

Yosemite National Park, Wilderness Management Minimum Requirement Analysis

Project Title: Action to Restore Use Impacts to Cathedral Peak

Cathedral Peak has long been a popular destination for both climbers and adventure hikers. After decades of consistent use, severe erosion, extensive informal trail networks, gullies caused by “scree skiing”, loose footing, and major vegetation loss characterize the final quarter-mile of the approach, as well as the descent back to the base. These impacts have only accelerated over the last few years as several new guidebooks promote the Peak as a “classic” climb, and as an “easy” introduction to Sierra Alpine climbing.

Step 1: Determine whether the proposed use takes place in designated Wilderness or in a Potential Wilderness Addition.

The proposed action would take place in designated Wilderness.

Step 2: Determine whether the proposed action is required for the administration of the Yosemite Wilderness.

The proposed action would focus on mitigating and reducing human induced change on the fragile sub-alpine and alpine habitat of Cathedral Peak. In order to administer Cathedral Peak as an “unimpaired” wilderness area that retains its “primeval character and influence,” deliberate management actions need to be taken. Wilderness character would be improved by restoring the multiple informal paths to natural conditions. These actions support wilderness management objectives of minimizing, reducing or eliminating human induced change and allowing for a quality wilderness experience.

**See map quads and images 1 and 2 at the end of document.*

Step 3: Determine if the objectives of the proposed action can be met with actions outside of wilderness or potential wilderness.

The objectives of the action cannot be met by actions outside of wilderness. Yosemite currently has no day use quotas for wilderness day hikes or climbs, and therefore there is no viable option to reduce the amount of users in the area. In addition, even if we instituted a day use quota, it would not address the impacts that already have occurred.

Step 4: Develop a list of alternatives to meet the objective of the proposed action.

Alternative 1: No action

Alternative 2: Delineate, primarily with “carabiner” sign posts (these are used in several other places in Yosemite to mark climber approaches), but also using natural features, a single route from the junction of the Budd Lake Fisherman’s trail to the base of the popular South East Face of Cathedral Peak, as well as a single descent route from the ridge North of the summit back to the base. These routes would be connected to form one continuous route from the final ¼ mile of the approach to the shoulder of Cathedral Peak. On the approach to the peak, the first carabiner post would be placed at the point where more than one heavily travelled path occurs. One or two more posts would be placed on the preferred route to the base. Another post would be placed at the point at the base of the South East Face where the climber approach and descent meet. Hikers would then follow 3-5 more posts up the climber descent route to the shoulder of Cathedral Peak. The route would follow the natural contours of the base of the rock portion of the peak, and stay on durable surfaces whenever possible. Climbers would locate the “descent” route by the top carabiner post placed clearly visible, and indicating the direction of the route. Using primitive tools a wilderness restoration crew would facilitate the restoration of other paths, gullies, and impacted areas to natural conditions.

Additionally, the Visitor Use and Social Sciences (VUSS) branch would install mechanical trail counters at the beginning of the informal Cathedral Peak trail and along the Cathedral Peak approach trail beyond the Budd Lake/Cathedral Peak junction. Documenting the amount of visitor use along the trail is important in order to empirically determine the overall amount of visitor use that this trail receives. Moreover, these baseline data can be used to determine changes in visitor use after the proposed management actions are completed. The VUSS observation research would be conducted from June 15th to September 30th, 2010.

***Alternative 3:** Delineate, using a minimal rockwork and trail construction techniques, a single route from the junction of the Budd Lake Fisherman’s trail to the base of the South East Face of Cathedral Peak, as well as a single decent route from the North ridge of the summit back to the base. These routes would be connected to form one continuous route from the final ¼ mile of the approach to the shoulder of Cathedral Peak. Before and during construction, and potentially for some time after work is completed, several carabiner posts would be placed to habituate climbers to the preferred route. These carabiner posts would follow the delineation proposed in Alternative 2.

