



West Side Trails Construction Environmental Assessment

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SECTION 1: PURPOSE AND NEED

Introduction

The National Park Service (NPS) proposes to construct two new trails within Pinnacles National Park on the west side of the park, in the vicinity of the West Side Visitor Contact Station.

This Environmental Assessment (EA) analyzes the impacts of the Proposed Action and the No Action Alternative on the human and natural environment. It describes these alternatives, alternatives that were considered but dismissed, existing conditions in the project area, and the effects of each project alternative on the environment. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations, Council of Environmental Quality (CEQ) regulations, Code of Federal Regulations (CFR), Title 40 Parts 1500-1508; and NPS Director's Order #12 (DO-12) and Handbook for Conservation Planning, Environmental Impact Analysis, and Decision-making (revised September 2015). Separate documentation has been prepared to comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and implementing regulations, 36 CFR Part 800.

Location

Pinnacles National Park is located in the Central Coast region of central California, along the border between southwestern San Benito and northeastern Monterey Counties (*Figure 1*). It is approximately 50 miles inland from the Pacific Ocean and 140 miles south of San Francisco Bay. Gateway towns include Soledad, 10 miles to the southwest, King City, 29 miles to the south, and Hollister, 30 miles to the northwest.

Background

Pinnacles National Monument was created in 1908 by President Theodore Roosevelt under the Antiquities Act. The purpose of the monument was to “protect the Pinnacles Volcanic Formation, talus caves, associated lands and ecosystems for their scientific, educational and cultural values, by caring for their natural processes and wild character while providing opportunities for public enjoyment and understanding of these resources.” On January 10, 2013, President Barack Obama signed The Pinnacles National Park Act which established Pinnacles National Park. The new park purposes included: 1) preserving and interpreting for the benefit of future generations the chaparral, grasslands, blue oak woodlands, and majestic valley oak savanna ecosystems of the area, the area's geomorphology, riparian watersheds, unique flora and fauna, and the ancestral and cultural history of native Americans, settlers and explorers; and 2) interpreting the recovery program for the California Condor and the international significance of the program.

Pinnacles National Park planning documents have consistently recognized the need for improving the visitor experience on the west side of the park. A Master Plan created in 1975 provided broad direction for management for the monument and identified actions to improve the quality of the visitor experience, management and protection of resources and other items. The Master Plan called for a shift in short-term visitor use from the east to the west side, where there are excellent roadside views and fewer crowds. It

also included removal of visitor and support facilities from obtrusive locations within significant resource areas and relocation to less sensitive areas.

A Development Concept Plan (DCP) and Environmental Assessment for the West District were approved in 1991. The DCP called for a new modest visitor center to provide visitors with an orientation to park resources. It also stated that a trail would be developed from the vicinity of the visitor center down Jawbone Canyon to the Chaparral Day Use Area (Chaparral Area). A scenic overlook near the park boundary, with good views of the Pinnacles formations, would also be constructed. This would provide another option for visitors who “could then turn around without adding to congestion in the Chaparral Area.”

Following the 1991 DCP guidance, an EA was completed in 2001 for the project to Relocate West Side Maintenance Facility and Visitor Contact Station (VCS). These facilities were located in an active floodplain, and floods in 1995 and 1998 resulted in major damage. With this project, the deteriorated West District maintenance and visitor service facilities were relocated from their current location at the Chaparral Area, to a larger, less sensitive site, out of the floodplain, near the west entrance two miles away. The project constructed a new visitor contact station/ranger station with public restrooms, a maintenance building with fire/EMS cache, entrance station, parking and related utilities. Construction of trails from the new VCS was not included in the EA or built at the time of the other facilities. The EA and Finding of No Significant Impact (FONSI) can be found at:
http://parkplanning.nps.gov/westside_relocation.

A General Management Plan (GMP) was approved in 2013. The GMP provides management guidance for Pinnacles National Park into the next century. The GMP confirmed the need for more visitor access on the west side. It stated: “The west side would be managed to retain a natural and quiet character, while providing for increased visitor services and safety. New trail connections will be developed, including a trail to link the new visitor contact station with the existing trail system. An improved picnic site will include shade structures. A small (approximately 10-site) walk in campground will be provided (possibly at Jawbone Canyon, across from the overflow parking area, although other locations would also be considered). At the Chaparral Area, the existing parking lot, picnic area, comfort station, and road, which are currently located in flood-prone areas, will be removed and relocated to appropriate areas within the front country zone. The relocation areas could include the overflow parking areas and the areas near the new visitor contact station.” The GMP can be viewed at <http://parkplanning.nps.gov/PINN-GMP>.

In 2015, the park started a Draft Accessibility Self-Evaluation and Transition Plan process which will guide changes to the way existing services, activities, and programs are provided at Pinnacles National Park (NPS 2015d). Barriers that limit accessibility were defined in multiple locations throughout the park, and the plan provides recommendations for removing or modifying conditions to improve accessibility for all park visitors. The proposed accessible trail is an effort to remove barriers and improve accessibility on the West Side. The plan can be viewed at <http://parkplanning.nps.gov/pinn-accessibility-plan>.

This project is the next step in planning for Pinnacles’ west side. The proposal is consistent with, and implements actions in the planning documents.

