorized/mechanical equipment that would be used in repair work at the dam by at least 50 percent. This would also decrease the potential of temporarily displacing individual boreal and great gray owls by 50 percent.

This alternative would increase pack loads and pack trips by 2.5 times. This would change the percent increase of disturbance to habitat along trails from 10 percent to 25 percent. This is a substantial increase of disturbance and may disturb roosting owls near the trails.

This alternative would nearly triple the amount of horses and horse days needed to complete the project and would increase the amount of acres of open meadows grazed from 50 acres to 142 acres. This would increase affects to great gray owl prey species. However, according to Section 4.3 (Vegetation) of this FEIS, increased horse use under this alternative would be well within the capability area and would have minimal long-term effects on the condition and trend of the vegetative resource. Therefore, the anticipated

increase in grazing in the designated areas under this alternative may reduce the amount of cover and forage available to great gray owl prey species for the season of project implementation, but is not expected to change the availability of forage and cover in the long term. Because boreal owls primarily forage in mature and older spruce/fir forests (Hayward 1994), there would be no anticipated affects to boreal owls or their prey species from tripling grazing by pack stock.

This alternative would increase personnel from 14 to 20, double the campsites (two in use at one time), and increase the time (35 days-65 days) needed to complete the project. This would increase disturbance in the area and increase the potential for displacement of boreal and great gray owls. This would also increase the time these species would receive disturbance from the project.

Cumulative Impacts

The increased amount of open meadow acres (50 acres-142 acres) affected by horse grazing under this alternative, combined with elk and deer use and recreational horse grazing, would more than triple the effects to great gray owl foraging habitat. Increasing the campsites, personnel, pack trips, and time to complete the project, combined with recreational use would increase the potential for displacement of boreal and great gray owls in the area.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Three-toed Woodpecker –

Direct and Indirect Effects

Helicopter flights would be reduced by nearly half under this alternative. This would be a 50 percent reduction of noise disturbance from helicopter flights to late nesting three-toed woodpeckers.

This alternative would decrease the amount of motorized/mechanical equipment that would be used in repair work at the dam by at least 50 percent. This would also decrease the potential of temporarily displacing individuals by 50 percent.

This alternative would increase pack loads and pack trips by 2.5 times. This would change the percent increase of disturbance to habitat along trails from 10 percent to 25 percent. This is a substantial increase of disturbance and may disturb late nesting three-toed woodpeckers along the trails.

Because their primary food source is wood boring insects (Parrish et al. 2002), there would be no anticipated affects to three-toed woodpeckers from tripling grazing areas.

This alternative would increase the personnel from 14 to 20, double the campsites (two in use at one time), and increase the time (35 days-65 days) needed to complete the project. This would increase disturbance in the area and increase the potential for displacement of three-toed woodpeckers. This would also increase the time three-toed woodpeckers would receive disturbance from the project.

Cumulative Impacts

Increasing the campsites, personnel, and pack trips, combined with recreational use would increase the potential for displacement of three-toed woodpeckers in the area. Increasing the amount of time to complete the project would also increase the potential for temporarily displacing individual three-toed woodpeckers.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Management Indicator Species

Elk and Mule Deer -

Direct and Indirect Effects

Helicopter flights would be reduced by nearly half under this alternative. This would be a 50 percent reduction of noise disturbance from helicopter flights to elk and deer, thus reducing the chances of temporarily displacing individuals by 50 percent.

This alternative would decrease the amount of motorized/mechanical equipment that would be used in repair work at the dam by at least 50 percent. This would also decrease the potential of temporarily displacing individuals by 50 percent.

This alternative would increase pack loads and pack trips by 2.5 times. This would change the percent increase of disturbance to habitat along trails from 10 percent to 25 percent. This is a substantial increase of disturbance and may add disturbance to elk and deer near the trails.

This alternative would nearly triple the amount of horses and horse days needed to complete the project and would increase the amount of acres grazed from 50 acres to 142 acres. This would increase the potential for temporarily displacing elk and deer from these areas. However, according to Section 4.3 (Vegetation) of this FEIS, increased horse use under this alternative would be well within the capability area and would have minimal long-term effects on the condition and trend of the vegetative resource. Therefore, the anticipated increase in grazing in the designated areas under this alternative may reduce forage available to elk and deer in the area for the season of project implementation, but is not expected to change the availability of forage in the long term.

This alternative would increase personnel from 14 to 20, double the campsites (two in use at one time), and increase the time (35 days-65 days) needed to complete the project. This would increase the potential for displacement of elk and deer in the area. This would also increase the time elk and deer would receive disturbance from the project.

Cumulative Impacts

The increased amount of acres affected by horse grazing under this alternative, combined with recreational horse grazing would further reduce available forage for elk and deer in the project area. Increasing the campsites, personnel, and pack trips, combined with recreational use would increase the potential for displacement of elk and deer in the area. Increasing the amount of time to complete the project would increase the effects from cumulative impacts on elk and deer and would increase the potential for temporarily displacing individuals.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Northern Goshawk –

Direct and Indirect Effects

Helicopter flights would be reduced by nearly half under this alternative. This would be a 50 percent reduction of noise disturbance from helicopter flights to late nesting goshawks. This would reduce the potential of nest abandonment by 50 percent.

This alternative would decrease the amount of motorized/mechanical equipment that would be used in repair work at the dam by at least 50 percent. This would also decrease the potential of displacing individual goshawks by 50 percent.

This alternative would increase pack loads and pack trips by 2.5 times. This would change the percent increase of disturbance to habitat along trails from 10 percent to 25 percent. This is a substantial increase in disturbance and may then disturb goshawk foraging patterns along the trails.

This alternative would nearly triple the amount of horses and horse days needed to complete the project and would increase the amount of acres grazed in open meadows from 50 acres to 142 acres. Because goshawks primarily forage in closed canopy forests with moderate tree densities (Graham et al. 1999), there would be no anticipated affects to goshawks or their prey species from increased grazing by pack stock.

This alternative would increase personnel from 14 to 20, double the campsites (two in use at one time), and increase the time (35 days-65 days) needed to complete the project. This would increase disturbance in the area and increase the potential for displacement of goshawks. This would also increase the time goshawks would receive disturbance from the project.

Cumulative Impacts

The increased amount of acres (50 acres-142 acres) of open meadows affected by horse grazing under this alternative, combined with elk and deer use and recreational horse grazing, would have no affects to goshawks or their prey species from increased grazing by pack stock. Increasing the campsites, personnel, and pack trips, combined with recreational use would increase the potential for displacement of goshawks in the area. Increasing the amount of time to complete the project would increase the effects from cumulative impacts on the goshawk and would also increase the potential for displacing individuals.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Lincoln's Sparrow and Song Sparrow -

Direct and Indirect Effects

Helicopter flights would be reduced by nearly half under this alternative. This would be a 50 percent reduction of noise disturbance from helicopter flights to late nesting Lincoln's and song sparrows. This would reduce the potential of nest abandonment by 50 percent.

This alternative would decrease the amount of motorized/mechanical equipment that would be used in repair work at the dam by at least 50 percent. This would also decrease the potential of displacing individuals by 50 percent.

This alternative would increase pack loads and pack trips by 2.5 times. This would change the percent increase of disturbance to habitat along trails from 10 percent to 25 percent. Since breeding territories for these species are approximately 208 ft. wide (0.4 hectares or 1 acre) (Nature Serve 2003) and trails are 200 to 500 feet away from the riparian area along Reader creek, this increased disturbance is not likely to affect these species.

This alternative would nearly triple the amount of horses and horse days needed to complete the project and would increase the amount of acres grazed from 50 acres to 142 acres. However, in Section 2.1.1 (Hydrology) of this FEIS, a mitigation measure directs that concentrated stock use would be conducted a minimum of 200 feet from a wetland, stream bank, or high waterline. Since Lincoln's and song sparrows are generally found along streams, wet meadows, and riparian thickets (Nature Serve 2003), it is unlikely that increased grazing from pack stock would affect these species.

This alternative would increase personnel from 14 to 20, double the campsites (two in use at one time), and increase the time (35 days-65 days) needed to complete the project. This would increase the time Lincoln's and song sparrows would receive disturbance from the project. This would also increase disturbance in the area and increase the potential for displacement of Lincoln's and song sparrows. However, the campsites would not be associated with riparian habitats. Therefore adding the other campsite would not affect the Lincoln's and song sparrow.

Cumulative Impacts

Since Lincoln's and song sparrows are generally found in riparian areas and stock grazing is restricted from these areas, the combined effect from grazing of recreational stock, elk and deer, and the tripling of proposed pack stock grazing, is unlikely to affect these species. Combining recreational use with the increase of personnel and days needed to complete the project would increase the potential for displacement of Lincoln's and song sparrows in the area.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

White-tailed Ptarmigan -

Direct and Indirect Effects

Helicopter flights would be reduced by nearly half under this alternative. This would be a 50 percent reduction of noise disturbance from helicopter flights to the white-tailed ptarmigan. This would reduce the potential of individuals being displaced by 50 percent.

This alternative would increase pack loads and pack trips by 2.5 times. This would change the percent increase of disturbance to habitat along trails from 10 percent to 25 percent. This is a substantial increase of disturbance and may then disturb white-tailed ptarmigan near trails in their habitat.

Increased horse days on the grazing areas, increased campsites and personnel, and decreased mechanized equipment would not affect the white-tailed ptarmigan due to these areas not occurring in their summer habitat.

Increasing the time it takes to complete the project (35 days-65 days) would increase the potential for displacement of individual white-tailed ptarmigan.

Cumulative Impacts

This alternative would increase pack loads and pack trips by 2.5 times. This would change the percent increase of disturbance to habitat along trails from 10 percent to 25 percent. This is a substantial increase of disturbance and may then displace white-tailed ptarmigan near trails in their habitat. Increasing the amount of time to complete the project would increase the effects from cumulative impacts on the white-tailed ptarmigan.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Birds of Conservation Concern (Migratory Birds)

Williamson's Sapsucker –

Direct and Indirect Effects

Helicopter flights would be reduced by nearly half under this alternative. This would be a 50 percent reduction of noise disturbance from helicopter flights to the Williamson's sapsucker. This would reduce the potential of individuals being displaced by 50 percent.

This alternative would decrease the amount of motorized/mechanical equipment that would be used in repair work at the dam by at least 50 percent. This would also decrease the potential of displacing individuals by 50 percent.

This alternative would increase pack loads and pack trips by 2.5 times. This would change the percent increase of disturbance to habitat along trails from 10 percent to 25 percent. This is a substantial increase in disturbance and may then disturb Williamson's sapsuckers along the trails.

Because their primary food source is sap, cambium, and ants (Nature Serve 2003), there would be no anticipated affects to Williamson's sapsuckers from tripling grazing areas.

This alternative would increase personnel from 14 to 20, double the campsites (two in use at one time), and increase the time (35 days-65 days) needed to complete the project. This would increase the potential for displacement of Williamson's sapsuckers. This would also increase the time Williamson's sapsuckers would receive disturbance from the project.

Cumulative Impacts

Increasing the campsites, personnel, and pack trips, combined with recreational use would increase the potential for the Williamson's sapsucker being displaced. Increasing the amount of time to complete the project would increase the effects from cumulative impacts on the Williamson's sapsucker.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Utah Partners in Flight Priority Species

Black Rosy-Finch -

Direct and Indirect Effects

Helicopter flights would be reduced by nearly half under this alternative. This would be a 50 percent reduction of noise disturbance from helicopter flights to nesting black rosy-finches. This would reduce the potential of nest abandonment by 50 percent.

This alternative would increase pack loads and pack trips by 2.5 times. This would change the percent increase of disturbance to habitat along trails from 10 percent to 25 percent. This is a substantial increase of disturbance and may then disturb black rosy-finches near trails in their habitat.

Increased horse days on the grazing areas, increased campsites and personnel, and decreased mechanized equipment would not affect the black rosy-finch due to these areas not occurring in their summer habitat.

Increasing the time it takes to complete the project would increase the time black rosy-finches would receive disturbance from the project.

Cumulative Impacts

This alternative would increase pack loads and pack trips by 2.5 times. This would change the percent increase of disturbance to habitat along trails from 10 percent to 25%. This is a substantial increase of disturbance and may then displace black rosy-finches near trails in their habitat. Increasing the amount of time to complete the project would increase the effects from cumulative impacts on the black rosy-finch.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

Broad-tailed Hummingbird -

Direct and Indirect Effects

Helicopter flights would be reduced by nearly half under this alternative. This would be a 50 percent reduction of noise disturbance from helicopter flights to nesting broad-tailed hummingbirds. This would reduce the potential of nest abandonment by 50 percent.

This alternative would decrease the amount of motorized/mechanical equipment that would be used in repair work at the dam by at least 50 percent. This would also decrease the potential of displacing individuals by 50 percent.

This alternative would increase pack loads and pack trips by 2.5 times. This would change the percent increase of disturbance to habitat along trails from 10 percent to 25 percent. This is a substantial increase in disturbance and may then disturb broad-tailed hummingbirds along the trails.

This alternative would increase the amount of horses and horse days needed to complete the project and would increase the amount of acres grazed from 50 acres to 142 acres. This would increase the effects to broad-tailed hummingbird foraging habitat. However, according to Section 4.3 (Vegetation) of this FEIS, increased horse use under this alternative would be well within the capability area and would have minimal long-term effects on the condition and trend of the vegetative resource. Therefore, the anticipated increase in grazing in the designated areas under this alternative may reduce the amount of foraging habitat available to this species for the season of project implementation, but is not expected to change the availability of forage habitat in the long term.

This alternative would increase personnel from 14 to 20, double the campsites (two in use at one time), and increase the time (35 days-65 days)

needed to complete the project. This would increase the potential for displacement of broad-tailed hummingbirds. This would also increase the time broad-tailed hummingbirds would receive disturbance from the project.