The rockwork and consolidated route construction would use an experienced Yosemite trail crew, avoiding (or minimizing) the use of motorized equipment. The route would be delineated or defined through the use of natural barriers (logs and rocks), natural features (trees, the base of Cathedral Peak, and topography), minimal trail building rockwork, and by restoring alternate paths to natural conditions. Through this delineation, the route up to the peak will focus impact to more resilient areas and minimize the area impacted. While restoration is in progress signs, will be needed to keep visitors off restoration areas. Extensive

ecological restoration would be needed to help restore other paths, gullies, and impacted areas to natural conditions.

In order to monitor the efficacy of restoration efforts, monitoring transects would be established (marked with rebar or tagged trees) in the degraded and un-vegetated areas (caused by the many informal paths) and remeasured for up to 10 years. Vegetation establishment would be monitored along transects through point intercept, cover quadrats, nested frequency, or a combination of several different measurements. Photo points would be established along these transects to visually document change. Sampling would not be destructive, although some plant specimens may be collected to verify identification. No more than 10 transects (20 pieces of rebar) would be installed. Rebar would be capped, would not stick out above the ground and would be covered by rocks. Flagging would not be used to mark the transects.

Additionally, the Visitor Use and Social Sciences (VUSS) branch would conduct research to estimate and understand overall visitor use levels in the Cathedral Peak area. First, mechanical trail counters would be installed at the beginning of the informal Cathedral Peak trail and along the Cathedral Peak approach trail beyond the Budd Lake/Cathedral Peak junction. Second, VUSS staff would conduct observations of climber use on Cathedral Peak and the descent route. Documenting the amount of visitor use in this area and along the trail is important in order to empirically determine the overall amount of visitor use that this area receives. Moreover, these baseline data can be used to determine changes in visitor use after the proposed management actions are completed. The VUSS observation research would be conducted from June 15th to September 30th, 2010.

Alternative 4: Construct an official trail (according to the park standards) from the John Muir Trail South of Tioga Road to Cathedral Peak. Add this trail to the park wide trails maintenance map and official trail maps. Due to the erosive nature of the steep slopes, extensive trail work and time would be required to build a resilient trail. Extensive ecological restoration would be required to establish vegetation in the existing informal trails, to minimize future accelerated erosion caused by runoff in the gullies and denuded areas, as well as impacts incurred from trail construction.

Alternative 5: Using hand drills, bolt a rappel route from the summit of Cathedral Peak to the base. Delineate a single approach route to the base of the SE Face of Cathedral Peak using carabiner sign-posts. Extensive ecological restoration would be required to establish vegetation in the existing informal trails, and to minimize future accelerated erosion caused by runoff in the gullies and denuded areas.

Step 5: Determine the effects of each alternative on wilderness health and character. Include cumulative effects.

Biophysical Impacts:

Alternative 1: The trampling of plants, erosion of topsoil and degradation of fragile subalpine and alpine habitat would continue.

Alternative 2: This alternative would promote the protection and preservation of plant populations. However, without retaining walls, and some rockwork the route would continue to erode, and it is likely the delineated route would become even more impacted. That said, the impact would be more concentrated and the overall area of degradation would decrease significantly. It would be difficult to keep climbers from straying from the route as it would still be hard to follow without installing significantly more carabiner posts, other signs, or continuously maintaining rock cairns. Delineation would minimize impacts to fragile subalpine and alpine habitat by reducing the extent of erosion and trampling. Re-vegetation and re-contouring of informal paths and impacted areas would accelerate restoration to natural conditions, and encourage visitors to stay on the delineated route.

Alternative 3: This alternative would promote the protection and preservation of plant populations. Delineation would minimize impacts to fragile subalpine and alpine habitat by reducing the extent of erosion and trampling. Re-vegetation and re-contouring of informal paths and impacted areas would accelerate restoration to natural conditions, and encourage visitors to stay on the delineated route. Rockwork and minimal route construction would also provide an easier to follow surface, encouraging climbers to use a single preferred route. This more durable route would also minimize future erosive effects on the delineated route. Re-vegetation and re-contouring of informal paths and impacted areas would accelerate restoration to natural conditions, and encourage visitors to stay on the delineated route.