Purpose and Need

The purpose of the proposed action is to enhance the overall visitor experience on the west side of Pinnacles National Park by providing trail connections in accordance with the GMP. The project would also provide safe and increased visitor services, sustainable trails as well as interpretative opportunities about the park's wide range of physical, natural, and cultural resources.

As stated above, the GMP and other planning documents direct the park to develop new trail connections on the west side of the park, particularly a trail to link the new visitor contact station with the existing trail system. Action is needed now because there are no formal trails that start from the recently constructed West Side VCS and the absence of trails impacts visitors' safety, overall experience, and park resources. Without a formalized trail, visitors hike around the VCS and create their own 'social' trails, which results in damage to native vegetation, contributes to erosion, and threatens the cultural landscape of nearby historic sites. There is an existing trailhead (constructed as part of the interpretive plaza) at the VCS that inadvertently leads hikers to a social trail, exacerbating the problem (*Figure 2*). The 2001 EA for the project to Relocate West Side Maintenance Facility and Visitor Contact Station (VCS) disclosed potential impacts to cultural resources since trails were not included in the project, and stated "public visitation would not be encouraged until a plan for the site is developed."

In addition to causing resource damage, a lack of trails at the VCS is also frustrating and potentially dangerous for park visitors. From the VCS, there is no safe way to access the hiking trails within the park by foot. The road that connects the visitor contact station and Chaparral Area is a one-lane curvy road without shoulders or sidewalks that is unsafe for walking/hiking. However, some visitors opt to walk down this narrow, shoulder-less road anyway, particularly if the Chaparral and overflow lots are full. When those parking lots are full, visitors who park at the VCS have no way to reach Chaparral and the other park trailheads except by walking the road. A connector trail is needed to provide a safe, scenic and enjoyable trail for visitors to hike to existing park trailheads.

Approximately 60,000 visitors enter Pinnacles National Park from the west side each year, yet there are limited opportunities for an accessible visitor experience. Providing an accessible trail with informational panels will open up the visual, cultural and natural resources to those unable to negotiate the more strenuous trails. An accessible trail is also needed to achieve the key experiences defined in the Draft Pinnacles National Park Accessibility Self-Evaluation and Transition Plan (SETP) (NPS 2015). This plan is intended to improve the park's accessibility by upgrading services, activities and programs improving accessibility parkwide. Experiences in the plan that could be achieved with construction of an accessible trail at the VCS include opportunities to view scenic vistas, wild character, wildflowers, wildlife, dark night skies and learn about early California settlements.

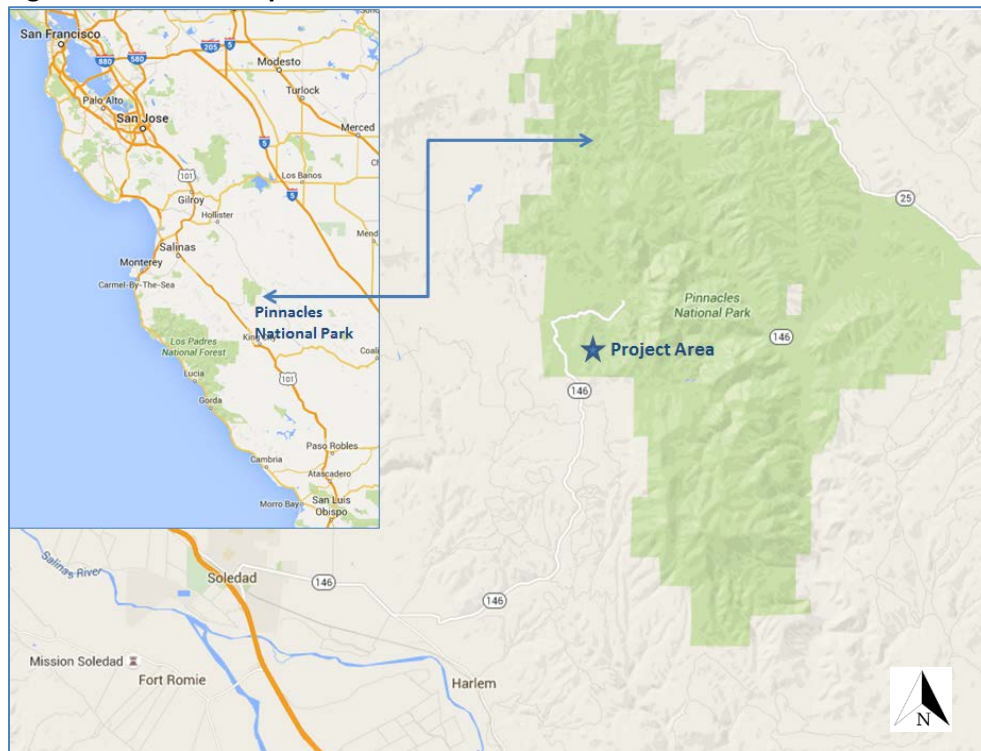
Scope of the Environmental Assessment

The environmental analysis in this EA is based on schematic level trail design. The EA analyzes general trail alignments, which may change during trail construction, so that trail may be routed around trees and other resources as necessary. The proposed action includes the construction of two trails only, not a complete West Side trail network. This action addresses the immediate need for trails that help protect

resources and provide a connection to from the West Side VCS to the Chaparral Area. This project does not preclude additional trails from being considered in the future.