Cumulative Impacts

The increased amount of acres (50 acres-142 acres) affected by horse grazing under this alternative, combined with elk and deer use and recreational horse grazing, would more than triple the effects to broad-tailed hummingbird foraging habitat. Increasing the campsites, personnel, and pack trips, combined with recreational use would further increase the potential for this species being displaced. Increasing the amount of time to complete the project would increase the effects from cumulative impacts on the broad-tailed hummingbird.

Mitigation/Monitoring

Mitigations and monitoring would be the same as discussed in Alternative One (refer to Alternative One).

ALTERNATIVE FOUR– No Action (Baseline Comparison)

Federally Threatened, Endangered, and Proposed Species

Canada Lynx –

Direct and Indirect Effects

Under this alternative, there would be no short-term effects that would occur. There would be a long-term deterioration of the dam. If dam failure occurs, the stream banks could be scoured and riparian vegetation lost. This loss of habitat would likely reduce some forage and cover habitat for beaver, fish, and other lynx prey species associated with riparian habitats.

Cumulative Impacts

There would be no measurable cumulative effects to the Canada lynx under this alternative.

Mitigation/Monitoring

None applicable.

Forest Sensitive Species

Northern Goshawk –

Direct and Indirect Effects

This alternative would have no short-term effects. There would be a long-term deterioration of the dam. If dam failure were to occur, stream banks could be scoured and riparian vegetation lost. Because goshawks primarily forage in closed canopy forests with moderate tree densities (Graham et al. 1999), this loss of habitat is not likely to affect goshawk prey species.

Cumulative Impacts

There would be no measurable cumulative impacts to goshawks under this alternative.

Mitigation/Monitoring

None applicable.

Boreal Owl and Great Gray Owl –

Direct and Indirect Effects

This alternative would have no short-term effects. There would be a long-term deterioration of the dam. If dam failure were to occur, stream banks could be scoured and riparian vegetation lost. This loss of habitat would likely reduce some forage and cover habitat for great gray owl prey species. Because boreal owls primarily forage in mature and older spruce/fir forests (Hayward 1994), this loss of habitat is not likely to affect boreal owl prey species.

Cumulative Impacts

There would be no measurable cumulative impacts to the boreal owl and great gray owl under this alternative.

Mitigation/Monitoring

None applicable.

Three-toed Woodpecker –

Direct and Indirect Effects

There would be no measurable direct or indirect effects to three-toed woodpeckers under this alternative.

Cumulative Impacts

There would be no measurable cumulative effects to three-toes woodpeckers under this alternative.

Mitigation/Monitoring

None applicable.

Management Indicator Species

Elk and Deer –

Direct and Indirect Effects

This alternative would have no short-term effects. There would be a long-term deterioration of the dam. If dam failure were to occur, stream banks could be scoured and riparian vegetation lost. This loss of habitat would likely reduce forage for elk and deer.

Cumulative Impacts

There would be no measurable cumulative impacts to elk and deer under this alternative.

Mitigation/Monitoring

None applicable.

Northern Goshawk –

Direct and Indirect Effects

This alternative would have no short-term effects. There would be a long-term deterioration of the dam. If dam failure were to occur, stream banks could be scoured and riparian vegetation lost. Because goshawks primarily forage in closed canopy forests with moderate tree densities (Graham et al. 1999), this loss of habitat is not likely to affect goshawk prey species.

Cumulative Impacts

There would be no measurable cumulative impacts to goshawks under this alternative.

Mitigation/Monitoring

None applicable.

Lincoln's Sparrow and Song Sparrow –

Direct and Indirect Effects

This alternative would have no short-term effects. There would be a long-term deterioration of the dam. If dam failure were to occur, stream banks could be scoured and riparian vegetation lost. This loss of habitat would likely reduce nesting and foraging habitat for Lincoln's sparrow and song sparrow.

Cumulative Impacts

There would be no measurable cumulative impacts to Lincoln's and song sparrows under this alternative.

Mitigation/Monitoring

None applicable.

White-tailed Ptarmigan –

Direct and Indirect Effects

This alternative would have no short-term effects. There would be a long-term deterioration of the dam. If dam failure were to occur, stream banks could be scoured and riparian vegetation lost. This loss of habitat would likely reduce some fall/winter forage and cover habitat for white-tailed ptarmigan.

Cumulative Impacts

There would be no measurable cumulative impacts to white-tailed ptarmigan under this alternative.

Mitigation/Monitoring

None applicable.

Birds of Conservation Concern (Migratory Birds)

Williamson's Sapsucker –

Direct and Indirect Effects

There would be no measurable direct or indirect effects to Williamson's sapsuckers under this alternative.

Cumulative Impacts

There would be no measurable cumulative effects to Williamson's sapsucker under this alternative.

Mitigation/Monitoring

None applicable.

Utah Partners in Flight Priority Species

Black Rosy-Finch –

Direct and Indirect Effects

This alternative would have no short-term effects. There would be a long-term deterioration of the dam. If dam failure were to occur, stream banks could be scoured and riparian vegetation lost. This loss of habitat would likely reduce some fall habitat for the black rosy-finch.

Cumulative Impacts

There would be no measurable cumulative impacts to the black rosy-finch under this alternative.

Mitigation/Monitoring

None applicable.

Broad-tailed Hummingbird –

Direct and Indirect Effects

This alternative would have no short-term effects. There would be a long-term deterioration of the dam. If dam failure were to occur, stream banks could be scoured and riparian vegetation lost. This loss of habitat would likely reduce some foraging habitat for the broad-tailed hummingbird.

Cumulative Impacts

There would be no measurable cumulative impacts to the broad-tailed hummingbird under this alternative.

Mitigation/Monitoring

None applicable.

Aquatic Wildlife

ALTERNATIVE ONE – Proposed Action

There will be no effect to the fisheries in Crescent or Fox lakes during the reconstruction. A coffer dam will be constructed during the reconstruction phase and the reservoirs will maintain a "conservation pool" volume of water for fish and other aquatic biota survival.

The dry channel from the cofferdam will result in approximately ½ to ¾ mile of temporary loss of fisheries habitat. It is likely that some brook trout will become trapped in pools and possibly even die during the construction period. However, once flowing water returns to the dewatered area, the abundant downstream brook trout population in Shale Creek will quickly repopulate the area. In stream sediment could lower water quality for adult fish. Fish in Fox Reservoir outlet stream could temporarily relocate when the cofferdam was removed and outflow resumed, due to sediment. If sediment settles within spawning/rearing gravels, habitat could be reduced for eggs/fry for fall-spawning species. Localized sediment deposition in slow water could shift macroinvertebrate taxa toward sediment-tolerant taxa until spring runoff flushed surface fines, if they were present over the winter. (Refer to hydrology discussion for sediment information.)

Alternative One utilizes Reader Creek drainage or Chepeta Trailhead and nearby meadows. Utah Division of Wildlife Resources has proposed Reader Creek for reintroduction of Colorado River Cutthroat trout (CRCT). The Proposed Action would not alter the suitability of Reader Creek for establishment of CRCT; some isolated stream crossings along trails could be affected, but this is would be a small proportion of the fish habitat. The use of the Chepeta Trailhead and Highline Trail #025d (rather than the Reader Creek meadow and trail) would have even less effect due to that trail being located away from a major stream.

Cumulative Effects

There will be no negative cumulative effects from the alternative. Because the project area is within the designated High Uinta Wilderness area, reasonably foreseeable future impacts would be negligible. The stabilization of Fox and Crescent dams will significantly reduce the chance for dam failure thus improved stream as well as lake and riparian conditions should result. Additionally, stabilizing the reservoirs water level should result in an improved flatwater fishery.

Mitigation Measures/Monitoring Guidelines

All equipment, (including hazardous materials) and packhorse staging areas will be a minimum of 200 feet from wetlands, streams, and lake high water lines.

Monitoring Guidelines

The Utah Division of Wildlife Resources with Forest Service assistance will continue to monitor brook and cutthroat trout populations in this area.

Management Indicator Species

Macroinvertebrates –

Effects on the Resource

The effects on macroinvertebrates from this alternative will be small and localized in scale, thus – assuming normal or typical re-colonization of macroinvertebrates there will be no detrimental impacts to the macroinvertebrate community.

Cumulative Impacts

There are no reasonably foreseeable future activities in this area to impact macroinvertebrates.

Mitigation Measures

There would be no specific mitigation needed.

Monitoring Guidelines

The Forest Service will ensure that pre and post reconstruction macroinvertebrate samples are collected and analyzed.

Colorado River Cutthroat Trout –

Effects on the Resource

There will be no downstream effects on CRCT because CRCT are not present in Shale Creek. Shale Creek is heavily populated with brook trout. With the maintenance work on the dam resulting in less leakage thus more stabilized water levels, CRCT in both Fox and Crescent Reservoirs will be positively affected.

Cumulative Impacts

There are no reasonably foreseeable future activities in this area to impact CRCT. As mentioned above, a positive impact to CRCT should result from less water leakage.

Mitigation Measures

There would be no specific mitigation need for CRCT.

Monitoring Guidelines

The Forest Service will coordinate with UDWR to ensure that the regularly scheduled CRCT monitoring effort continues as scheduled.

ALTERNATIVE TWO – Modified Proposed Action

Similar to Alternative One, except there would be less sediment due to mitigation measures. There still could be effects on spawning or rearing habitat for fall-spawning species, which do not include Colorado River cutthroat trout. (Refer to hydrology discussion for sediment information.)

Alternative Two would avoid use of Reader Creek drainage.

Cofferdam effects would be similar to Alternative One.

Cumulative Impacts

Impact would be the same as Alternative One.

Management Indicator Species

Macroinvertebrates –

Effects on the Resource

The effects would be the same as for Alternative One.

Cumulative Impacts

The effects would be the same as for Alternative One.

Mitigation Measures/Monitoring Guidelines

Measures and monitoring would be the same as for Alternative One.

ALTERNATIVE THREE – Maximize Primitive Tools and Access

Effects would be similar to Alternatives One and Two, except fish habitat would experience greater impacts. There would be increased potential sediment-generating activity along trails due to project duration and number of pack trips. Effects would be for fall spawning species, which do not include Colorado River cutthroat trout.

Three would avoid use of Reader Creek drainage.

Cofferdam effects would be similar to Alternative One.

Mitigation Measures/Monitoring Guidelines

Mitigation and monitoring would be the same as for Alternatives One and Two. Mitigation at Fox Reservoir would minimize effects in Shale Creek.

Management Indicator Species

Macroinvertebrates –

Effects on the Resource

The effects would be the same as for Alternative One.

Cumulative Impacts

The effects would be the same as for Alternative One.

Mitigation Measures/Monitoring Guidelines

Measures and monitoring would be the same as for Alternative One.

ALTERNATIVE FOUR – No Action (Baseline Comparison)

No short-term effects would occur. There would be long-term deterioration of the dam with subsequent effects to both water quality and channel integrity. This would have serious consequences to fish habitat below Fox Reservoir.

Alternative Four would avoid use of Reader Creek drainage.

Fisheries in Shale Creek could be significantly affected if dam failure presented a large amount of sediment and material into the stream channel below the dam, or if banks were physically degraded (see hydrology section).

4.5 HYDROLOGY

Photo 4.d – pond along West Fork Whiterocks Trail # 047

Issues

The issues from Chapter One are listed below. Each issue is addressed in the following analysis by alternative.

Water Rights includes:
1.8.5 the ability of Dry Gulch Irrigation Company (DGIC) to use their existing water storage rights.

Water Quality includes:
1.8.4.2 Increase sedimentation from project activities and their effects on biological resources such as fish, amphibians, etc.
1.8.4.3 Effects of sediment trapping by the dam on the stream environment below the structure.
1.8.4.4 Changes in stream and reservoir water temperatures from project activities.

Riparian, Streams, Wetlands includes:
1.8.4.1 Effects of water storage on the hydrologic function of the drainages and its resulting effects on microorganisms, macro-invertebrates, and riparian condition of the stream.
1.8.4.5 Effects of the project on the safe passage of high flows without physical degradation of the stream system.

ALTERNATIVE ONE – Proposed Action

Direct and Indirect Effects

Water Rights:
Fox and Crescent Reservoirs:
Dry Gulch Irrigation Company's (DGIC) storage rights (acre-feet) would be fully usable, and DGIC would have increased control with the new head gates.

Shale Creek and forage areas near Fox and Crescent Reservoirs); Queant Trail (#048) and jeep trail head (staging area); Reader Creek drainage; West Fork Whiterocks River (Trail #047 and forage area west of Queant Lake); Queant Lake:
There would be no effect on DGIC's storage rights.

Water Quality:
Fox and Crescent Reservoirs: There would be fewer leaks of dams/levees, which reduces sediment and long-term dam spillway failure potential. There would be increased control over water from installation of new head gates. Within the reservoirs, sediment would settle to the bottom when water is slowed.

Low reservoir levels combined with suspended sediment during the project would increase reservoir water temperatures, due to warming by the sun, and thus could also increase the stream temperature immediately downstream. However, the reservoirs would usually be low during the proposed project period. This effect would gradually reduce as days get shorter and weather cools throughout September. The effect would be negligible about ½ mile below the Fox Reservoir outlet, where colder water enters Shale Creek

from Dime Lake and the stream above. At Fox Reservoir, removal of sediment from the reservoir bottom (borrow material) would deepen the reservoir in some areas, which would help keep the reservoir colder in the long-term.

There would a potential of fuels or other hazardous spills primarily from equipment kept on-site, rather than at the staging area. The annual and long-term Operation and Maintenance (O&M) Plan (controls over use of equipment and storage of gasoline, etc.) would reduce long-term contamination potential.

The North Pole trail accesses Fox Reservoir by crossing the inlet stream. The Fox/Queant Trail accesses Crescent Reservoir first and then traveling a series of levees to Fox Reservoir.

Shale Creek and forage areas near Fox and Crescent Reservoirs: The coffer dam would eliminate flows to the outlet stream intermittently during construction. Therefore, sediment would not immediately run downstream. In addition, mitigation measures during disturbance of borrow sites near water would offer additional protection. Short-term sediment increase in water would result the first year or two following activity due to reservoir bed (Fox Reservoir), outlet channel (Fox and Crescent Reservoirs) and /or vicinity disturbance.