Alternative 4: This alternative would promote the protection and preservation of plant populations. Trail construction would minimize impacts to fragile subalpine and alpine habitat by reducing the extent of erosion and trampling. Trail construction would require extensive rockwork, grading and erosion mitigation on the descent slopes. Re-vegetation and re-contouring of informal paths and impacted areas would accelerate restoration to natural conditions and encourage climbers to stay on the delineated path. There would also be the need for restoration of the impacts of full scale trail construction.

Alternative 5: If consistently used, bolted rappel stations would greatly reduce impacts to the eroded gully area. However, given the nature (relatively low angle, regular occurrence of cracks and blocks for ropes to snag on, speed and ease of the traditional descent route) of Cathedral Peak, climbers prefer to hike down instead of rappelling. This alternative does not address the significant number of

hikers who would not be using equipment and would hike up the “traditional” climber descent route. Re-vegetation and re-contouring of informal paths and impacted areas would accelerate restoration to natural conditions. However, without a route for hikers or climbers choosing not to use the rappel stations the integrity of this restoration work would be hard to maintain.

Experiential Impacts:

Alternative 1: The multiple paths, and heavily eroded gullies observed by visitors indicate a relatively high level of impact. The multiple paths and cairns leading in many different directions also disrupt the sense of discovery for wilderness visitors. Given that Cathedral Peak is often an introduction into Sierra Nevada alpine climbing, visitors become habituated to these impacts instead of a more pristine alpine experience.

Alternative 2: Through the delineation of one route using carabiner posts as well as the ecological restoration of other trail networks and gullies, hikers and climbers will experience a less degraded alpine and subalpine ecosystem.

However, without greatly improving the integrity of the route, visitors will still be following essentially an eroded gully. Using several carabiner posts along the route also disrupts the sense of discovery for wilderness visitors. The potential impact of the mechanical trail counter on visitors’ wilderness experiences would be minimized by installing the counters out of sight of visitors.

Alternative 3: Through the delineation of one route using some rockwork and route construction, as well as ecological restoration on the other impacted areas of the approach and descent of Cathedral Peak, will allow hikers and climbers to experience a less degraded alpine and subalpine ecosystem. The integrity of the route will withstand high amounts of seasonal use, and provide users a clear single route to follow. The need for carabiner sign posts will be reduced from alternative 2, but there will still be a need for “restoration in progress” signs to keep visitors off the restoration work areas. The negative impacts of the signs and delineation include a reduced experience of discovery, and a visible reminder of deliberate human management in wilderness. Ecological restoration of the many existing informal paths and gullies would allow visitors to experience a less degraded alpine and subalpine ecosystem. There could be potential negative impact resulting from visible installations of rebar for monitoring in Wilderness. Information gathered from monitoring plant establishment after seeding, effectiveness of re-contouring efforts and changes in visual impacts could help streamline and improve future restoration efforts. Ecological restoration staff anticipates more restoration actions in higher elevation environments as these areas are highly susceptible to impacts from ever-increasing visitor use.

The potential impact of the mechanical trail counter on visitors’ wilderness experiences would be minimized by installing the counter out of sight of visitors. There would be minimal to no impact to visitors experience from the observation

based research because observers would use a spotting scope from a remote location on the ridgeline east of Budd Creek.

Alternative 4: Through the construction of an official trail, multiple paths and rock cairns observed by visitors would decrease. Due to the erosive nature of the slopes, trail construction would necessitate extensive rockwork and may result in a higher level of observed development. By formalizing the trail, there could be an increase in visitor use, taking away from a sense of solitude. Ecological restoration of the many existing informal paths and gullies would allow visitors to experience a less degraded alpine and subalpine ecosystem.

Alternative 5: It would be difficult to encourage climbers to use a bolted rappel route. The bolts are also permanent installations. For liability reasons the NPS has never formally installed climbing anchors for the public, much less actively encourage visitors to use them. If climbers did use this option, their experience would be impacted by having to wait (sometimes up to hours) for climbers ahead of them to descend the rappel route. This also does not address the fact that there are many climbers who solo the route without ropes and therefore could not follow this option. In addition, hikers will often follow the descent route to the top; clearly they would have no use for the bolted rappel route.

Impacts to wildness:

Alternative 1: Large areas of degradation, increased erosion and vegetation loss, affect natural wilderness character within the multiple path corridor. The Cathedral Peak area remains essentially undeveloped and untrammeled.