Interpretive panels would contain information about the natural, cultural, and physical resources in the area. Detail on interpretive themes is not identified in this EA as it is not relevant to the environmental analysis.

Figure 1. Location Map



Public Scoping

A list of issues and concerns related to improvements to the project were identified through park internal scoping and through the public scoping process. The public scoping period was from June 25 to July 25, 2015.

During scoping, the public was presented with a proposed action. A proposed action is the initial NPS proposal to address a purpose and need. A proposed action is one option (alternative) for addressing purpose and need. The proposed alternative, as it relates to the construction of the trails, is also the preferred alternative. During scoping, the proposed action included improvements to the Chaparral Day Use area. This component was removed from the project; reasons are discussed under 'Considered but Rejected' below.

The park hosted a public scoping meeting on Wednesday, July 8, 2015. Twelve people were in attendance. The majority of comments at the public meeting were about parking, the lack of available parking spaces at the Chaparral lot, and the need for a shuttle system. Most felt that the existing parking

is inadequate, the Chaparral lot is essential and should not be removed (as directed by the GMP), that visitors need to park as close as possible to the trailheads, and the parking at the overflow lot was too far from the trails. Overall, meeting participants seemed to express general support for construction of the trails.

The park received nine comment letters during the scoping period. Some of these letters also expressed dissatisfaction with the availability of existing parking and future removal of the Chaparral parking lot and desire for a shuttle system and additional visitor services on the west side to complement the trails. These actions are outside of the scope of this project and EA and not included in the alternatives.

Other concerns focused on the need for analysis of impacts from invasive plants, to wilderness and water quality, and to the visitor experience. Some called for more details in the project description regarding elevations, distance, and level of hiking difficulty. Other commenters expressed disappointment that a larger trail network was not being proposed at this time and questioned the utility of the connector trail in the absence of a trail network. There were concerns that the public would not use the connector trail as a starting point for hikes on the west side and that visitors need to park at the Chaparral Area to get as close as possible to the other west side trailheads. Others noted that bringing more people into the park and increased visitation would result in resource and visitor impacts (i.e. parking). The topic of interpretation was discussed in numerous letters, and commenters suggested interpretive themes for the trails and stressed the importance of the interpretive components of the project. There were several positive comment letters about the importance of new west side trails, the potential socioeconomic benefits to the city of Soledad and the ability of the accessible trail to serve a wide range of visitors (from babies to boomers). The NPS received a comment letter from the Regional Water Quality Control Board about permitting requirements, and an initial letter from the State Historic Preservation Officer concurring with the area of potential effect (APE) for the project. Scoping comments were considered in the development of the alternatives and analysis in this EA.

Issues and Impact Topics

Public scoping comments, combined with internal scoping and agency consultation, created a list of issues and concerns related to the project. According to NPS Director's Order 12 (revised September 2015), analysis in an EA should focus on significant issues (i.e., pivotal issues or issues of critical importance), and only discuss insignificant issues briefly. As a general rule, issues should be retained for consideration and discussed in detail if:

- The environmental impacts associated with the issue are central to the proposal or of critical importance;
- A detailed analysis of environmental impacts related to the issue is necessary to make a reasoned choice between alternatives;
- The environmental impacts associated with the issue are a big point of contention among the public or other agencies; or
- There are potentially significant impacts to resources associated with the issue.

Issues and Impact Topics Considered but Dismissed

The following issues and topics did not meet the above criteria: they are not potentially significant, not critical to choosing between alternatives, and are not controversial. A brief analysis is presented below, but the issues are not carried forward in Section 3.

General Wildlife

According to the NPS Management Policies, the NPS strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of animals. Forty-nine mammalian species are known to occur within the park, including black-tailed deer, bobcat, gray fox, raccoon, jackrabbit, brush rabbit, ground squirrel, chipmunk, badger, coyote, mountain lion, a wide variety of rodents and fourteen kinds of bat.

There are 22 reptile and 8 amphibian species, including coast horned lizard, Western rattlesnake, and federally threatened California tiger salamander and California red-legged frog. Pinnacles National Park has a high diversity of invertebrate species including 41 dragonflies, 71 butterflies, approximately 475 bees, and more than 500 moths. Due to the intermittent nature of Pinnacles' streams, the three-spined stickleback is the only native fish.

Over 200 species of birds have been documented in the park since 1908 including California condor, and several species of raptor. Numerous species live in the park year-round and others use the park for seasonal nesting and migratory stopovers. Much of the bird diversity at Pinnacles is focused along the riparian corridors of Bear Gulch and Chalone Creek, because they provide an abundance of food, water, and shelter for many species. Certain species favor the pine and oak woodlands in the park. The project area contains oak woodlands which are habitat for many species, including California quail, oak titmouse, western scrub jay, mourning dove, ash-throated flycatcher, and northern flicker. The majority of the project area is within chaparral which provides habitat for many birds, including residents such as California thrasher, spotted towhee, wrenit, bushtit, and seasonal species including sage sparrow. Vegetation clearing and trail construction should be completed between July 7 and January 31 to the greatest extent possible to reduce and avoid impact to nesting birds. If this is not possible, then vegetation within the trail corridor would be cleared during that timeframe so that construction would occur within nesting season. If work is to occur in a cleared corridor, then work (i.e. noise) should proceed simultaneously along the whole trail alignment until the work is completed or the breeding season ends so that the noise and activity related to the construction would deter birds from starting their nests in the project area. If this is not possible, bird surveys would be completed before construction, and the park would take precautions to protect nesting birds while work occurs.