Upon completion of the project and return of continuous outflow, some material loosened within the bed of the reservoir would be transported downstream and diluted en route to the Uinta River. Short-term temperature increases might occur for up to about ½ mile below the outlet (see Fox Reservoir discussion).

Low potential for spill of hazardous materials exists because this drainage is mostly used for stock forage, rather than as a transport area. A spill may occur around Fox or Crescent Reservoir, which could travel into Shale Creek. The annual and long-term Operation and Maintenance (O&M) Plan (controls over use of equipment and storage of gasoline, etc.) would reduce long-term contamination potential.

There would be dispersed vegetative utilization. Mitigation measures and forage utilization limits would result in little sediment contribution from this source.

Queant Trail (#048) and jeep trailhead (staging area): There would no effect. Use of these areas was not proposed in Alternative One.

Reader Creek drainage: For Reader meadow, vegetative utilization would occur at the staging area. Vegetative and soil recovery of stock confinement areas might be slowed, due to combined use or continued use of forage areas by recreation stock concurrently or in the years immediately following project completion. Stream sediment might increase, due to ground disturbance from stock animal impacts. Along Reader Creek trail, soil displaced from trail treads could wash into streams during precipitation events, where the trail is very close to the stream and a low vegetative buffer exists. A potential for hazardous material contamination exists at stream crossings. If the Chepeta Trailhead, Highline Trail #025d, and nearby meadows were used, less stream sediment potential would exist since this trailhead and trail is located some distance from Reader Creek or other streams along Reader Creek.

West Fork Whiterocks River (trail #047 and forage area west of Queant Lake): There would be no effect. West Fork Whiterocks River Trail #047 (above where Queant Lake Trail #048 joins) would not be used under this alternative to access Fox Reservoir.

Queant Lake: There would be no effect. Use of Queant Lake Trail #048 around the reservoir was not proposed in Alternative One. Queant Lake serves as a sediment sink.

Riparian, Streams, Wetlands:

Fox Reservoir: The dry channel from the coffer dam might affect riparian vegetation locally by depriving the stream channel below of water, depending on timing of activities; this would be expected to have an effect only during the year of construction since water would return to that area after construction. Borrow sites outside the reservoir bed would have vegetation removed; and

where adjacent to riparian areas, some deposition of soil on riparian vegetation would occur.
Crescent Reservoir: Effects of packing and staging would be less than Alternative Three, due to greater use of helicopter, resulting in reduced camping/staging time. Effects of packing and staging would be similar to Alternative Two.

Shale Creek and forage areas near Fox and Crescent Reservoirs: Short-term utilization and trampling of vegetation by livestock or equipment would occur within allowed levels. Disturbance of surface vegetation could increase opportunity for noxious weed introduction, but mitigation measures would limit effects on these areas.

Queant Trail (#048) and jeep trail head (staging area): There would no effect. Use of these areas was not proposed in Alternative One.

Reader Creek drainage: Disturbance of surface vegetation in Reader Creek meadow areas or Chepeta Trailhead meadow areas might increase the opportunity for noxious weed introduction. Vegetation loss could reduce plant vigor in the project year; however, utilization limits would be applied. If the Chepeta Trailhead and Highline Trail #025d were used, less stream effects would occur because this area is not along a main stream. At trail stream crossings, banks would lose vegetation and soil into the stream with repeated use.

West Fork Whiterocks River (trail #047 and forage area west of Queant Lake): There would be no effect. The trail and forage area would not be used.

Queant Lake: There would no effect. Use of Queant Lake Trail #048 around the lake was not proposed in Alternative One.

Cumulative Impacts

Water Rights:
Fox and Crescent Reservoirs: DGIC's storage right would be preserved.

Shale Creek and forage areas near Fox and Crescent Reservoirs; Queant Trail (#048) and jeep trail head (staging area); Reader Creek drainage: There would be no effect on DGIC's water storage rights.

West Fork Whiterocks River (trail #047 and forage area west of Queant Lake); Queant Lake: There would be no effect; the areas would not be used.

Water Quality:
Fox and Crescent Reservoirs: Work would be done on both Crescent and Fox Reservoirs in the same year; so short-term sediment increases would occur in both. No other headwater activities are anticipated in addition to the ongoing recreational activities.

Shale Creek and forage areas near Fox and Crescent Reservoirs: Vegetative utilization (physical breakage or consumption) or soil disturbance from equipment or forage areas would be in addition to usual recreation use in the drainage in the same or successive years. However, the allowed grazing levels are for all users so they would not be exceeded and increased sediment from streams would not be expected. It is unlikely that project-induced sedimentation would be noticeable in the Uinta River. Lack of increased sedimentation would be due to the coffer dam, dilution between the project and the river, and dilution when Shale Creek enters the Uinta River, as well as implementation of mitigation measures established for the project.

Queant Trail (#048) and jeep trail head (staging area): No cumulative effects – area not used in Alternative One.

Reader Creek drainage: Soil disturbance from trails use in moist areas or from the staging area would be in addition to normal recreation use in the drainage in the same or successive years. Use of this trail for pack stock to access Fox Reservoir would increase trail tread and riparian/stream crossings wear over current recreational-use levels, which may increase sediment contributions to streams. Some sediment might be transported down Reader Creek from direct input at wet area/trail interfaces. It would be unlikely that this would be noticeable in Whiterocks River, due to the dilution by Whiterocks River.

West Fork Whiterocks River (trail #047 and forage area west of Queant Lake); Queant Lake: There would be no effect (area would not be used).

Riparian, Streams, Wetlands:

Fox and Crescent Reservoirs: Pack stock use of the reservoirs would be minimal since they would deliver supplies and then move on to staging at forage areas. Recreation visitors and their stock animals would also use the area. The camping limits, which apply to other wilderness visitors, would also apply to this effort. It would be unlikely that visitors would use the area concurrently with this effort because of the lower wilderness values during the project; however, there might be some use prior to the construction season, which would reduce the amount of vegetation available for use by DGIC's stock.

Shale Creek and forage areas near Fox and Crescent Reservoirs: Vegetative utilization and possible soil compaction from forage and work areas would be in addition to normal recreation use in the drainage. Mitigation measures would provide for recovery of riparian areas, probably within one year.

Queant Trail (#048) and jeep trailhead (staging area): Vegetative utilization and possible soil compaction from trails use in moist areas or at the staging area would be in addition to normal recreation use in the drainage in the same or successive years. The moist area approaching Queant Lake from the southwest would be the most vulnerable to combined trail users.

Reader Creek drainage: Vegetative utilization and possible soil disturbance from trails use in moist areas and from use of the staging area would be in addition to normal recreation use in the drainage. Vegetative recovery of the staging area and/or forage areas might be slowed, due to combined use (project and recreation use of trail) or continued use by recreation stock in the same or successive years. The moist areas and stream crossings would be the most vulnerable to combined trail users.

West Fork Whiterocks River (trail #047 and forage area west of Queant Lake); Queant Lake: There would no effect (These areas would not be used).

Mitigation Measures

1. All staging, camping, concentrated stock, helicopter, and other activities with concentrated use would be conducted a minimum of 200 feet from a wetland, stream bank or lake high water line and located on soils with low potential for erosion and compaction (excluding helicopter areas associated with Fox and Crescent Reservoirs and their outlet channels).

2. The skid loader would be confined to designated locations to protect water and soil resources.

3. Loading/unloading of oil, fuel or other hazardous material from horses would occur outside of riparian/wet meadow area and at least 200 feet from live water of any kind where practicable.

Monitoring

1. Implementation monitoring by a Forest Service representative documenting concentrated activities or hazardous material loading/unloading within 200 feet of a wetland stream bank or lake high water line.

2. Implementation monitoring by a Forest Service representative documenting heavy equipment impacts to water quality or soil resources.

ALTERNATIVE TWO – Modified Proposed Action

Direct and Indirect Effects

Water Rights:

Fox and Crescent Reservoirs: Same as Alternative One. Dry Gulch Irrigation Company's (DGIC) storage rights would be fully usable, and the Company's control would improve with a new head gate.

Shale Creek and forage areas near Fox and Crescent Reservoirs; Queant Trail (#048) and jeep trail head (staging area); West Fork Whiterocks River (trail #047 and forage area west of Queant Lake); Queant Lake: Same as Alternative One. There would be no effect on DGIC's water storage rights.

Reader Creek drainage: There would be no effect (area would not be used).

Water Quality:

Fox and Crescent Reservoirs: Similar to Alternative One.

Shale Creek and forage areas near Fox and Crescent Reservoirs: Similar to Alternative One.

Queant Trail (#048) and jeep trail head (staging area): Most of this trail is on drier land with buffer zones of up to about 0.3 miles between the trail and water courses. Sediment delivery to stream channels or water bodies is most likely where the trail follows wetter areas. This includes the area to the southeast of Queant Lake (approximately ½ mile), and intermittent locations en route to the jeep trail. These areas are less frequent than on West Fork Whiterocks River Trail #047 or the Highline Trail #025. Soil displaced from trail treads would wash down the trail during precipitation events, but overall the trail is not very close to the stream and the vegetative buffer would help reduce sediment contributions to water. The jeep trail also passes through mostly drier timbered areas with some patch cut openings, rather than through moist areas.

Reader Creek drainage: There would be no effect (area would not be used).

West Fork Whiterocks River (trail #047 and forage area west of Queant Lake): There would be dispersed vegetative utilization at the forage area; however, utilization limits would apply. Stream sediment could increase due to ground disturbance from stock animal impacts, primarily at riparian or wet areas on trails. Soil displaced from trail treads could wash into streams during precipitation events, where the trail is very close to the stream and a low vegetative buffer exists. When horses transport hazardous materials, a potential for contamination would exist at stream crossings. Some effects could be alleviated by use of Queant Trail #048 to North Pole Pass.

Queant Lake: Trail use around Queant Lake could result in increased sediment moving from trails toward water bodies. However, some of this would likely be intercepted by Queant Lake. Lakebeds commonly are composed of fine sediments, so this would not considered an impact. No extended period of livestock congregation or use is authorized for Queant Lake. The forage area for the packhorses would be to the west. Some livestock watering and resting could occur at Queant Lake.

Riparian, Streams, Wetlands:

Fox and Crescent Reservoirs: Same as Alternative One.

Shale Creek and forage areas near Fox and Crescent Reservoirs: Same as Alternative One.

Queant Trail (#048) and jeep trail head (staging area): Since most of the trail and jeep trail access is away from streams, wetlands, and water bodies, there would be minimal effect to these resources. At stream crossings or moist areas (such as the approach to Queant Lake), banks could lose vegetation and soil could be deposited into the stream with repeated use.

Reader Creek drainage: There would be no effect (area would not be used).

West Fork Whiterocks River (trail #047 and forage area west of Queant Lake): At stream crossings, banks would lose vegetation and soil into the stream with repeated use. Some impacts would be alleviated by use of Queant Trail #048 to North Pole Pass.

Queant Lake: Bare soil areas could increase in size through repeated stock use. Hoof action in moist soil could cause root disturbance. However, mitigation and forage utilization limits would greatly reduce the risk of this effect; so recovery should be maximized in the first year.

Cumulative Impacts

Water Rights:
Fox and Crescent Reservoirs: Same as Alternative One. DGIC's storage right would be preserved.

Shale Creek and forage areas near Fox and Crescent Reservoirs; Queant Trail (#048) and jeep trail head (staging area); West Fork Whiterocks River (trail #047 and forage area west of Queant Lake); Queant Lake: Same as Alternative One. There would be no effect on DGIC's water storage rights.

Reader Creek drainage: There would be no effect (area would not be used).

Water Quality:
Fox and Crescent Reservoirs: Similar to Alternative One.

Shale Creek and forage areas near Fox and Crescent Reservoirs: Same as Alternative One.

Queant Trail (#048) and jeep trailhead (staging area): Use of trails and the associated potential for sediment in moist areas or at the staging area would be in addition to normal recreation use in the drainage in the same or successive years. The moist area approaching Queant Lake from the southwest would be the most vulnerable to project and recreation trail users (The majority of the trail crosses through drier timbered area.)

Vegetative utilization by stock and possible soil compaction from vehicle use at the staging area would be in addition to usual recreation use in the drainage in the same or successive years. Use of this trail for pack stock to access Fox Reservoir would increase trail tread wear and riparian/stream-course wear over current conditions associated with recreational-use levels, which could increase sediment into streams. However, riparian/stream areas are not common in this area. In addition, the main trailhead for West Fork Whiterocks River #047 is the primary recreation access with excellent stock and trailer facilities, so additional use of the jeep trail would be minimal unless recreation use increased after the project. In addition, signing on West Fork Whiterocks Trail #047 guides users to access Queant Lake via a turnoff near Cleveland Lake, rather than via Queant Trail #048. Therefore, recreation use of Trail #048 would be less than on West Fork Whiterocks Trail #047 unless recreation use increased post-project. Any erosion of the old sale units or access roads, including the jeep trail itself, would be in addition to effects of this alternative. However, the location of both the jeep trail and the access trail is generally away from stream courses, so vegetative buffering would reduce sediment. Queant Lake serves as a sediment sink.

Reader Creek drainage: There would be no effect (area would not be used).

West Fork Whiterocks River (trail #047 and forage area west of Queant Lake): There would be dispersed vegetative utilization, in addition to usual recreation use in the drainage in the same or successive years. However, forage utilization limits would apply. Vegetative recovery of forage areas could be slowed due to combined use (project use and recreation use) or continued use of by recreation stock in the years immediately following project completion. Use of this trail for pack stock to access Fox Reservoir would increase wear on trail treads and riparian/stream crossings compared to current recreational-use levels, which could increase sediment into streams. Some sediment could be transported down West Fork Whiterocks River from direct input at wet area/trail interfaces. Increased sediment over current levels would occur, but this would not be noticeable in Whiterocks River due to dilution.