Alternative 2: One delineated approach and descent route would help mitigate human impacts to the multiple paths and gullied zone, improving the natural wilderness character of the Cathedral Peak. The number of paths and other structures (rock cairns) may decrease in number but would be replaced by carabiner posts through this delineation option. Wilderness character in the area would be more developed. Ecological restoration of the many existing informal paths and gullies would mitigate human induced change on wilderness. For the duration of the project there will be some impacts to wildness in the area by the additional presence of the restoration crew, trail crew, mechanical trail counters, and other VUSS research methods.

Alternative 3: One delineated approach and descent route would help mitigate human impacts in the multiple paths and gullied zone, improving the natural wilderness character of the Cathedral Peak. The number of paths and overall area of impact would be greatly reduced, but the delineated route would be more obviously developed. The various signs are needed to effectively encourage visitors to stay on the delineated route, and off restoration areas will reduce the untrammeled character of the area. Ecological restoration of the many existing informal paths and gullies would mitigate human induced change on wilderness.

For the duration of the project there will be some impacts to wildness in the area by the additional presence of the restoration crew, trail crew, mechanical trail counters, and other VUSS research methods.

Alternative 4: A constructed trail would change the character of the Cathedral Peak experience by reducing the freedom of visitors to find their own way. The number of paths and other structures may decrease in number but would be a higher level or type (more obvious and more obviously constructed) through trail construction. The area would be considerably more developed and trammled. The experience of solitude in the area may also be affected by the increase in use after official trail designation. Ecological restoration of the many existing informal paths and gullies would mitigate human induced change on wilderness.

Alternative 5: A bolted rappel route would not necessarily reduce the areas of degradation, continued erosion, and vegetation loss.

Step 6: Determine the management concerns of each alternative.

Alternative 1: Continued resource damage in wilderness.

Alternative 2: Maintaining the carabiner posts would be required by climbing management. The cost of Ecological restoration for Resources Management and Science would be approximately \$30,000/year over three years. Although it would be reduced, there would be continued resource damage. The cost of visitor use estimation for Resources Management and Science will cost approximately \$5,000 for work next summer.

Alternative 3: The cost of trail work by the Facilities Division would be approximately \$20,000/year over three years. The cost of Ecological restoration for Resources Management and Science would be approximately \$30,000. The cost of visitor use estimation for Resources Management and Science will cost approximately \$7,000 for work next summer. The project will be included in the Yosemite Funds Campaign for Yosemite's Trails. Maintenance would occasionally be required by the Facilities Division. Resources division would be required to continue to monitor restoration progress, and ensure that the restoration area is clearly protected.

Alternative 4: Trail construction would require extensive time, funding, and effort to build a trail to park standards. The trail would be added to the annual maintenance schedule. The cost of ecological restoration for Resources Management and Science would be approximately??

Alternative 5: Establishing a bolted rappel route has never been a practice of the NPS in Yosemite. It would be a dangerous precedent, and could result in lawsuits

or public expectations for climbing management to maintain climbing anchors throughout the park.

Step 7: Choose an alternative

Alternative 3:

Alpine and subalpine vegetation is slow growing, vulnerable to trampling and extremely important in preventing erosion and anchoring unstable scree slopes. This alternative proposes to delineate one route from the junction of the Budd Lake Fisherman's trail to the base of the South East Face of Cathedral Peak, as well as a single descent route from the North ridge of the summit back to the base. The SE Face of Cathedral peak has become one of the most popular climbing routes in the Tuolumne area. Due to the absence of a clear path or route to approach the base of the climb or to descend from the summit, climbers and hikers have caused extensive areas of degradation characterized by braided trails, erosion gullies, and massive vegetation loss. Some climbers will also run or "ski" down the descent, exacerbating the severity of impacts.

As an introduction into alpine climbing and wilderness climbing, visitors on Cathedral Peak should remember and enjoy the pristine character of Yosemite Wilderness. The many rock cairns, informal paths, large gullies, and denuded areas detracts from this experience.