The general area surrounding the proposed trail corridor may provide habitat for native wildlife species. Animals would most likely leave the area when vegetation removal and trail construction is underway so those effects are expected to be minimal. Burrow-dwelling species could be harmed from ground disturbance because most reptiles hibernate at relatively shallow depths. Construction of the connector trail would add visitors to the currently undisturbed canyon, which would create some disturbance to wildlife. This disturbance would be small and would not affect feeding, reproduction, or overall viability or survival of the animals in the area. The use of plastic netting or plastic covered erosion control wattles,

which could trap small animals, would not be permitted. The effects described in Section 3 for special status wildlife would be similar for commonly found reptiles and small mammals.

Water Resources

Pinnacles National Park is situated in an arid, chaparral dominated mountain range. The project area is in within the Gloria Lake (Chalone Creek) watershed, which encompasses 69% percent of the park and consists of Chalone and Sandy creeks and several smaller tributaries (*Figure 3*). The terrain in the Gabilan Range is rugged and dissected by faults and fractures so there are no regular drainage pattern for the creeks and tributaries. The watershed eventually empties into the Salinas River and Monterey Bay in the Pacific Ocean. Many of the streambeds in the park are intermittent and dry except after significant rain events. Chalone Creek, Bear Gulch, and Sandy Creek have some stretches of perennial flow. The longest intermittent creeks within the park are the West Fork of Chalone Creek and Frog Creek. One first order stream in the project area (when water is present) flows into the West Fork of Chalone Creek. Periodically, heavy rains cause substantial flooding within the park. There have been three large floods in the Chalone Creek watershed during the past two decades, including an event in 1998 that has been estimated to have been in the range of a 40-year flood. Some stream reaches within the Chalone Creek watershed experienced considerable erosion, whereas others experienced substantial sedimentation.

For trail construction, soil would not be removed deeper than five feet below the surface. The 2002 geotechnical investigation for the VCS drilled percolation test holes at depths of 15.5-23 feet below existing grade, and groundwater was not found (Kleinfelter 2002). No groundwater would be encountered and therefore not affected. There are no streams, seeps, springs, or other surface waters in the area of the accessible trail.

The connector trail is not expected to impact surface water quality. The two bridge crossings would be constructed so that they span the entire length of the stream, well above the mean high water mark. No structures or fill would be placed in the stream. The crossings would not be constructed if water is flowing in the stream and erosion control measures would be in place during construction as a precaution. Installation of bridges would not only help visitors be safe and dry as they cross the stream, but would also reduce erosion on the banks and reduce the sediment entering into the streambed from hikers. Impacts to water quality would be barely noticeable, and therefore this topic has been dismissed from further analysis.

No irrigation would be used for revegetation. Water would be used for dust control during construction. Water for dust control would come from a park well but would not affect the park water supply.

Floodplains

Executive Order 11988, Floodplain Management, requires an examination of impacts to floodplains and potential risk involved in placing facilities within floodplains. NPS Management Policies 2006, and Director's Order 77-2 (Floodplain Management Guideline) provides guidelines for proposals that occur in floodplains. The Chaparral area is within a floodplain, but trails would be constructed outside of the floodplain. Floodplain values would not be affected.

Night Sky Resources

The dark sky over Pinnacles National Park has been identified as an asset, contributing to the park's pristine landscape. Preserving this critical resource is important for the protection of nocturnal habitat and for the enjoyment of the public. This project does not include the addition of any new permanent or temporary lighting in park. There would be benefits for visitors wishing to view the night sky from the accessible trail overlooks.

Socioeconomic Conditions and Growth Inducing Impacts

The new trails are not expected to substantially increase visitation to the west side of Pinnacles National Park. People visit Pinnacles for a variety of recreational opportunities, hiking being one activity. This project would add two additional trail options for the visitors that would normally come to the park. The accessible trail would provide a hiking opportunity for visitors that currently have few options to experience the park on a trail (such as those with mobility impairments, the elderly, or families with small children). The project would not change roads, access or other infrastructure that would add growth to the park or surrounding communities. If some additional visitation was to occur, it has the potential to add tax revenue to the City of Soledad. Soledad hotels have reported low vacancy rates that are associated with tourism to Pinnacles National Park (NPS 2012).

Park Operations

The construction and maintenance of approximately two miles of trail would result in an increase in workload for park staff and require financial resources to maintain each year. The accessible trail could require more maintenance than backcountry trails to ensure that an accessible, stable surface is maintained. Additional patrols would be needed in the area, and staff would continue emergency response for injured or lost visitors. Staff time would also be required to monitor sensitive natural/cultural resources and establishment of non-native species. These changes are considered a normal part of park operations and trail maintenance. The construction of the trails would not substantially affect human or fiscal park resources, or create any serious complexities or changes to park management.