Queant Lake: Stock use of this area would be in addition to usual recreation use in the drainage in the same or successive years. Effects would be similar to West Fork Whiterocks River forage areas. Queant Lake would be a sediment sink so effects could be negligible below.

Riparian, Streams, Wetlands:
Fox and Crescent Reservoirs: Similar to Alternative One.

Shale Creek and forage areas near Fox and Crescent Reservoirs: Same as Alternative One.

Queant Trail (#048) and jeep trail head (staging area): Effects would be minimal, due to the drier terrain and lower recreation use than along West Fork Whiterocks River Trail #047. Timber sale activities are minimal and related to regeneration (e.g., surveys and possible thinning), rather than ground-disturbing activities.

Reader Creek drainage: There would be no effect (area would not be used).

West Fork Whiterocks River (trail #047 and forage area west of Queant Lake): Use of riparian zones in the forage area or at riparian trail crossings would be in addition to recreation use in concurrent or successive years. Mitigation measures would maximize recovery within one year at the forage area.

Queant Lake: Stock use of this area would be in addition to usual recreation use in the drainage in the same or successive years. Mitigation measures would limit cumulative effects and maximize recovery within one year.

Mitigation Measures

The measures would be the same as developed for Alternative One.

Monitoring

Monitoring would be the same as Alternative One.

ALTERNATIVE THREE – Maximize Primitive Access and Tools.

Direct and Indirect Effects

Water Rights:

Fox and Crescent Reservoirs: Same as Alternatives One and Two. DGIC's storage rights would be fully usable, and the Company's control would improve with new head gates.

Shale Creek and forage areas near Fox and Crescent Reservoirs; Queant Trail (#048) and jeep trail head (staging area); Reader Creek drainage; West Fork Whiterocks River (trail #047 and forage area west of Queant Lake); Queant Lake: Same as Alternatives One and Two. There would be no effect on DGIC's water storage rights.

Water Quality:

Fox Reservoir: The effects would be similar to Alternatives One and Two, except that a longer disturbance period could increase the potential for reservoir or downstream sediment in Fox Lake and downstream sediment below Crescent Lake. This increase in sediment would be the result of vegetation damage and bare ground exposure from horses, human activities and equipment use over a longer period. Stock animals would transport materials to work areas and remain in the reservoir area to accomplish work, rather than moving quickly on to forage areas. Sediment increases from animals would be more than in Alternative One or Two because increased hoof action would loosen surface soil, which would wash into watercourses, where it may settle behind dams or be transported. In Fox Reservoir, the sediment contribution from horses is still small compared to short-term sediment from reservoir bed disturbance (which is the same as for Alternatives One and Two). Sediment increases could last longer than a year or two – until soil-holding vegetation is re-established. In Crescent Reservoir, effects are similar to Fox Reservoir except that reservoir bed disturbance occurs only around the head gate, so sediment from activities would be the principal sediment source and thus more sediment would be contributed directly to the outlet channel, rather than to the reservoir.

The O&M Plan reduces long-term potential for hazardous materials contamination as in Alternatives One and Two.

Shale Creek and forage areas near Fox and Crescent Reservoirs: Increased ground disturbance compared to Alternatives One and Two would result from greater use of forage areas (longer duration and more stock). This could increase short-term sediment from overland transport. However, mitigation for concentrated horse use would limit the amount of sediment reaching water courses so effects are similar to Alternatives One and Two. The O&M Plan reduces long-term potential for hazardous

materials contamination as in Alternatives One and Two.

Queant Trail (#048) and jeep trail head (staging area): The effects would be similar to Alternative Two, except there would be more potential for increased sediment delivery to water at the intermittent riparian locations along the trails and along the ½ mile approach to Queant Lake, due to extended period of use and increased stock. There would be a longer vegetative recovery time at the staging area due to longer concentrated activities. Queant Lake serves as a sediment sink.

Reader Creek drainage: There would be no effect (area would not be used).

West Fork Whiterocks River (trail #047 and forage area west of Queant Lake): The effects would be similar to Alternative Two, except that greater use of trail and forage area (more stock, longer duration) would increase sediment transport and slow recovery of the forage area.

Queant Lake: The effects would be similar to Alternative Two.

Riparian, Streams, Wetlands:

Fox and Crescent Reservoirs: The longer work period and increased number of stock-days over either Alternatives One or Two (increased season of use) would amplify negative effects on vegetation and soil compaction.

Shale Creek and forage areas near Fox and Crescent Reservoirs: The effects would be similar to Alternatives One and Two.

Queant Trail (#048) and jeep trail head (staging area): The effects would be similar to Alternative Two, except there would be greater effects at the intermittent riparian locations and the approach to Queant Lake. There would also be greater potential for noxious weed establishment at the staging area due to longer duration and increased stock numbers leading to more overall disturbance.

Reader Creek drainage: There would be no effect (area would not be used).

West Fork Whiterocks River (trail #047 and forage area west of Queant Lake): The season of horse use and number of pack trips would be significantly greater than Alternatives One or Two, so livestock effects would be amplified. The number of stock and longer season would have increased effects even with limited use of riparian areas in the forage area. Recovery of the forage area is still maximized within one year due to mitigation measures. Impacts at riparian trail crossings would be greater than in Alternative One or Two. Recovery of trail riparian areas would take longer than with Alternative One or Two.

Queant Lake: The effects would be similar to Alternative Two, but recovery could take longer even with mitigation measures, due to the number and frequency of animals using the trail around the lake.

Cumulative Impacts

Water Rights:

Fox and Crescent Reservoirs: The effects would be the same as Alternatives One and Two. DGIC's storage right would be preserved.

Shale Creek and forage areas near Fox and Crescent Reservoirs; Queant Trail (#048) and jeep trail head (staging area); West Fork Whiterocks River (trail #047 and forage area west of Queant Lake); Queant Lake: Effects would be the same as Alternatives One and Two. There would be no effect on DGIC's water storage rights.

Reader Creek drainage: There would be no effect (area would not be used).

Water Quality:

Fox and Crescent Reservoirs: The effects would be similar to Alternative Two. The longer disturbance period and increased stock numbers would increase the combined effects.

Shale Creek and forage areas near Fox and Crescent Reservoirs: Effects would be similar to Alternatives One and Two except that the longer work period and higher stock numbers would increase vegetation utilization and potential soil

disturbance. Mitigation measures still limit sediment contributions to watercourses.

Queant Trail (#048) and jeep trail head (staging area): The types of effects would be similar to Alternative Two. There would be more potential for sediment delivery to water along the ½ mile approach to Queant Lake. The combined effects of this alternative would be greater than Alternative One or Two in the intermittent riparian trail crossing or the ½ mile approach to Queant Lake. Recreation use currently contributes minimal impact between the jeep trail and Queant Lake, but use is expected to increase after the jeep trailhead is cleared for this project.

Reader Creek drainage: There would be no effect (area would not be used).

West Fork Whiterocks River (trail #047 and forage area west of Queant Lake): Effects would be similar to Alternative Two, except the greater use of trail and forage area (more stock, longer duration) would increase sediment production and slow recovery of the forage area. When combined with recreation use, mitigation measures still limit sediment contributions to watercourses from the forage area, but not from riparian stream crossings. Effects on trail riparian crossings are greater than Alternative Two.

Queant Lake: Effects would be similar to Alternative Two though increased due to the increased number of animals and pack trips. When combined with other recreation use, recovery would be longer than with Alternative One or Two.

Riparian, Streams, Wetlands:

Fox Reservoir: The types of short-term effects would be similar to Alternatives One and Two. The extended numbers and duration of horse and human activities would create additional disturbance of soil and vegetation with greater impacts when combined with other uses. The benefits of the O&M Plan would be the same as for Alternatives One and Two.

Shale Creek and forage areas near Fox and Crescent Reservoirs: Effects would be similar to Alternative Two except that the longer work period lengthens the time that riparian vegetation below the coffer dam is deprived of water. The benefits of the O&M Plan would be the same as for Alternatives One and Two.

Queant Trail (#048) and jeep trailhead (staging area): The types of effects would be similar to Alternative Two. The combined effects of this alternative would be greater than Alternative One or Two in the ½-mile approach to Queant Lake or riparian crossings, where increased physical effects of hoof action in moist areas would result. Recreation use currently contributes minimal impact between the jeep trail and Queant Lake, but use is expected to increase after the jeep trailhead is cleared for this project. There would be a greater potential for noxious weed establishment at the staging area due to greater potential surface soil disturbance from a longer period of use.

Reader Creek drainage: There would be no effect (area would not be used).

West Fork Whiterocks River (trail #047 and forage area west of Queant Lake): When combined with recreation or other wilderness uses along this popular trail, impacts to riparian trail crossings would be greater than Alternatives One or Two. Impacts to the forage area would be about the same as Alternative Two due to mitigation measures.

Queant Lake: Effects would be similar to Alternative Two, but recovery could take longer even with mitigation measures, due to the number and frequency of animals using the trail around the lake in combination with recreation or other wilderness users.

Mitigation Measures

These measures would be the same as developed for Alternative One.

ALTERNATIVE FOUR – No Action (Baseline Comparison)

Direct and Indirect Effects

Water Rights:

Fox and Crescent Reservoirs: In the short-term, DGIC would be able to use their storage rights. This would gradually decline as the dam condition worsens and storage capacity is reduced. In the long-term, DGIC would not be able to store or use water to which they have a legal right. This would not meet the purpose and need of the project. The dam would deteriorate until an equilibrium level was naturally attained, or until intervention was needed to prevent serious environmental damage due to catastrophic failure. The reservoir level would ultimately be lower than initial design; and storage decreases would occur over time.

Shale Creek and forage areas near Fox and Crescent Reservoirs; Queant Trail (#048) and jeep trail head (staging area); Reader Creek drainage; West Fork Whiterocks River (trail #047 and forage area west of Queant Lake); Queant Lake: Effects would be the same as Alternatives One, Two, and Three. There would be no effect on DGIC's water storage rights.

Water Quality:

Fox and Crescent Reservoirs: In the short-term, water quality would be similar to current conditions. In the long-term, dam deterioration would continue until dam failure, which would be a major sediment source and cause of physical damage to stream channels below the dam. Any stabilization proposal would be considered a separate decision, requiring a separate future analysis.

Shale Creek and forage areas near Fox and Crescent Reservoirs: In the short-term effects would be similar to current conditions. In the long-term effects would be high flows associated with dam deterioration and failure that would transport sediment and dam materials. Dam fragments would provide turbidity and physical channel modifications or obstructions around which water could erode banks. Overflow without design could scour the floodplain or channel below the dam. Sediment contributions to the stream from dam deterioration could result in stream channel realignment, scour of banks, loss of riparian vegetation, and associated changes in sediment transport dynamics.

Queant Trail (#048) and jeep trail head (staging area); Reader Creek drainage; West Fork Whiterocks River (trail #047 and forage area west of Queant Lake); Queant Lake: These trails could be used to access the reservoir for the purpose of resolving resource issues related to dam deterioration and potential failure.

Riparian, Streams, Wetlands:

Fox and Crescent Reservoirs: Wetlands and riparian areas adjacent to the reservoirs would reduce in size, due to lowering of the reservoirs' level over time. A "mud ring" around the lowered level would eventually revegetate; this would be a potential invasion site for noxious weeds.

Shale Creek and forage areas near Fox and Crescent Reservoirs: Short-term stream and riparian conditions below the dam would be similar to current conditions. As the dam deteriorates and leaks increased, riparian/wetland environments may increase with dam leakage until continued dam deterioration would exacerbate and the dam would fail. Dam deterioration could result in stream channel realignment, scour of banks, or loss of riparian vegetation.

Queant Trail (#048) and jeep trail head (staging area); Reader Creek drainage; West Fork Whiterocks River (trail #047 and forage area west of Queant Lake); Queant Lake: These trails could be used to access the reservoir for the purpose of resolving resource issues related to dam deterioration and potential failure.

Cumulative Impacts

Water Rights:

Fox and Crescent Reservoirs: Off-Forest impacts would include loss of water use by shareholders of Dry Gulch Irrigation Company.

Shale Creek and forage areas near Fox and Crescent Reservoirs; Queant Trail (#048) and jeep trail head (staging area); Reader Creek drainage; West Fork Whiterocks River (trail #047 and forage area west of Queant Lake); Queant Lake: Effects would be the same as Alternatives One,

Two, and Three. There would be no effect on DGIC's water storage rights.

Water Quality:
Fox and Crescent Reservoirs: Short-term, water quality remains similar to current conditions and uses remain the same. Long-term, reduced future recreation use would occur while the area is unsightly or damaged.

Shale Creek and forage areas near Fox and Crescent Reservoirs: Short-term, water quality remains similar to current conditions. Long-term, reduced future recreation use would occur while the area is unsightly or damaged. Wilderness values would be reduced during this period since effects of catastrophic dam breaching are not a natural event.

Queant Trail (#048) and jeep trail head (staging area); Reader Creek drainage; West Fork Whiterocks River (trail #047 and forage area west of Queant Lake); Queant Lake: Effects of future use of trails would be in addition to recreation or other current types of use. Effects would be minimal unless a new proposal and separate analysis were conducted to allow otherwise.

Riparian, Streams, Wetlands:
Fox and Crescent Reservoirs: In the short-term, condition of these lands remains similar to current conditions. In the long-term, reduced future recreation use would occur while the area is unsightly or damaged.

Shale Creek and forage areas near Fox and Crescent Reservoirs: In the short-term, condition of these lands remains similar to current conditions. In the long-term, reduced future recreation use would occur while the area is unsightly or damaged. Wilderness values would be reduced during this period since effects of catastrophic dam breaching are not a natural event.

Queant Trail (#048) and jeep trail head (staging area); Reader Creek drainage; West Fork Whiterocks River (trail #047 and forage area west of Queant Lake); Queant Lake: Effects of future use of trails would be in addition to recreation or other current types of use. Effects would be minimal unless a new proposal and separate analysis were conducted to allow otherwise.