The route from the junction of the Budd Lake fisherman's trail and Cathedral Peak climber's trail to the North ridge of Cathedral (this includes the approach and descent routes) is approximately 1.185 kilometers. By delineating one route and using extensive ecological restoration, the multiple informal paths (approximately another 2 kilometers) would be restored to natural conditions. With proactive ecological restoration work (re-contouring, discouraging erosion, revegetating and seeding) combined with a delineated preferred route, the wide swaths of paths and gullies (about 5 acres) would eventually be restored to their natural conditions (although this could take years due to slow regeneration of disturbed alpine environments.) decreasing the impacted area and reducing the visibility of these additional paths and gullies from the top of the peak. Seeding the area with locally gathered seeds will promote vegetation establishment in the highly denuded areas where there are few remaining seed sources. Wayfinding would continue but with less resource damage than is currently occurring.

In order to preserve and protect natural and cultural resources and wilderness character the route should be delineated. The route would be delineated or defined through the use of natural barriers. The longevity, resistance to erosive forces, and durability of the route will be enhanced through minimal rockwork and trail work. Through this delineation, the route up and down the peak will focus impact to more resilient areas and minimize the area impacted.

To monitor the efficacy of restoration efforts, installation of up to 10 transects marked with rebar is recommended. The advantage of marking the transects with rebar is to

ensure that they are “permanent” sampling points, in that the same location is monitored. The principal advantage of using permanent instead of temporary sampling units is that for many species, the statistical tests for detecting change from one period to the next in permanent sampling units are much more powerful than the tests used on temporary sampling units (Elzinga et al. 2001). This translates into needing fewer sampling units to detect the degree of change (Elzinga et al. 2001). If transects are not read at the same point, probability of detecting a change that did not occur or not detecting a change that did occur is increased, reducing statistical validity and power of the study.

It is anticipated that these transects would be monitored for up to ten years in order to capture change over time, especially in a high elevation areas where vegetation is extremely slow growing. This information can also help determine when the restoration signs are no longer needed and can be removed. Ecological Restoration staff will remove the rebar at the end of the study, anticipated to be 2018.

The visitor use estimation component of this project will provide important contextual information about the overall numbers of visitors, locations, and temporal aspects of visitor use in the Cathedral Peaks area. These data will provide an integrative component between visitor use and ecological impacts and allow objective evaluation of the prescribed management actions and wilderness experience.

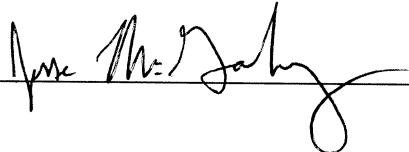
The project will be managed primarily by the Vegetation and Restoration Branch of the Division of Resources Management and Science. Wilderness Management will help the planning and monitoring phases and be responsible for education and outreach to the climbing community as well other user groups on Cathedral Peak. Facilities Division (trails) will manage the trail work and maintain the route integrity. All involved divisions will have the opportunity to amend specific elements of the project as it evolves. The project will have a preliminary three year calendar starting in summer/fall 2009. The NPS hopes that the Yosemite Fund will extend funding for this project as a worthy cause for their Campaign for Yosemite Trails.

Project Title: Cathedral Peak Route Delineation

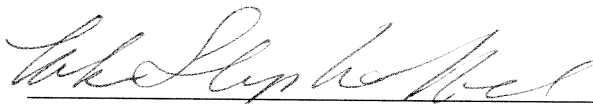
Check one:

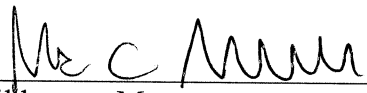
- ☐ The proposed action is a temporary, one time activity.
☒ The proposed action will be an on-going, long term activity.