Air Quality, Greenhouse Gases, and Climate Change

Pinnacles National Park is located within California's North Central Coast Air Basin, includes over 16,000 acres of wilderness, and is designated as a "Class I" airshed. The Clean Air Act dictates that Class I areas have the greatest protection against air pollution. Air quality at Pinnacles is an important resource and on good days, is a defining feature of the park. Trail construction would cause some increase in dust, but this would be small, temporary and limited to the trail construction corridor. There would also be a short-term increase in greenhouse gas emissions due from trail construction such as contractor travel, producing and transporting fill materials, transporting excess soil, and the use of construction equipment with internal combustion engines (i.e. chainsaws, Bobcats, and compactors). The creation of two additional park trails is not expected to substantially increase visitation or car trips, so the contribution to the existing greenhouse gas levels in the atmosphere would be undetectable. Therefore, there would be no actions that would contribute to climate change. As temperatures warm in California, flooding may increase, but the trails would not be impacted by future flooding.

Soundscape/Noise

In accordance with NPS Management Policies 2006 and Director's Order 47, Sound Preservation and Noise Management, an important component of the NPS mission is the preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human-caused sound. There would be some increase in noise (unwanted sound) during construction. The addition of more people on trails may contribute to human-caused sound on and around the trails, but it would be temporary as people pass through different areas. Noise caused by trail use would be a long-term adverse impact but would not be frequent or loud enough to significantly interfere with wildlife behavior. Noise caused by trail construction could differ between the two action alternatives. Alternative C could require micro-blasting or extensive rock drilling. This construction-related noise may be heard in the park and could be disruptive to both wildlife and visitors hiking in Wilderness.

Indian Trust Resources

Indian trust assets are owned by Native Americans but held in trust by the United States. No Indian trust assets occur within Pinnacles National Park and, therefore, not analyzed further.

Environmental Justice

Presidential Executive Order 12898, *General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. According to the Environmental Protection Agency, environmental justice is the "...fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies. The goal of this "fair treatment" is not to shift risks among populations, but to identify potentially disproportionately high and adverse effects and identify alternatives that may mitigate these impacts (EPA 1998).

The community surrounding Pinnacles National Park contains both minority and low-income populations. The proposed action would not create disproportionately high and/or adverse human health or environmental effects on minorities and low-income populations and communities. Construction of the trail would benefit visitors and potentially improve the socioeconomic situation for gateway communities. The access fee to enter the park would not change as a result of the new trail construction. This expense would apply to all visitors and not disproportionately and/or adversely affect low income or minority populations or communities. Fees to access the park are not significant and do not target any specific minority or low income group. Further, the park staff and planning team actively solicited public participation as part of the planning process and gave equal consideration to input from all people regardless of age, race, income status, or other socioeconomic or demographic factors.

Impact Topics Identified for Further Analysis

Issues identified for this project that warrant a more detailed environmental analysis include: vegetation, wildlife special status species, cultural resources, wilderness, and recreation and visitor use (including accessibility and access/circulation/parking). The analysis can be found in Section 3.

SECTION 2: ALTERNATIVES

CEQ and NPS DO-12 refer to alternatives as the heart of the environmental analysis process and instruct decision makers to consider a range of alternatives to meeting the purpose and need for action. This range includes reasonable alternatives as well as those alternatives considered but dismissed from detailed analysis. Alternatives should represent substantively different options, not simply depicting different designs of the same options. For this project, the trail alternatives were limited due to the area's topography. Some areas of Jawbone Canyon are extremely difficult to access. Topography also limits the location options for an accessible trail. This EA analyzes a No Action alternative, the Proposed Action, a non-wilderness trail alternative, and briefly describes other options that were considered but dismissed.

Alternative A - No Action

Under the No Action alternative, current management practices would continue and neither an accessible trail nor a connector trail would be constructed. Visitors would access information about park resources and trails at the VCS as they do currently. Signage could be added that directs visitors not to walk in areas without formal trails, but visitors would most likely continue to create 'social' trails around the VCS area. Visitors to the West Side VCS would not be able to hike that area of the park or connect to the existing trailheads without driving another two miles to the Chaparral Area. There would be no changes to the park road, so safety hazards of visitors walking the narrow road would persist. Because much of the monument's terrain is steep and rocky, trail access for visitors with mobility impairments would continue to be limited to three options; the Bench Trail and Peaks View Picnic Area near the east entrance of the monument and the Chaparral area picnic area and parking lot on the west side.

Alternative B - Proposed Action (Preferred)

The proposed action includes two actions: 1) construct an accessible loop trail to and from the West Side VCS; and 2) construct a connector trail from the accessible loop to the Chaparral area and trailheads. Interpretive waysides and directional signage would also be installed.

Accessible Loop Trail

The accessible loop trail would be approximately two-thirds of a mile in length, in a lollipop design (*Figure 3*), for a total of approximately two acres of ground disturbance. It would be designed to meet the Architectural Barriers Act Accessibility Standards (ABAAS) for Outdoor Developed Areas. The trail would begin from the existing interpretive plaza adjacent to the West Side VCS and follow the contour of the landscape to maintain a maximum 10% running slope (the slope of the direction that people travel when walking on the trail), although the average running slope is about 3-5%. The maximum cross slope (perpendicular to the running slope – the slope across the trail) would be 2%. See *Figure 4* for the general area of the loop trail.