Mitigation Measures

1. Monitoring reports would be prepared by DGIC and/or the Forest Service every one to two years to assess resource protection needs.

2. Additional NEPA would be done as resource protection needs were identified.

3. Safety notices, articles, and other notification or use restrictions would be prepared as appropriate if potential dam failure created hazards to recreationists, DGIC, or other users.

Monitoring

Monitoring would be the same as Alternative One.

4.6 SOILS AND LANDFORM
(Issues 1.8.4 and 1.8.6 – Chapter 1)

ALTERNATIVE ONE – Proposed Action

Effects on the Resource:

1. Impacts to the physical resources of the wilderness, including trails –

The disturbance and horse use under alternative one would not have any long-term effects to the soil resource. Reader Creek Trail #133 is generally over dry ground, morainal materials and the use of this trail should not result in any long-term impacts.

2. Impacts to the established dispersed campsites –

The use of dispersed campsite areas would not result in any increased effect to the soil resource over the base in Alternative Four (No Action). More than likely, the camp use, as well as horse use, would not increase, as many recreation users would use other areas during the project period.

3. Impacts to the forage resource due to stock grazing –

Increased horse use in the Fox Reservoir area would have a minimal effect on the soil resource, as long as utilization standards are met.

4. Use of existing borrow areas, and the associated impact from re-disturbing the recovering sites –

Reopening and excavation of new borrow sites would be necessary to obtain materials needed to meet the requirements of the repair work. For those borrow sites outside of the reservoir, excavation would remove the soil materials and associated vegetation. Very little topsoil exists on the ground moraines and fertility is very low. The ability to reclaim the site would be limited and could result in exceeding the class III standard for the area. The use of existing borrow areas, and/or the opening of new areas would result in a long-term effect to the soil resource.

5. Use of the helicopter staging area and its impacts on recreation use and the physical resources –

The Reader Creek staging area has been used in the past for other helicopter staging operations without any long-term impact to the soil resource. Use of the Reader Creek area would not result in any long-term impact to the soil resource.

Cumulative Impacts

Most of the cumulative impacts to soils in the project area are a result of past grazing practices, the construction of the reservoir, the continued recreation increase in use, and the wildlife use, both by native and introduced animals.

Mitigation Measures

Reclamation of borrow sites outside the reservoir would be required to meet wilderness standards and guidelines. Reshaping of the ground contour should conform to the natural look of the ground moraines being excavated.

Locations of latrine pits are to be specified or approved by the Forest Service so as to minimize the risk of ground or surface water contamination. A minimum of one latrine unit at the work area and one at each campsite is required. Portable toilet facilities may be required to reduce the human waste in the area.

Jute netting or other similar porous fabric would be placed on cut slopes of borrow sites. Water would be contained within the borrow sites. Waste material (oversized material) would be screened and placed back in the borrow sites.

Monitoring Guidelines

There are seven long-term trend studies currently established within one mile of the project area. Soils would be incorporated into these studies as well as the two or three new studies identified as directly tied to this project. These sites would be used to monitor soil condition, along with vegetation, immediately following the repair work. Monitoring would be used to determine actual use in the impacted campsite and horse use areas.

Study plots would also be established in conjunction with the borrow areas to determine the degree of disturbance.

Photo 4.e – West Fork Whiterocks Trail # 047

ALTERNATIVE TWO – Modified Proposed Action

Effects on the Resource:

1. **Impacts to the physical resources of the wilderness, including trails within and outside of the wilderness:**

Alternative Two would have a significant impact to the soil resource in conjunction with the trail system. The trail system in West Forks of Whiterocks River (Trails #047 and #048) would impact riparian and sensitive soil areas to a much greater degree than the Reader Creek Basin Trail #133. Increased use in conjunction with this project, and continued increased recreation use following completion of the project would have irretrievable consequences, especially if the staging area and the Queant Jeep Trail were upgraded beyond the existing size and width.

2. **Impacts to the established campsites –**

The effects to the soil resource at established dispersed campsites would be the same as for Alternative One.

3. **Impacts to the forage (soils) resource due to stock grazing –**

The effects to the soil resource would be the same as Alternative One, and are discussed in Section 4.3 Vegetation.

4. **Use of existing borrow areas, and the associated impact from re-disturbing the recovering sites –**

There would be no impacts to the soil resource at the existing borrow areas. All borrow materials would be extracted from within the reservoir.

5. **Use of the helicopter staging area and its impacts on recreation use and the physical resources –**

The opening of the old logging spur and use of the logged-over area near the junction of Chepeta Lake Road and Queant Lake Jeep Trail would have minor short-term impacts to soils.

Cumulative Impacts

The existing trail system from the terminus of the Queant Lake Jeep Trail is in need of relocation and repair (Trails 047 and 048). Numerous segments have deep rutting and sediment delivery. Increased horse use with the project would have a greater effect on the associated trail system than for the trail system associated with Alternative One all. Following the completion of the project, increased recreation, with both horses and foot traffic, could occur having long-term cumulative impacts to the upper portion of the watershed, especially cumulative impacts to riparian areas. Having two trailheads in the West Fork of Whiterocks (West Fork Whiterocks River and Queant Lake Trails) would greatly impact the watershed by the expected amount of increased use.

Mitigation Measures

The mitigation measures for Alternative Two in regard to horse use would be the same as Alternative One.

Locations of latrine pits are to be specified or approved by the Forest Service so as to minimize the risk of ground or surface water contamination. A minimum of one latrine unit at the work area and one at each campsite is required. Portable toilet facilities may be required to reduce the human waste in the area.

There are no proposed mitigation measures for the borrow areas, since all borrow material would be extracted within the reservoirs.

Monitoring Guidelines

Monitoring guidelines would be the same as for Alternative One, with the addition of a trail condition inventory prior to the beginning of the project and the establishment of monitoring sites at key locations that would be tied to riparian and poor condition segments.

ALTERNATIVE THREE – Maximize Primitive Access and Tools

Effects on the Resource:

1. Impacts to the physical resources of the wilderness including trails –

Alternative Three would have the most significant impact to the soil resource in conjunction with the trail system of any of the action alternatives. The trail system in West Forks of Whiterocks River (Trails 047 and 048) impacts riparian and sensitive soil areas to a much greater degree than the Reader Creek Basin Trail #133. Increased use in conjunction with this project, and continued increased recreation use following completion of the project would have irretrievable consequences, especially if the staging area and the Queant Jeep Trail were upgraded beyond the existing size and width.

2. Impacts to the established campsites –

Impacts to the soil resource would be similar to Alternative One and Two, even with an increase in human and horse use. It is not expected that the standard for the Class III designation would be exceeded.

3. Impacts to the forage resource (soils) due to stock grazing –

The increase in the number of horse days for this alternative would nearly triple from Alternatives One and Two. However, there could be a decrease in recreation horse use if users avoid the project area. If recreation users avoided the project area, the increased horse use under this alternative would be within the capability of the Fox Reservoir area and would have a minimal long-term effect on the soil resource. The potential to exceed the allowable use standard identified in the Vegetation section 4.3 shouldn't result in a long-term effect to the soil resource.

4. Use of the existing borrow areas, and the associated impact from re-disturbing the recovering areas –

Borrow material would be extracted from the reservoirs. Therefore, there would be no impacts to existing borrow areas.

5. Use of the helicopter staging area and its impacts on recreation use and the physical resource –

The opening of the old logging spur and use of the logged-over area near the junction of Chepeta Lake Road and Queant Lake Jeep Trail would have minor short-term impacts to soils.

Cumulative Impacts

Cumulative impacts are similar to Alternative Two, except for the large increase in packhorse use. The existing trail system from the terminus of the Queant Lake Jeep Trail is in need of relocation and repair (Trails 047 and 048). Numerous segments have deep rutting and sediment delivery. The increased horse use with the project would have the greatest effect on the trail system of all the alternatives. Following the completion of the project, increased recreation, with both horses and foot traffic, could occur having long-term cumulative impacts to the upper portion of the watershed, especially cumulative impacts to riparian areas. Having two trailheads in the West Fork of Whiterocks (West Fork Whiterocks River and Queant Lake Trails) would

greatly impact the watershed by the expected amount of increased use.

Mitigation Measures

The mitigation measures in regard to horse use would be the same as Alternative Two.

Locations of latrine pits are to be specified or approved by the Forest Service so as to minimize the risk of ground or surface water contamination. A minimum of one latrine unit at the work area and one at each campsite is required. Portable toilet facilities may be required to reduce the human waste in the area.

If the Queant Lake Jeep Trail staging area location is selected, there should be a design for long-term use of the terminus as a trailhead, relocation and upgrading of the trail system, and a systematic look at the impacts to the watershed.

Monitoring Guidelines

Monitoring guidelines would be the same as for Alternative One, with the addition of a trail condition inventory prior to the beginning of the project and the establishment of monitoring sites at key locations that would be tied to riparian and poor condition segments.

ALTERNATIVE FOUR – No Action (Baseline Comparison)

Effects on the Resource:

1. **Impacts to the physical resources of the wilderness including trails –**

Negligible effects on the soils would be expected under this alternative. The low number of horses and days associated with normal annual maintenance activities would not result in any measurable impact to the resource in relation to impact to trails.

2. **Impacts to the established campsites –**

Negligible effects to the soils in relation to campsites would be expected under this alternative. The low number of horses and few days of use associated with annual and long-term operation and maintenance activities would not have measurable impacts to the soil resource.

3. **Impacts to the forage resource (soils) due to stock grazing –**

The low number of horses and days associated with annual and long-term operation and maintenance would not result in any change in the Class III designation for this area.

4. **Use of the existing borrow areas, and the associated impact from re-disturbing the recovering areas –**

There would not be any impacts, as the existing borrow areas would not be used.

5. **Use of the helicopter staging area and its impacts on recreation use and the physical resource –**

There would be no helicopter use; consequently there would be no impacts to staging areas and the physical resource.

Cumulative Impacts

There would no cumulative impacts with this alternative other than those already associated with the normal annual operation and maintenance.

Mitigation Measures

No mitigation measures are proposed. This alternative would not alter the standard for a Class III designation.

Monitoring Guidelines

Soil information would be collected at the range studies sites in conjunction with vegetation monitoring. These sites would be used for long-term monitoring of impacts due to use in the area, and to help in assessing the overall condition of the watershed.

4.7 CULTURAL RESOURCES

ALTERNATIVE ONE – Proposed Action

Effects on the Resource

The proposed action would have an adverse effect to the National Register eligible site, Fox Reservoir Dam. Removal or replacement of the outlet and headgate, uses of historic borrow areas, and raising of levees would have a moderate impact on the historic appearance of the features and area. Removal of woody vegetation would actually help preserve and stabilize features. Campsites and staging area locations could disturb National Register eligible sites. The staging and campsites have been mapped at such a scale that it is impossible to determine their exact relationship to known sites. Increased activity in the area during project implementation would present the increased risk of collection or vandalism of archaeological remains.

Mitigation Measures and Monitoring Guidelines

Mitigation as agreed with Utah SHPO would consist of off site interpretation of the high lake dams or a publication detailing the history of Uinta Mountain reservoirs. Additional mitigation would consist of a site visit by Forest archaeologist to proposed staging areas and camp sites to verify their location and move their position if necessary to prevent placement on National Register Eligible sites. A brief discussion with project personnel to explain cultural resources laws and the need to leave cultural resources alone would also be recommended. Forest personnel would visit the sites after the project to monitor impacts to cultural resources as a result of project implementation.

Photo 4.f – cabin at Fox Reservoir

ALTERNATIVE TWO – Modified Proposed Action

Effects on the Resource

This alternative would have the same adverse impact to Fox Reservoir Dam as Alternative One.

Mitigation Measures and Monitoring Guidelines

These would be the same as for Alternative One.

ALTERNATIVE THREE – Maximize Primitive Tools and Access

Effects on the Resource

Alternative Three would have the same impacts to National Register sites as Alternative Two.

Mitigation Measures and Monitoring Guidelines

The same mitigation measures for Alternative One would be recommended for this Alternative.

ALTERNATIVE FOUR – No Action (Baseline Comparison)

Effects on the Resource

This Alternative would have no immediate impact to National Register eligible sites. However, any work proposed with the " Reservoir and Dam Restoration Plan" would undoubtedly have an impact.

Mitigation Measures

Mitigation and monitoring of the restoration plan would have to be done in consultation with Utah SHPO if this approach is chosen.

4.8 INVENTORIED ROADLESS AREA

Inventoried Roadless Area in the vicinity of the Project Area

The effects of the project on inventoried roadless attributes will be assessed for the issue and indicators discussed in Chapter One.

Issue Common to all action alternatives– Effects of the project on inventoried roadless area attributes (the change in attribute characteristics, measured by a change in the existing ratings for the attribute).

Attributes ratings area as follows:

- High – attribute fully maintained.
- Moderately High – attribute maintained, with a few exceptions that are seldom noticeable.
- Moderate – attribute is mostly maintained, and exceptions are evident and noticeable to the majority of users.
- Moderately Low – at least 50 percent of the attribute characteristics are missing or affected.
- Low - all by a few of the attribute characteristics are missing.
- Very Low – all attribute characteristics are missing.

The proposed and alternative staging areas, jeep road and trail access routes, and helicopter and horsepacking operations would only have indirect effects on the attributes of the adjacent and surrounding inventoried roadless area. ***(There would be no direct effects, since sites for staging operations are adjacent to and outside of the inventoried roadless area, and no road or trail construction or reconstruction would occur within the inventoried roadless area. Refer to the Inventoried Roadless Area Map in Section 3.8 of Chapter Three.)*** The indirect effects would be apparent to area visitors in a zone influence within inventoried roadless area. For analysis purposes, this zone of influence is defined as…. any portion of the inventoried roadless area within 0.5 to 1.0 miles of the staging areas, jeep road access, and trail routes that are as discussed in Chapter Two, Section 2.0 – Alternatives Considered, including the Proposed Action.