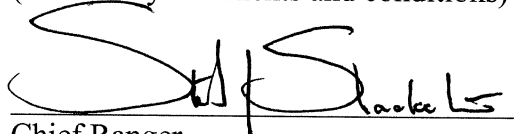
Submitted By: Jesse McGahey

 08/24/08
Date

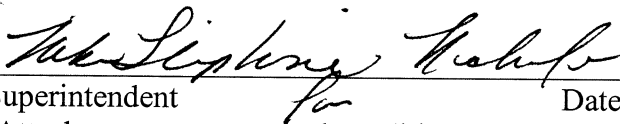
Reviewed By:

 9-15-09
Division Chief, RMS Date
(Attach any comments and conditions)

 9/5/09
Wilderness Manager Date
(Attach any comments and conditions)

 9/8/09
Chief Ranger Date
(Attach any comments and conditions)

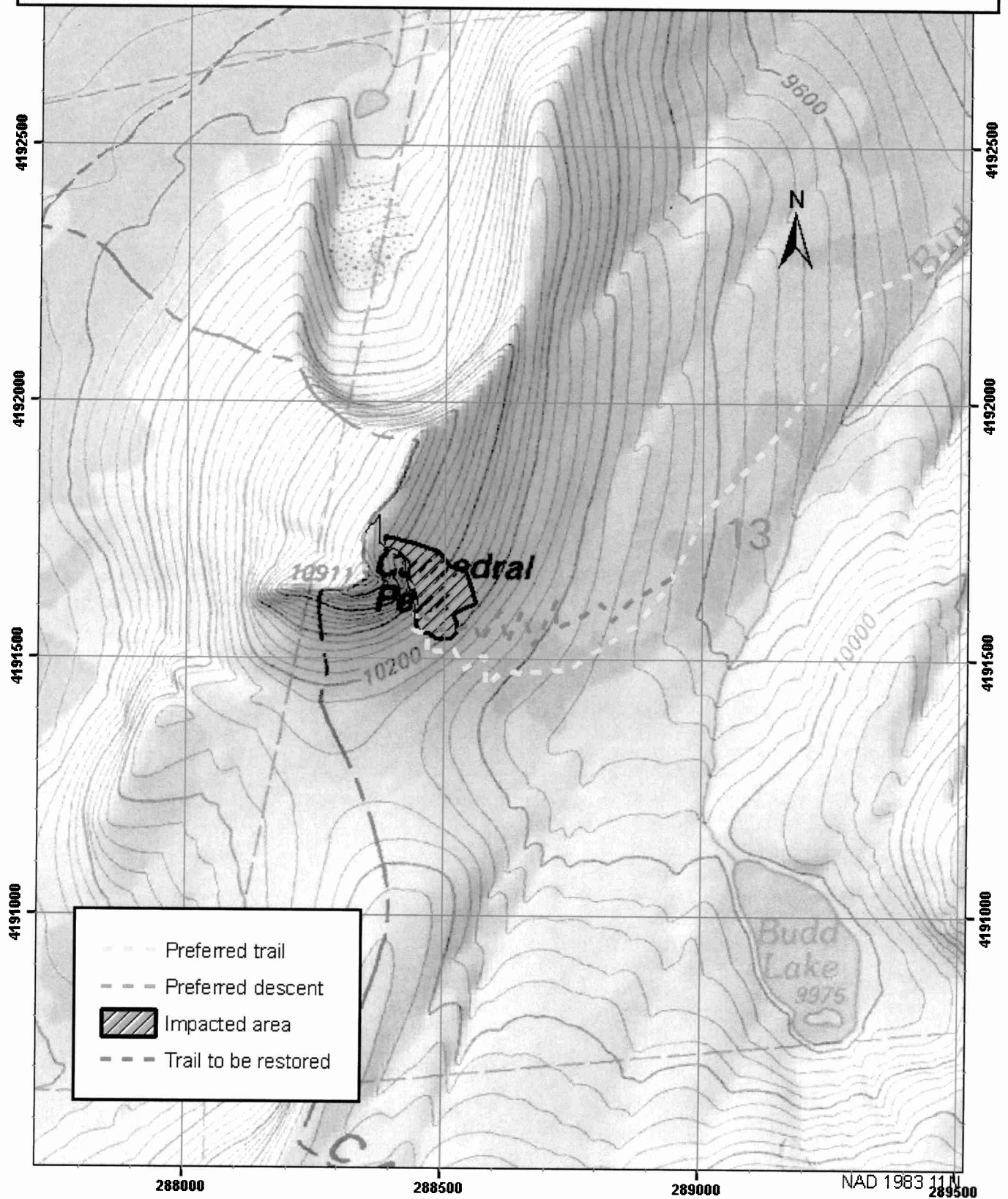
Approved By:

 9-27-09
Superintendent Date
(Attach any comments and conditions)

Cathedral MRA Map 1 Quad



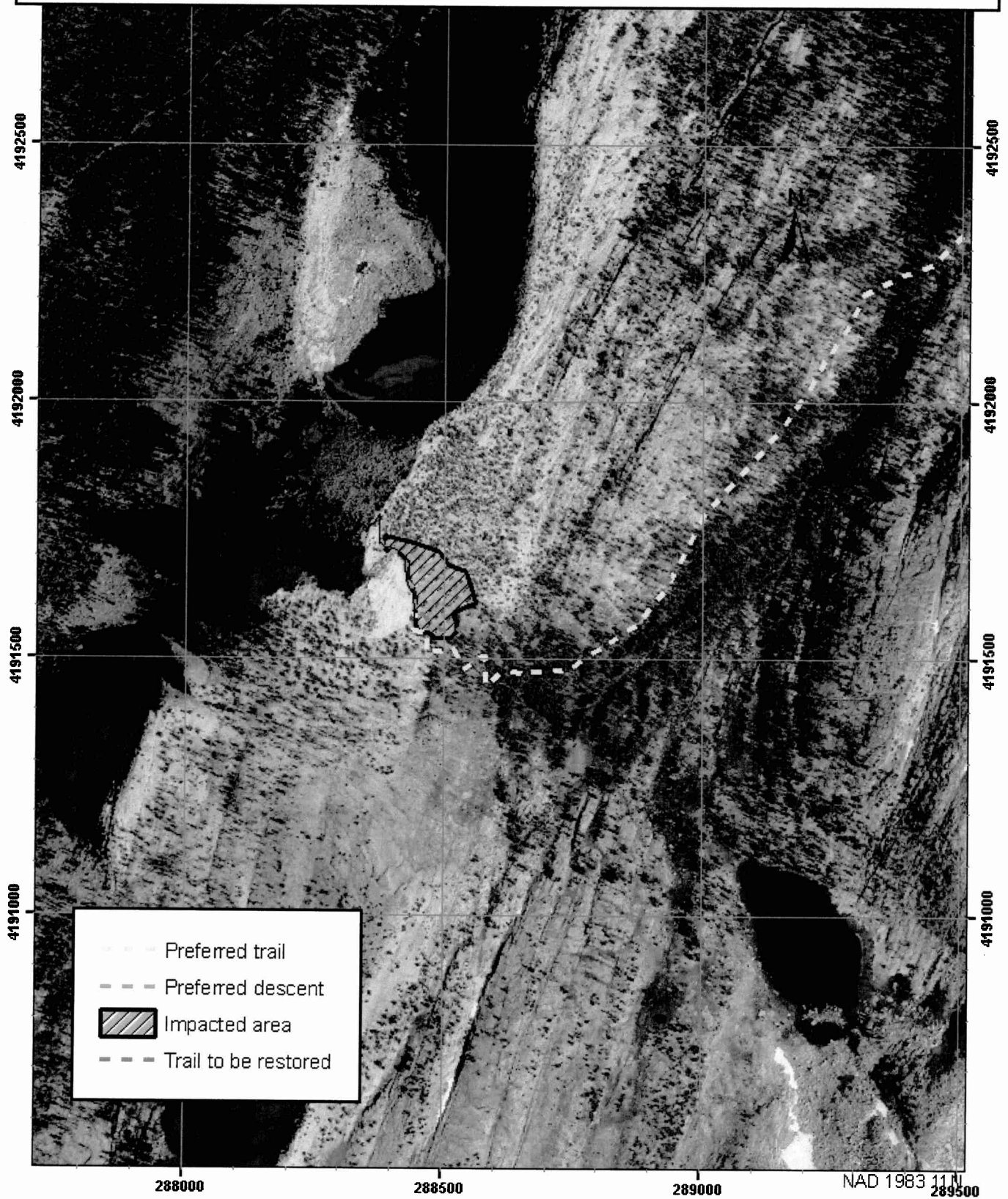
J. McGahey Oct. 2008 1:10,000



Cathedral MRA Map 1 Image