The trail would have a firm and stable surface and a width of up to 60 inches (five feet) for the entire trail, with one foot shoulders. If the trail is less than 60 inches, passing spaces would be provided at intervals of 1,000 feet. The surface would be a similar color to existing soil to blend into the landscape. It would be hardened but not paved with asphalt as it is a trail, not a service or access road. Two overlooks are proposed- one at the beginning of the loop, and another along the loop with a view of the High Peaks. *Figure 5* shows the scenic view from one of the proposed overlooks. The overlooks would be up to 25 x 15 feet and provide one or two benches. Some cut slopes could be 5-6 feet high, and cut slopes over 40% would require a rock retaining wall. The walls would be contoured into the hillside and constructed of local rock to match the existing landscape.

Vegetation slated for removal includes shrubs, plants, and both native and non-native grasses. Oak trees, juniper trees, rock screes would be avoided to the greatest extent possible. Removed shrubs would be used as vertical mulch in disturbed areas. Revegetation and erosion control measures would be implemented. Jute netting would be installed on the cut slopes. Locally sourced seeds would be broadcast under the jute or the jute would be covered with a layer of topsoil that was cut from the hillside (or both). Seeds from native shrub species may be collected, grown into seedlings at a local nursery, and transplanted on the hillside (although the park may opt to let the area revegetate naturally). A layer of topsoil would be salvaged from the cut areas and spread on the cut slope or other disturbed areas to facilitate revegetation from onsite seeds. Soil would be staged in the west side overflow parking lot and would be re-used by the park. If the park determines there is no on-site use for the soil, it would be hauled away.

Current social trails visible from the new accessible loop, would be obliterated and restored (*Figure 7*). The soil would be de-compacted. Similar to the treatment of the cut slopes, either local seeds would be broadcast or the trail would be covered by layer of topsoil that was cut from the hillside. Some of the removed shrubs would be laid on top of the trail for mulch.

Construction methods would likely include a combination of heavy equipment and hand tools. Large excavators, bobcats, loaders, dumpers and haulers could be used. Staging of materials and equipment would occur at the overflow parking lot and the west maintenance office and housing area.

Directional signs would be installed in various locations as appropriate. Approximately six interpretive wayside panels and two information panels would be installed along the accessible route to provide educational information on the natural, cultural, and physical resources on the west side of Pinnacles National Park, particularly as seen from the new trail.

Connector Trail

The connector trail would be approximately one mile long and three feet wide, and connect the VCS to the existing trailheads at the Chaparral area. It extends down the southern portion of Jawbone Canyon and traverses 1500 feet of the Hain Wilderness. The connector trail would start on the accessible loop and descend approximately 600 feet through Jawbone Canyon to the overflow parking lot. A crosswalk would be painted on the road that connects to a new trail to the overflow parking lot. This 670 foot section of trail would go along the side of the overflow lot entrance road and along the edge of the parking lot to

separate hikers from vehicles. This section of trail would connect to the existing trailhead in the overflow parking lot, leading hikers to an existing .3 mile trail to the Chaparral Area. Some improvements are needed to this existing trail as there is a steep 70 foot section with a 30% grade. This section of trail would be rerouted to be more sustainable for heavy visitor use (*Figure 3*). Parking in the overflow lot may be reorganized to accommodate the trail but a loss of parking spaces is not anticipated.

The connector trail provides users with a full array of terrain and impressive views of Pinnacles' rock formations and the surrounding landscape (*Figure 8*). It is tucked into the landscape on a north facing slope, providing summer shade, and lower than "The Fingers" formations for a substantial portion of the route, which would screen the trail from the view of visitors in the Hain Wilderness. For part of its length, the trail would take advantage of an old road bed.

There are several short steep sections of trail (10-15% grade), but the majority of the trail is comprised of gradual grades which allows for a curvilinear layout to lose elevation. The route would likely require a small number of widely spaced switchback turns with ample visual screening. The trail includes two stream crossings, one of which is in the Hain Wilderness. Bridges would be constructed to cross the streams. Each bridge would span the entire width of the streambed, with the footings on the banks, well above the mean high water mark. There would not be any bridge structures placed in the stream bed. This work would not occur when there is running water in the stream, would not involve removal of vegetation, and would not place fill onto wetland vegetation.

This trail would be constructed by hand crews which would allow the trail to accommodate environmental considerations such as avoiding trees or rock outcroppings and minimizing erosion. Staging would occur in the disturbed trail corridor.

Construction of the trails would be constructed as funding becomes available. The connector trail may not be constructed concurrently with the accessible trail.

Alternative C – Accessible Loop and Non-Wilderness Connector

This alternative includes construction of the accessible loop trail as described in Alternative B. The Alternative C connector trail alignment would be approximately one mile long and three feet wide, and connect to the overflow parking lot and existing trailheads at the Chaparral area in the same manner as described for Alternative B. This alignment extends down the northern portion of Jawbone Canyon and is located outside of designated Wilderness (*See Figure 3*).

Similar to the Proposed Action, the non-wilderness connector trail provides users with impressive views of Pinnacles' rock formations and the surrounding landscape. Located on the south facing slope, the trail would be fully exposed to summer sun and highly visible from the High Peaks area of the Hain Wilderness.

The trail corridor would be consistently steep for the majority of its length and require numerous consecutive switchbacks down the hillside to the canyon bottom. Steep areas will be avoided when possible; however several sections would require traversing through very steep areas. Erosion control measures would be more intrusive and prevalent; multiple retaining walls, check steps, and other

measures would be required along the majority of the trail. The trail corridor contains many rock outcroppings that could require micro-blasting or extensive rock drilling.