ALTERNATIVE ONE – Proposed Action

Effects on the Resource

The effects to inventoried roadless area attributes would be those associated with the following project activities:

a) 30 to 35 day project period
b) 8 to 20 round trip helicopter flights from Reader Basin meadow staging area
c) 20 horse pack trips (round trips) from the Reader Basin meadow staging area or Chepeta Trailhead and meadow staging area, with nine horses in each pack string (180 horse trips) via Reader Basin Trail #133 and/or Highline Trail #025 or #025d. *If the 20 round trips were spread over 30 to 35 consecutive project days, there would be approximately 1 round trip per day*

Visitors using the Reader Basin Trail #113 and the Highline Trail #025 and/or #025d within the zone of influence would occasionally see and hear helicopters landing and/or flying to or from Fox and Crescent Reservoirs. Visitors using the trails could also see a pack string of up to nine horses transporting supplies to and from the reservoirs.

Refer to Chapter Three, Section 3.8 for descriptions of the following roadless area attributes and current conditions and ratings. All impacts to these attributes would occur during the 30 to 35-day operations period.

The existing ratings for roadless area attributes adjacent to the staging area and trail routes take into consideration existing conditions and activities, such as normal recreation activities associated with fishing, horseback riding, and hiking.

Natural Integrity –

The Reader Creek meadow staging and Chepeta Trailhead and meadow staging area would be outside of the inventoried roadless area. Natural integrity of the inventoried roadless area adjacent to staging operations would remain in tact and operating, and therefore, natural integrity would remain moderately high.

Also, there would be no change to the moderately high rating from horsepacking operations over the 30 to 35-day operations period.

Apparent Naturalness –

Even with user awareness of the inventoried roadless area boundary, this alternative would diminish the perception of apparent naturalness of the adjacent inventoried roadless area within the above-described 0.5 to 1.0 mile "zone of influence".

Even though there would be no direct effects on this attribute, the visitor's perception of human impacts to the adjacent inventoried roadless area would be affected. This perception would be fostered by the proximity (¼ mile) of the staging area to the boundary of the inventoried roadless area. The moderately high rating for this attribute would change to moderately low during the project period; then return to moderately high at the end of all helicopter operations. This temporary change would be due to the high level of noise and the visual sightings associated with the helicopter operations.

The horse packing operations would not affect the current rating of moderately high, since there would only be one round trip per day.

Evidence of project activities noise, visual obtrusions, etc., would greatly diminish beyond the 0.5 to 1.0 mile zone of influence.

Remoteness –
Even with user awareness of the inventoried roadless area boundary, this alternative would diminish the perception of remoteness of the adjacent inventoried roadless area within the above-described 0.5 to 1.0 mile "zone of influence".

The feeling of remoteness would change from moderate to moderately low during the 30 to 35 day operations period within the 0.5 to 1.0 mile zone of influence of the adjacent inventoried roadless area; then return to the existing rating or moderate. This temporary change would be due to the high level of noise and the visual sightings associated with the helicopter operations.

The attribute would not be effected by horsepacking operations over the 30 to 35-day operations period, since round trips would be not exceed one trip per day.

Vegetative screening by dense stands of trees and the mountainous terrain would provide some sense of remoteness.

Solitude –

This attribute is presently rated moderately high in the zone of influence, except for the areas immediately adjacent to Chepeta Lake Road #110, Chepeta Lake itself, and the Rasmussen Lake and Queant Lake Jeep Trails where these areas are rated as low.

Visitors passing through the interior portions of the zone of influence would experience occasional sightings of the horse pack strings and helicopters, and occasionally hear noise from the helicopter operations.

The staging operations at the Reader Creek meadow or Chepeta Trailhead and meadow staging areas would not change the existing rating of low in the adjacent areas of concentrated recreation use mentioned above (including the staging area), due to the normal recreation uses

that would be ongoing in these areas. The helicopter operations would change the rating of moderately high within the remaining zone of influence to a rating of moderately low during the 30 to 35 day operations period. The rating would return to moderately high after operations were completed.

The horsepacking operations would not affect the current attribute rating in the areas of concentrated use or in the remaining zone of influence. There would only be one round trip per day, and encounters with visitors along the trails would be of short duration.

Evidence of project activities noise, visual obtrusions, etc., would greatly diminish beyond the 0.5 to 1.0 mile zone of influence.

Special Features –

The unique features within the inventoried roadless area (meadows, riparian areas, streams,) would not be affected by project operations. Helicopter operations would not affect these areas, and pack strings use would occur on existing trails and established forage areas.

Manageability/Boundaries –

This alternative would not affect the ability to manage and maintain the boundary of the adjacent inventoried roadless area along the eastern most boundaries. The roadless area attributes would be affected during the operations period, and would return to existing ratings upon termination and completion of project work.

Cumulative Impacts

The following activities were considered for the cumulative impacts on the inventoried roadless area adjacent to the all project activities:

- Past logging along the Chepeta Lake Road #110 and Rasmussen Lakes and Queant Lake Jeep Trails.
- Proximity of Chepeta Lake and associated recreation activities (parking area, Trailhead for Highline Trail #025)
- Dispersed recreation along Chepeta Lake Road #110 (non-motorized and motorized)
- Hunting , fishing, hiking, and horseback riding activities at Chepeta Lake, Reader Creek meadows, West Fork Whiterocks River Trailhead (Trail #047), and Rasmussen Lakes and Queant Lake Jeep Trails

The cumulative impacts of sustained and perpetual maintenance of Fox and Crescent reservoirs and the other three reservoirs in Upper Uinta Canyon drainage was discussed in Section 4.1 – Wilderness, page 2. The impacts from repeated intrusions of motorized or mechanical transport of equipment and supplies would have cumulative effects to attributes of Apparent Naturalness, Remoteness and Solitude in the zone of influence, when added to the normal recreation use of the area. The horse pack trips (estimate 1 round trip/day for 5 weeks) over trails and high country passes along with the normal recreation uses could increase trail damage and wear, especially if conducted during wet weather.

The attributes of Natural Integrity, Special Features, and Manageability/Boundaries would be repeatedly affected, but effects would be short-term and not cumulative with other uses. There are no other past or proposed activities in the immediate area of the inventoried roadless area that would add cumulative impacts to those discussed above.

Mitigation Measures

- Prepare, post, and distribute flyers and other media notices that describe the purpose and need for the project work, location of helicopter and pack string staging areas, and the time frames for all operation activities. Publish notices in local and regional papers as needed, and recommend that visitors limit their stay or otherwise avoid the inventoried roadless area during the project work period

ALTERNATIVE TWO – Modified Plan of Operations

Effects on the Resource

The effects to inventoried roadless area attributes would be those associated with the following project activities:

a) 30 to 35 day project period
b) 8 to 20 round trip helicopter flights from staging area northwest of the junction of Chepeta Lake Road #110 and Queant Lake Jeep Trail
c) 20 horse pack trips (round trips) from the staging area, with nine horses in each pack string (180 horse trips) via the Queant Lake Jeep Trail, Queant Lake Trail #048, West Fork Whiterocks Trail #047, and/or Highline Trail #025via Reader Basin Trail #133 and Highline Trail #025.

Visitors using the trail routes within the zone of influence would occasionally see and hear helicopters landing and/or flying to or from Fox and Crescent Reservoirs. Visitors using the trails could also see a pack string of up to nine horses transporting supplies to and from the reservoirs.

Refer to Chapter Three, Section 3.8 for descriptions of the following roadless area attributes and current conditions and ratings. All impacts to these attributes would occur during the 30 to 35-day operations period.

The existing ratings for roadless area attributes adjacent to the staging area and trail routes take into consideration existing conditions and activities, such as normal recreation activities associated with fishing, horseback riding, and hiking.

Natural Integrity –

The staging area north and west of the junction of Chepeta Lake Road #110 and Queant Lake Jeep Trail would be outside of the inventoried roadless area. Natural integrity of the inventoried roadless area adjacent to staging operations would remain in tact and operating, and therefore, natural integrity would remain moderately high.

Also, there would be no change to the moderately high rating from horse-packing operations over the 30 to 35-day operations period.

Apparent Naturalness –

Even with user awareness of the inventoried roadless area boundary, this alternative would diminish the perception of apparent naturalness of the adjacent inventoried roadless area within the above-described 0.5 to 1.0 mile “zone of influence”.

Even though there would be no direct effects on this attribute, the visitor’s perception of human impacts to the adjacent inventoried roadless area would be affected. This perception would be fostered by the proximity (3/4 miles) of the staging area to the boundary of the inventoried roadless area. The moderately high rating for this attribute would change to moderately low during the project period; then return to moderately high at the end of all helicopter operations. This temporary change would be due to the high level of noise and the visual sightings associated with the helicopter operations.

The horse-packing operations would not affect the current rating of moderately high, since there would only be one round trip per day.

Evidence of project activities noise, visual obtrusions, etc., would greatly diminish beyond the 0.5 to 1.0 mile zone of influence.

Remoteness –

Even with user awareness of the inventoried roadless area boundary, this alternative would diminish the perception of remoteness of the adjacent inventoried roadless area within the above-described 0.5 to 1.0 mile “zone of influence”.

The feeling of remoteness would change from moderate to moderately low during the 30 to 35 day operations period within the 0.5 to 1.0 mile zone of influence of the adjacent inventoried roadless area; then return to a the existing rating of moderate. This temporary change would be due to the high level of noise and the visual

sightings associated with the helicopter operations.

The attribute would not be affected by horse-packing operations over the 30 to 35-day operations period, since round trips would not exceed one trip per day.

Vegetative screening by dense stand of trees and the mountainous terrain would provide some sense of remoteness.

Solitude –

This attribute is presently rated moderately high in the zone of influence, except for the areas immediately adjacent to Chepeta Lake Road #110, Chepeta Lake itself, and the Rasmussen Lake and Queant Lake Jeep Trails where these areas are rated as low.

Visitors passing through the interior portions of the zone of influence would experience occasional sightings of the horse pack strings and helicopters, and occasionally hear noise from the helicopter operations.

The operations at the staging area would not change the existing rating of low in the adjacent areas of concentrated recreation use mentioned above (including the staging area), due to the normal recreation uses that would be ongoing in these areas. The helicopter operations would change the rating of moderately high within the remaining zone of influence to a rating of moderately low during the 30 to 35 day operations period. The rating would return to moderately high after operations were completed.

The horsepacking operations would not affect the current attribute rating in the areas of concentrated use or in the remaining zone of influence. There would only be one round trip per day, and encounters with visitors along the trails would be of short duration.

Evidence of project activities noise, visual obtrusions, etc., would greatly diminish beyond the 0.5 to 1.0 mile zone of influence.

Special Features –

The unique features within the inventoried roadless area (meadows, riparian areas, streams,) would not be affected by project operations. Helicopter operations would not affect these areas, and pack strings use would occur on existing trails and established forage areas.

Manageability/Boundaries –

This alternative would not affect the ability to manage and maintain the boundary of the adjacent inventoried roadless area along the eastern most boundaries. The roadless area attributes would be affected during the operations period, and would return to existing ratings upon termination and completion of project work.

Cumulative Impacts

The following activities were considered for the cumulative impacts on the inventoried roadless area adjacent to the all project activities:

- Past logging along the Chepeta Lake Road #110 and Rasmussen Lakes and Queant Lake Jeep Trails.
- Proximity of Chepeta Lake and associated recreation activities (parking area, Trailhead for Highline Trail #025)
- Dispersed recreation along Chepeta Lake Road #110 (non-motorized and motorized)
- Hunting, fishing, hiking, and horseback riding activities at Chepeta Lake, Reader Creek meadows, West Fork Whiterocks River Trailhead (Trail #047), and Rasmussen Lakes and Queant Lake Jeep Trails

The cumulative impacts of sustained and perpetual maintenance of Fox and Crescent reservoirs and the other three reservoirs in Upper Uinta Canyon drainage was discussed in Section 4.1 – Wilderness. The impacts from repeated intrusions of motorized or mechanical transport of equipment and supplies would have cumulative effects to attributes of Apparent Naturalness, Remoteness and Solitude in the zone of influence, when added to the normal recreation use of the area. The horse pack trips (estimate 1 round trip/day for 5 weeks) over trails and high country

passes along with the normal recreation uses could increase trail damage and wear, especially if conducted during wet weather.

The attributes of Natural Integrity, Special Features, and Manageability/Boundaries would be repeatedly affected, but effects would be short-term and not cumulative with other uses. There are no other past of proposed activities in the immediate area of the inventoried roadless area that would add cumulative impacts to those discussed above.

Mitigation Measures

The measures would be the same as described for Alternative One.

Monitoring Guidelines

The guidelines would be the same as described for Alternative One.

ALTERNATIVE THREE – Maximize Primitive Access and Tools

Effects on the Resource

The effects to inventoried roadless area attributes would be those associated with the following project activities:

a) 60 to 65 day project period *(30 to 35 day longer than Alternatives One and Two.*
b) 10 to 12 round trip helicopter flights *(eight round trips less than with Alternatives One and Two)*
c) 50 horse pack trips (round trips) from the staging area located north and west of the junction of Chepeta Lake Road #110 and Queant Lake Jeep Trail, with nine horses in each pack string (450 pack loads) via the Queant Lake Jeep Trail, Queant Lake Trail #048, West Fork Whiterocks Trail #047, and/or Highline Trail #025. *(30 pack trips or 220 pack loads more than for Alternative One and Two.)*
   If the 50 round trips were spread over 60 to 65 consecutive project days, there would be approximately 1 round trip per day. *(Same number of round trips per day as Alternatives One and Two.)*

Visitors using the Queant Lake Jeep Road, Queant Lake Trail #048, West Fork Whiterocks River Trail #048, or Highline Trail #025 within the zone of influence would occasionally see and hear helicopters landing and/or flying to or from Fox and Crescent Reservoirs. Visitors using the jeep trail and the above mentioned non-motorized trails would also occasionally see pack strings of up to nine horses transporting supplies to and from the reservoirs. A portion of the Queant Lake Jeep Trail (0.7 miles of the 2.2-mile jeep trial) crosses through a "finger" of the inventoried roadless area. Visitors using the Chepeta Lake Road would encounter trucks and other vehicles involved in bringing supplies and materials to the helicopter staging area.