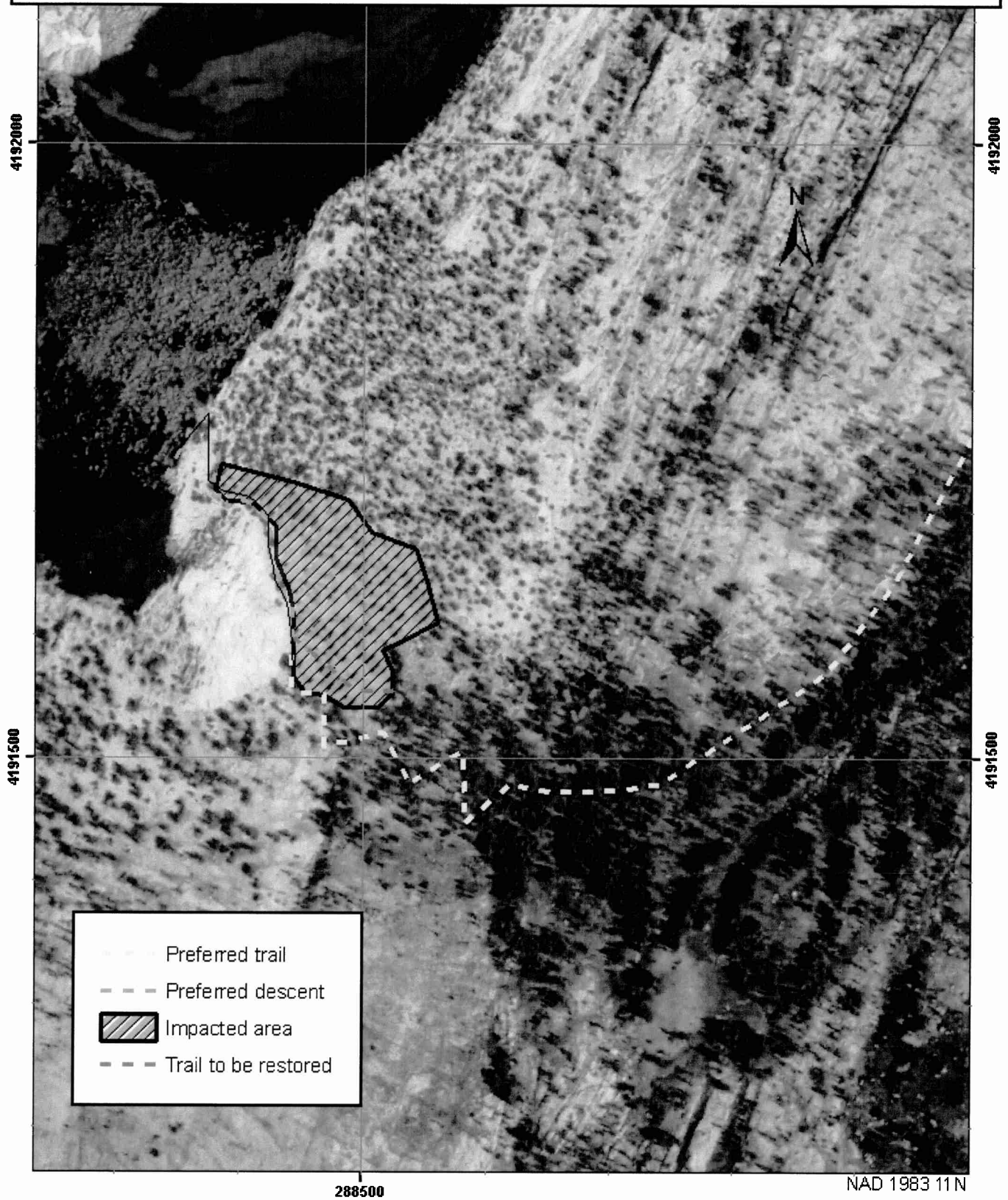
J. McGahey Oct. 2008 1:10,000



Cathedral MRA Map 2 Image



J. McGahey Oct. 2008 1:4,200



Cathedral MRA Map 2 Quad



J. McGahey Oct. 2008 1:4,200