This trail would be constructed by hand crews which would allow the trail to accommodate environmental considerations such as avoiding trees or rock outcroppings and minimizing erosion. No stream crossings are encountered on this route. Staging would occur in the disturbed trail corridor.

Alternatives Considered but Rejected

Terminating the Connector Trail at the Chaparral Area

Terminating the connector trail at the Chaparral parking lot was considered as an option, but dismissed for a number of reasons. The route would have a section with a cross slope in excess of 30 degrees, requiring large effort to cut and remove soil to construct the trail tread bench. A large amount of soil would need to be cut from the hillside and it would require numerous retaining walls. This option would also require crossing a large stream with significant riparian and wetland vegetation. Further, the GMP called for eventual removal and replacement of the Chaparral parking lot if it is washed out by a flood. It was deemed imprudent to create a trail in an area that might wash out in the future.

Improvements at Chaparral Area

During public scoping, the NPS included improvements at the Chaparral Area as part of the proposed action. These actions included obliterating redundant sections of trail, improving wayfinding, and consolidating signage under a new shade structure. Orientation around the Chaparral Area is confusing for visitors, but this issue could be addressed in the short-term by improving signage, an action does not require analysis in an EA. Improvements to the Chaparral trails are an independent action and can be completed at a later time with additional environmental compliance.

Northern Jawbone Canyon Connector

During scoping, a second connector alignment was discussed. The majority of this trail was the same as the Alternative C alignment but it traversed through the Hain Wilderness for approximately 600 feet. Other impacts are similar to those described for Alternative C. This alignment had one stream crossing and would have the greatest impacts to an archeological site. Because this alignment was similar to the other actions alternatives, and had similar or greater impacts, it was dismissed from further analysis.

Scout Peak to High Peaks

During scoping, a commenter suggested that a trail from Scout Peak to the High Peaks would be used more than a connector trail through Jawbone Canyon. This trail could be valuable to add in the future, but it was not added to this project because it does not meet the purpose and need of the project; it would not create a safe option to reach the other trailheads at the Chaparral Area or reduce resource damage. This trail could be considered in the future.

Rock Stream Crossings

There are several options to cross the streams. One method is to place rocks on the sides of the stream and within the streambed to use as stepping stones. Another option is to clear the streambed down to bedrock and either place rocks on the sides or have visitors climb out of the stream on the earthen side

banks. The park weighed the potential impacts to vegetation, water quality (from erosion), and wilderness. The NPS planning team determined that in-stream crossings would result in far more environmental impacts than a bridge crossing. The Regional Water Quality Control Board felt that clearing the streambed to bedrock would cause fill to be released in the streambed and result in unnecessary impacts to water quality. Water quality impacts could also occur during placement of rocks in the streambed. The park determined that climbing in and out of a streambed inevitably causes a much greater amount of damage. The area where visitors climb in and out of the stream tends to become larger over time, and even greater amount of area would become denuded of vegetation and subject to erosion. Because the impacts would be greater, this option was dismissed. Additionally, this trail would be used by stock animals and rock crossings are more difficult and hazardous for them to navigate.