Refer to Chapter Three, Section 3.8 for descriptions of the following roadless area attributes and current conditions and ratings. All impacts to these attributes would occur during the 60 to 65-day operations period.

The existing ratings for roadless area attributes adjacent to the staging area and trail routes take into consideration existing conditions and activities, such as normal recreation activities associated with fishing, horseback riding, and hiking.

Natural Integrity –

The Queant Lake Jeep Trail staging would be outside of the inventoried roadless area. Natural integrity of the inventoried roadless area adjacent to staging operations would remain in tact and operating, and therefore, natural integrity would remain moderately high.

Also, there would be no change to the moderately high rating from horsepacking operations over the 60 to 65-day operations period.

Apparent Naturalness –

Even with user awareness of the inventoried roadless area boundary, this alternative would diminish the perception of apparent naturalness of

the adjacent inventoried roadless area within the 0.5 to 1.0 mile "zone of influence" described at the beginning of this Chapter section. Even though there would be no direct effects on this attribute, the visitor's perception of human impacts to the adjacent inventoried roadless area would be affected. This perception would be fostered by the proximity of the staging area to the boundary of the inventoried roadless area. (The staging area would approximately 3/4 miles from the roadless area boundary.) The moderately high rating for this attributed would change to moderately low during the project period; then return to moderately high at the end of all helicopter operations. This temporary change would be due to the high level of noise and the visual sightings associated with the helicopter operations.

The horse-packing operations would not affect the current rating of moderately high, since there would only be one round trip per day.

Evidence of project activities noise, visual obtrusions, etc., would greatly diminish beyond the 0.5 to 1.0 mile zone of influence.

Remoteness –

Even with user awareness of the inventoried roadless area boundary, this alternative would diminish the perception of remoteness of the adjacent inventoried roadless area within the above-described 0.5 to 1.0 mile "zone of influence".

The feeling of remoteness would change from moderate to moderately low during the 60 to 65 day operations period within the 0.5 to 1.0 mile zone of influence of the adjacent inventoried roadless area; then return to the existing rating or moderate. This temporary change would be due to the high level of noise and the visual sightings associated with the helicopter operations.

The attribute would not be effected by horsepacking operations over the 60 to 65-day operations period, since round trips would be not exceed one trip per day.

Vegetative screening by dense stands of trees and the mountainous terrain would provide some sense of remoteness.

Solitude –

This attribute is presently rated moderately high in the zone of influence, except for the areas immediately adjacent to Chepeta Lake Road #110, Chepeta Lake itself, and the Rasmussen Lake and Queant Lake Jeep Trails where these areas are rated as low.

Visitors passing through the interior portions of the zone of influence would experience occasional sightings of the horse pack strings and helicopters, and occasionally hear noise from the helicopter operations.

The operations at the Queant Lake Jeep Trail staging area would not change the existing rating of low in the adjacent areas of concentrated recreation use mentioned above (including the staging area), due to the normal recreation uses that would be ongoing in these areas. The helicopter operations would change the rating of moderately high within the remaining zone of influence to a rating of moderately low during the 60 to 65 day operations period. The rating would return to moderately high after operations were completed.

The horsepacking operations would not affect the current attribute rating in the areas of concentrated use or in the remaining zone of influence. There would only be one round trip per day, and encounters with visitors along the trails would be of short duration.

Evidence of project activities noise, visual obtrusions, etc., would greatly diminish beyond the 0.5 to 1.0 mile zone of influence.

Special Features –

The unique features within the inventoried roadless area (meadows, riparian areas, streams,) would not be affected by project operations. Helicopter operations would not affect these areas, and pack string use would occur on existing trails and established forage areas.

Manageability/Boundaries –

This alternative would not affect the ability to manage and maintain the boundary of the adjacent inventoried roadless area along the eastern most boundaries. The roadless area attributes would be affected during the operations period, and would return to existing ratings upon termination and completion of project work.

Cumulative Impacts

The following activities were considered for the cumulative impacts on the inventoried roadless area adjacent to the all project activities:

- Past logging along the Chepeta Lake Road #110 and Rasmussen Lakes and Queant Lake Jeep Trails.
- Proximity of Chepeta Lake and associated recreation activities (parking area, Trailhead for Highline Trail #025)
- Dispersed recreation along Chepeta Lake Road #110 (non-motorized and motorized)
- Hunting , fishing, hiking, and horseback riding activities at Chepeta Lake, Reader Creek meadows, West Fork Whiterocks River Trailhead (Trail #047), and Rasmussen Lakes and Queant Lake Jeep Trails

The cumulative impacts of sustained and perpetual maintenance of Fox and Crescent reservoirs and the other three reservoirs in Upper Uinta Canyon drainage was discussed in Section 4.1 – Wilderness. The impacts from repeated intrusions of motorized or mechanical transport of equipment and supplies would have cumulative effects to attributes of Apparent Naturalness, Remoteness and Solitude in the zone of influence, when added to the normal recreation use of the area. The horse pack trips (estimate 1 round trip/day for 9 weeks) over trails and high country passes along with the normal recreation uses could increase trail damage and wear, especially if conducted during wet weather.

The attributes of Natural Integrity, Special Features, and Manageability/Boundaries would be repeatedly affected, but effects would be short-term and not cumulative with other uses. There are no other past of proposed activities in the immediate area of the inventoried roadless area that would add cumulative impacts to those discussed above.

Mitigation Measures

The measures would be the same as described in Alternative One.

Monitoring Guidelines

The guidelines would be the same as described in Alternative One.

ALTERNATIVE FOUR – No Action (Baseline Comparison)

Effects on the Resource

Under this alternative the repair work as described in the Proposed Action would not take place. The motorized intrusion described in the action alternatives would not occur and the attributes of the inventoried roadless area would not be affected. Eventually, this alternative could lead to action at the reservoir site to implement storage restrictions, and at some time the area would need restoration. It is not anticipated at this time that these future activities would require any motorized tools or equipment or require mechanical transport.

Mitigation Measures

No new mitigation measures would be needed for the Dam and Reservoir Restoration Plan that would be developed for this alternative. Existing special use permit provisions would suffice.

Monitoring Guidelines

Monitoring guidelines for the inventoried roadless area attributes would be those in the existing special use permit, which include annual inspections and requirements for correction of deficiencies with no motorized access or mechanical tools.

4.9 SOCIOECONOMICS

Alternative One (Proposed Action), Alternative Two (Modified Proposed Action), and Alternative Three (Maximize Primitive Access and Tools)

These alternatives would meet an aspect of the Purpose and Need, i.e., insuring that stockholders of Dry Gulch Irrigation Company (DGIC) could continue to use their water rights for the established use of irrigating their farms and pastures. The needed repairs to Fox and Crescent Reservoirs would be achieved under these three Alternatives (although by different repair methods), and therefore, normal annual maintenance costs, and socioeconomic values would not be lost or reduced to any great degree. These three Alternatives would honor and recognize the rights associated with the Ditch Bill Easement (Colorado Ditch Bill PL 99-545) and the water rights granted under state law, particularly in established wilderness areas.

Refer to Chapter Three, Table 3.d (Costs and Values Associated with the Fox and Crescent Reservoirs Maintenance Project) for information and data discussed in the following paragraphs.

The storage water accounts for 0.3 of an acre-foot of irrigation water per acre. This represents 12% of the total acre-feet of irrigation water that is applied annually to the 4,155 acres irrigated with water from the reservoirs. The remaining 2.3 acre-feet (88 percent) applied annually to the 4,155 acres come from other irrigation sources. *(DGIC, 02/25/02)*

Annually, DGIC produces 2.6 acre-feet of water, with 0.3 acre-feet of this amount coming from Fox and Crescent Reservoirs. Of this 2.6 acre-feet, 2.3 acre-feet of irrigation water is used by farmers and ranchers from spring through mid-summer, while the 0.3 of an acre foot of water from Fox and Crescent Reservoirs is late season water (late-summer through late fall). The 2.3 acre-feet of irrigation water are essential to values that meet the expenses of farm and ranching operations. Farmers and ranchers consider the 0.3 of an acre-foot of water from Fox and Crescent Reservoirs as essential in attaining the profit needed to maintain viable faming and ranching operations after meeting expenses. *(DGIC, 02/25/02)*

Alternative Four (No Action)

This alternative would not meet the socioeconomic aspect of the Purpose and Need and the potential requirements associated with a Ditch Bill Easement as described in preceding paragraphs. In addition, values associated with the irrigation water stored at Fox and Crescent Reservoirs and delivered by DGIC to farms and ranches would be reduced if the company could not accomplish the maintenance work or could not find other irrigation water sources.

The following reductions in values shown in Tables 4.a and 4.b and subsequent notations would occur if irrigation water is not stored at Fox and Crescent Reservoirs and in not replaced by other sources. Values shown in Tables 4.a and 4.b are taken from Chapter Three - Table 3.d, and are reduced by the percentage attributed to the irrigation water supplied by the reservoirs (12%).

Table 4.a
Average Annual Reductions in Yield of Crops if Irrigation Water is Not Available

Average Annual Yield of Crops			
Crop	Potential Yield/Value	Reduction Yield/Value	Final Yield/Value
Alfalfa	4 tons/ac	0.5 tons/ac	3.5 tons/ac
Meadow Hay	3 tons/ac	0.4 tons/ac	2.6 tons/ac
Oat	70 bushel/ac.	8.4 bushel/ac	61.6 bushel/ac
Average Annual Receipts			
	Potential Receipts	Reduction in Receipts	Final Receipts
	$706M	$90.0M*	$615.1M*

Crop Receipts Uintah County = $6.2MM for the year 2000
Crop Receipts Duchesne County = $7.7MM for the year 2000
Total Livestock Receipts = $13.9MM

*
Average annual receipts of Crop Production on the 4,155 acres of irrigated lands with loss of the 0.3 acre-feet of water from Fox and Crescent Reservoir:
Alfalfa: 3.5 tons/ac. x 1,000 acres x $100 per ton = $350M
Meadow Hay: 2.6 tons/ac. x 1,200 acres x $80/ton = $249.6M
Oats: 61.6 bushels/ac. x 100 acres x $2.52/bushel = $15.5M
Total average annual receipts of Crop Production = $615.1M (This is $90.9M less annual receipts than would be produced with use of 0.3 acre-feet of water from Fox and Crescent Reservoirs)

Average annual receipts of Crop Production on the irrigated lands as compared to Crop Receipts in Uintah and Duchesne Counties with and without use of water from Fox and Crescent Reservoirs:

With use of the 0.3 acre-fee of water:
$706M/$13.9MM = 0.0508 or 5.1%

Without use of the 0.3 acre-feet of water:
$615.1M/$13.9MM = 0.0442 or 4.4%

Table 4.b
Average Annual Reductions in Livestock, Meat Production and Commodity Value of Meat if Irrigation Water is Not Available

Average Annual Livestock Numbers			
Livestock	Potential #s/value	Reduction in #s/Value	Final #s/Value
Beef cattle	1,366 cow/calf units	164 cow/calf units	1,202 cow/calf units
Horses	60 head	7 head	53 head
Average Annual Meat Production for Livestock #s			
Livestock	Potential Production	Reduction	Final Production
Cow/calf units	409,800 lbs	49,176 lbs	360,624 lbs
Commodity Value of Meat			
	Potential Value	Reduction	Final Value
	$669,340.00	$80,321.00*	$589,019.00*

Livestock Receipts Uintah County = $22.9MM for the year 2000
Livestock Receipts Duchesne County = $32.5 MM for the year 2000
Total Livestock Receipts = $54.4MM

*
Average annual Commodity Value of Meat from cow/calf production on the 4,155 acres of irrigated lands with loss of the 0.3 acre-feet of water from Fox and Crescent Reservoir = $589M. (This is $80.3M less annual receipts than would be produced with use of 0.3 acre-feet of water from Fox and Crescent Reservoirs)

Average annual Commodity Value of Meat from cow/calf production on the irrigated lands as compared to Livestock Receipts in Uintah and Duchesne Counties with and without use of water from Fox and Crescent Reservoirs:

With use of the 0.3 acre-feet of water:
$669M/$54.4MM = 0.0122 or 1.2%

Without use of the 0.3 acre-feet of water:
$589M/$54.4MM = 0.0108 or 1.1%

Sources of information:
"Utah Agricultural Statistics – 2003 Economic Report to the Governor"; Duchesne County Water Conservancy District, Socioeconomic Computations associated with Fox and Crescent Reservoirs, letter to Clark Tucker, dated March 24, 2003); Telephone discussions between Randy Crozier of

Duchesne County Water Conservancy District and Garth Heaton, Forest Service Contractor - August 20, 2003; and USDA National Agricultural Statistics Service, 1997 Census of Agriculture

Additional Notations for Tables 4.a and 4.b:

The value of an acre-foot of water expressed in year 2000 dollars is $70.00. Total value of the 1,324 acre-feet of annual storage yield from the reservoirs would be lost or significantly reduced if the maintenance work was not done. This could amount to annual loss of $92,680.00.

With the loss of the irrigation water from Fox and Crescent Reservoirs, reductions in employment on farms and ranches dependent on the irrigation water from the reservoirs could occur, with corresponding reductions in expendable income.

The storage water rights are the highest priority storage rights in the Uinta River drainage. These water rights can also be changed over to Municipal and Industrial (M&I) water if that decision is made in the future. Current M&I costs of developed water in the Central Utah Project, under the 203(a) Project are $225.00 per acre/foot per year. (Current value if converted to M&I water would be $297,900.00 annual loss.)

"Average Annual Costs for Normal and Minor Maintenance for the Reservoirs" = $2,500.00 (approximate)

This figure comes from actual records of operation and maintenance (O&M) costs associated with the reservoirs.

"Combined Annual Storage Yield for the Reservoirs" = 1,324 acre feet

This represents actual average storage figures.

"Number of Acres of irrigated lands from the Reservoirs" = 4,155 Acres

This figure is from the Dry Gulch Irrigation Company stockholder list. (Only lands irrigated from these reservoirs were identified.)

"Average Annual Yield of each Crop" = Alfalfa – 4 tons/acre, Meadow hay – 3 tons/acre, Oats – 70 bushels/acre, Irrigated pasture – 3 tons/acre

These figures were based on actual crop yields in the Neola-Hayden area.

"Average Annual Livestock Numbers" = 1,366 cow/calf units, plus 60 head of horses

These averages were based on one cow/calf unit to every 3 acres of irrigated land. USDA 2001 NAP statewide figures show one cow/calf unit to 2 and one half acres of irrigated land.

"Average Annual Meat Production" = 409,800 lbs.

This figure was based on slaughtering 1,366 calves multiplied by 500 lbs. then multiplied by 60% hanging weight.

"Value of an Acre-foot of Water" = $70.00 an acre-foot

This figure was based on Uintah Basin Replacement Project (URBP) 203(a) Feasibility Study figures.

"Commodity Value of Meat (calves sold" = $669,340.00

This figure was based on 2000 Selling Prices – 1,366 calves multiplied by 500 lbs. Then multiplied by $0.98 per lb.

"Reduction in Values with Loss of Irrigation Water"

Loses were based on UBRP studies. The average annual yield of water to Dry Gulch Irrigation Company irrigated acreage is 2.6 ac/ft per acre. The 2.6 ac/ft per acre multiplied by 4,155 acres equals 10,803 ac/ft of water available to those lands. If these reservoirs were not in place there would be a reduction of 1,324 ac/ft of water annually, therefore, the 1,324 ac/ft of water is actually 12.25% of the total annually yield. Accordingly each average annual yield value of crops, livestock numbers, annual meat production for livestock, and commodity value of meat was multiplied by a rounded off figure of 12% to determine average annual losses without irrigation water from the reservoirs.

Note:

The 12% loss is actually low on crop yield due to the water demands of the

crops in the later portion of the growing season when this storage water is delivered to the crops in question.

4.10 UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts are identified by resource values, which in turn, represent public issues and management concerns. Mitigation of impacts is presented in Sections 2.1.1 – Alternative One (Proposed Action), 2.2.1 – Alternative Two (Modified Proposed Action), 2.3.1 – Alternative Three (Maximize Primitive Tools and Access), and in Chapter Four at the end of each resource section.

Wilderness

Motorized intrusion (helicopter and mechanical equipment) in an established wilderness would occur over a 30 to 35 day period under Alternatives One and Two, and 35 to 65 day period with Alternative Three, with subsequent loss of wilderness social attributes of solitude and remoteness. For the duration of the project, these fundamental aspects of wilderness social values would be forfeited.

Several sections of the Uintah Highline Trail #025 or West Fork Whiterocks Trail #047 presently in poor condition would be subject to an added level of use, with 180 horse days of use for Alternatives One and Two, and 450 horse days of use for Alternative Three. Trail conditions would deteriorate, and result in additional erosion. These trail sections vary in length from 0.1 miles to 0.5 miles.

Wilderness visitors could be excluded from using the Fox and Crescent Reservoir area during the project work period, either due to lack of campsite space or loss wilderness attributes, i.e., solitude, remoteness, etc. *(Up to 14 workers would be involved with Alternatives One and Two, and up to 20 workers with Alternative Three.)*

Recreation

Trail users would encounter 1 pack trip per day (round trip) of up to nine horses for a 30 to 35 day period with Alternatives One and Two, and a 35 to 65 day period with Alternative Three.

Recreationists would experience noise and dust in the immediate vicinity of the Reader meadow or Chepeta Trailhead and meadow staging areas during a 30 to 35 day period with Alternatives One and Two. [The staging area for Alternative Three (Queant Lake Jeep Trail) would have little to no impacts on recreationists.]

Vegetation

A loss of vegetative cover would occur with the re-excavation of old borrow sites at the dam under Alternative One. *(Borrow material would be taken from within the reservoirs with Alternatives Two and Three.)*

With Alternatives One and Two, the allowable use standards for livestock in the High Uintas Wilderness could be exceeded during the project work period, due to grazing by horses used as part of the project and horses used by wilderness visitors. This potential would increase with Alternative Three, due to the increase of horse use from 180 horse days to 450 horse days.

Wildlife
Terrestrial Wildlife

There would be 50 acres (Alternatives One and Two) to 142 acres (Alternative Three) of forage for elk and deer lost to horse grazing during the season of project implementation.

Nest abandonment of late nesting three-toed woodpeckers, Lincoln's and song sparrows, black rosy-finches, and broad-tailed hummingbirds could occur. However, this effect is unlikely with the listed mitigation measures.

Aquatic Wildlife

A short-term reduction of eggs/fry from fall-spawning species below the reservoirs could result during maintenance work, due to instream sediment.

A short-term shift of macro-invertebrate taxa from clean-water to sediment-tolerant species could occur in the reservoirs and outlet streams.

Fish in the reservoirs could relocate during the maintenance work, due to increased sediment.

Hydrology

Sediment at and below the reservoirs would increase during the maintenance work. *(There would be less sediment over time, due to repair of leaks.)*

A short-term increase in water temperature would increase at the reservoirs during maintenance work.

A short-term increase in sediment in Reader Creek would occur with Alternative One during the project period, and in West Fork Whiterocks River with Alternatives Two and Three. *(The duration of this increase would be greater with Alternative Three, due to increase project work period.)*

Short-term impacts would occur to riparian areas and wetlands from horse use along trails under all action alternatives. *(The duration of this impact would be greater with Alternative Three, due to increased project work period.)*

Soils and Landform

Re-excavation of the old borrow sites at Fox Reservoir for Alternative One would result in a long-term impact, due to lack of top soil for rehabilitation and low fertility. *(Borrow material would be taken from within the reservoirs with Alternatives Two and Three.)*

There could be increased soil erosion along the Queant Lake Trail and West Fork of Whiterocks Trail for Alternatives Two and Three, due to moderately high erosion potential and increase horse use. This impact would be greater with Alternative Three, due to the increased number of horse days.

Cultural Resources

The National Register eligibility of Fox Dam and the old existing campsites at the reservoirs would be compromised.

Roadless Area – Inventoried Roadless Area

Natural Integrity –
No impact

Apparent Naturalness –
For all project activities proposed under the action alternatives, the moderately high rating would change to moderately low during the project period in the zone of influence; then return to moderately high after completion of all project activities. *(This change would be over a longer period of time with Alternative Three, due to the increase in project days.)*

Remoteness –
During the operational period for all action alternatives, the existing rating of moderate for the zone of influence would change to moderately low; then return to moderate after completion of all project activities. *(This change would be over a longer period of time with Alternative Three, due to the increase in project days.)*

Solitude –
For all project activities proposed under the action alternatives, the moderately high rating would change to moderately low during the project period in the zone of influence; then return to moderately high after completion of all project activities. *(This change would be over a longer period of time with Alternative*

Special Features –
No impacts

Manageability/Boundaries –
No impacts

Socioeconomic

The following losses/reductions in values would occur, if maintenance work was not done, and Dry Gulch Irrigation Company did not deliver irrigation water to farms and ranches dependent on the irrigation water: *(Losses/reductions*

would be applicable to all alternatives, including "no action".)

Annual losses/reductions to farm and ranch values/products/assets:

0.5 tons per acre of Alfalfa

0.4 tons per acre of Meadow Hay

8.4 bushel per acre of Oats

164 cow/calf units

7 head of horses

49,176 pounds of meat production

$80,321.00 of commodity value of meat

$92,680.00 dollars associated with value of 1,324 acre-feet of stored water in the reservoirs

Unquantifiable loss of employment and associated wages

The above reductions in average annual values for crop production represents approximately 0.7 percent of the crop values for Duchesne and Uintah Counties.

The above average annual reductions in values for meat production represent approximately 0.1 percent of the livestock values for Duchesne County and Uintah Counties.

4.11 RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

The short-term operations involved with Alternative One would have effects on the long-term productivity of the following resource values:

Vegetation and Soil –

The loss of vegetative cover caused by re-excavating the old borrow sites at Fox Reservoir would be difficult to reestablish, due to the lack of topsoil and low fertility of the soil. Long-term productivity of vegetation and soil site conditions would be lost for a period greater than 10 to 20 years, even with rehabilitation efforts.

4.12 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible (commitments that can not be reversed) –

- Removal of the 200 cubic yards of borrow material, from either the old borrow sites (Alternative One), or within the beds of the reservoirs (Alternatives Two and Three) for use in repairing the Fox Reservoir dam *(less than ½ acre would be involved)*
- Erosion of soil along trails, caused by pack horse trips, and sediment deposition into nearby streams
- Sediment deposition into streams below Fox Reservoir during maintenance work

Irretrievable (commitments that are lost for a period of time) –

- Short-term impacts to wilderness attributes from motorized intrusions *(30 to 35-day period for Alternatives One and Two, and 35 to 65-day period of Alternative Three)*
- Temporary disturbance to wilderness visitors and recreationists
- Temporary reduction of vegetation at forage sites for horses *(50 acres of suitable range for Alternatives One and Two, and 142 acres of suitable range for Alternative Three)*
- Reduced quality ratings for roadless area attributes

4.13 COMPLIANCE WITH FOREST PLAN DIRECTION (Refer to Chapter One – Section 1.0 Purpose and Need for Action, and Chapter One – Section 1.5

Forest Plan Objectives, Standards and Guidelines)

All Objectives, and Standards and Guidelines in the Ashley National Forest Land and Resource Management Plan would be followed, and adherence would be mandatory. The provisions in the High Uintas Wilderness portion of the Plan (Amendment 12) would be a part of all operational requirements for activities in the wilderness. Amendment 12 to the Forest Plan allows mechanical or motorized access in the wilderness, if approved through an analysis process that complies with the National Environmental Policy Act and the "minimum tool analysis".

Proposed and alternative actions outside of the High Uintas Wilderness, as addressed in Alternative One, Two, and Three would be in full compliance with the Forest Plan

4.14 ENVRIONMENTAL JUSTICE

Environmental Justice means that, "…. to the greatest extent practicable and permitted by law, all populations are provided the opportunity to comment before decisions are rendered on, are allowed to share in the benefits of, are not excluded from, and are not affected in a disproportionate high and adverse manner, by government programs and activities affecting human health or the environment." (USDA 1997)

U.S. Department of Agriculture Regulation, number 5600-2, dated December 15, 1997 states the following in regards to Environmental Justice.

> "Executive Order (E.O.) 12898, dated February 11, 1994, requires each Federal agency, to the greatest extent practicable and permitted by law, to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects, including social and economic effects, of its programs, policies, and activities on minority populations and low-income populations in the United States…."

In addition to EO 12898, a Presidential Memorandum to each Federal agency, dated February 11, 1994, "….emphasized that all programs and activities receiving Federal financial assistance that affect human health or the environment do not directly, or through contractual or other arrangement, use criteria, methods, or practices that discriminate on the basis of race, color, or national origin."

"E.O. 12898 requires that in complying with NEPA, agencies shall" – (USDA 1997)

(1) Analyze the environmental effects of a proposed action, including human health, economic, and social effects on minority or low-income populations;

(2) Identify mitigation measures that reduce significant and adverse environmental effects of a proposed action on minority and low-income population;

(3) Provide opportunities for community input in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities;

(4) When reviewing NEPA documents, ensure that the agency preparing NEPA analyses and documentation has appropriately analyzed environmental effects on minority and low-income populations, including human health, social, and economic effects.

The Ashley National Forest, in response to the Proposed Action by Dry Gulch Irrigation Company to repair and maintain the Fox and Crescent Reservoirs, properly and fully complied with the Federal mandate for Environmental Justice. Actions taken by the Forest to achieve this compliance are as follows:

- ✓ Defined the action, purpose, need and area or potential effect.
- ✓ Initiated public scoping and continued with scoping throughout the NEPA process to determine if any minority or low-income populations would be affected by the proposed action.

The Uintah and Ouray Indian Reservation with Tribal Headquarters in Ft. Duchesne, Utah is, by definition and policy set forth in E.O. 12898, a "minority population" and a "low-income population". A scoping letter was sent to the Tribal Business Committee as part of the initial scoping process. The business committee did not respond. Dry Gulch Irrigation Company informed the Ashley National Forest that the Tribal Business Committee hold 40 to 50 shares of irrigation water from the Fox and Crescent Reservoirs. If approved, the repair work on the reservoirs would benefit the reservation through continued use of the water shares. The Socioeconomic Section 4.9 describes losses/reductions in values associated with all water shares held by those receiving irrigation water from Dry Gulch Irrigation Company. Tribal shares are few in comparison with the total number of shares, nevertheless, some economic values to the Tribe would be lost or reduced.

- ✓ Defined a range of alternatives to be evaluated.
- ✓ Analyzed effects of preferred and alternative actions on the quality of the human environment.
- ✓ Developed mitigation to offset or ameliorate adverse effects.
- ✓ Where applicable, notified interested or affected parties of the availability of the Draft EIS and encouraged comment.
- ✓ Where applicable, notified interested or affected parties of the availability of the Final EIS and encouraged comment.
- ✓ Notified interested or affected parties of the agency's decision.
- ✓ Assessed the effectiveness of outreach or scoping effort.

The analysis confirms that this project will not discriminate on the basis of race, color, or national origin. This project will have no disproportionate impact on any minority or low-income communities, nor will it differentially affect the Civil Rights of any citizens, including women and minorities.

All records of the above actions are on file in the Forest Supervisor's Office, Ashley National Forest, 355 North Vernal Avenue, Vernal, UT 84078 (435) 789-1181.