Figure 2. Existing Trailhead at VCS



Figure 3. Alternative Alignments for Accessible and Connector Trails

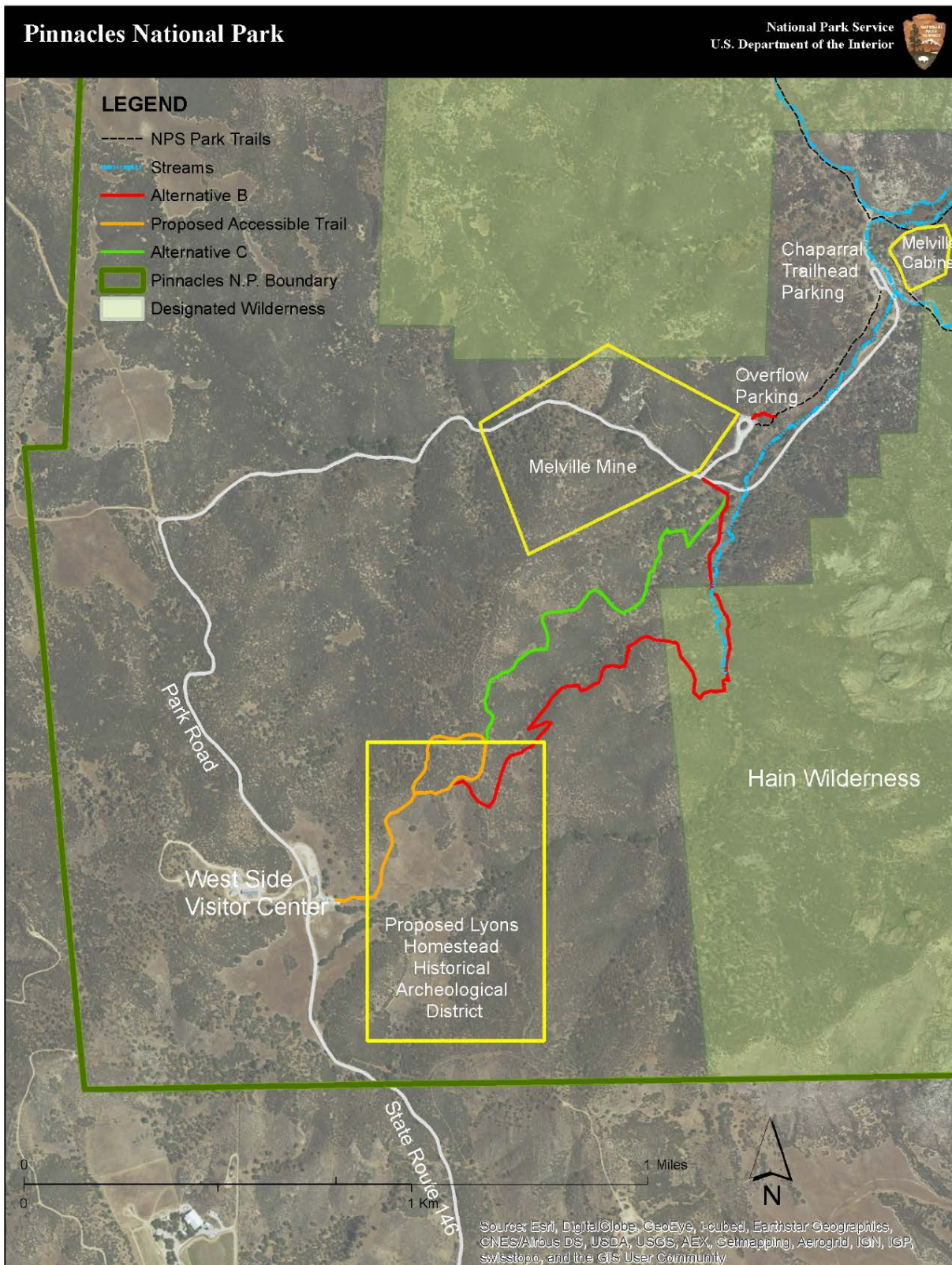


Figure 4. General Area of Accessible Loop Trail



Figure 5. View from Proposed Accessible Loop Trail



Figure 6. Typical Trail Cross Section

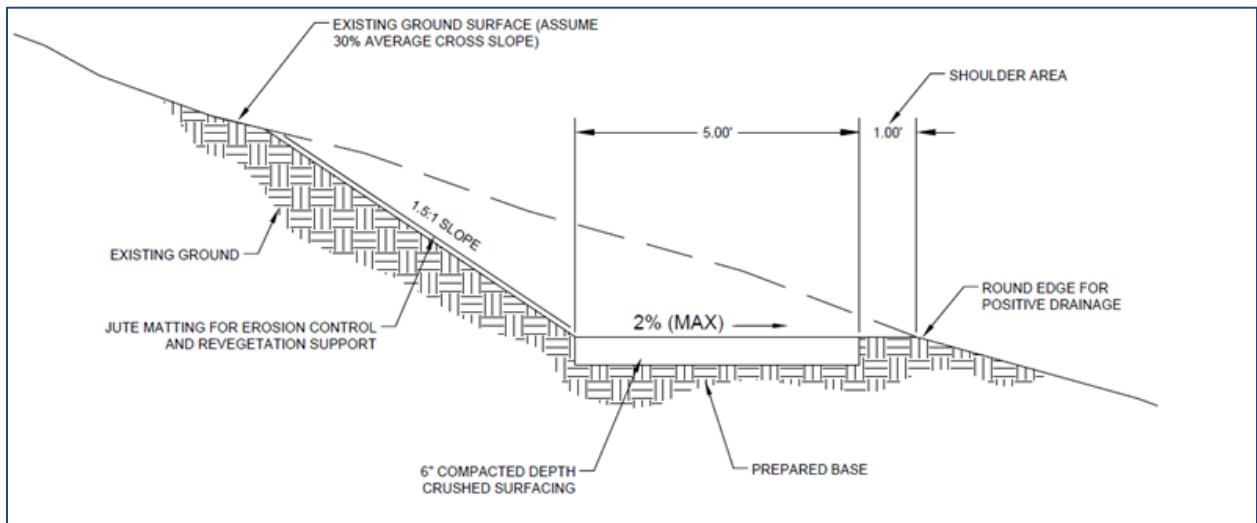


Figure 7. Social Trail to be Obliterated and Restored



Figure 8. A View from Jawbone Canyon



Mitigation Measures

The measures below have been developed to lessen the potential adverse effects of the proposed action.

Table 1. Mitigation and Conservation Measures

General Construction Measures	
General-1	All protection measures would be clearly stated in the construction contract documents.
General-2	Construction limits would be clearly marked with stakes prior to the beginning of ground disturbing activities. No disturbance would occur beyond these limits other than protection measures for erosion/sediment control.
General-3	Staging and stockpiling areas would be located in previously disturbed areas to minimize new disturbance of area soils and vegetation.
General-4	Trail construction zones would be identified and signs or fencing would be placed to prevent visitors from entering the area.
Noise and Air Quality	
Air-1	Both contractors and park staff would minimize noise from use of construction equipment (i.e. mufflers) and equipment would not be allowed to idle longer than necessary when not in use.
Air-2	Dust control (i.e., use of water as a dust suppressant) would occur, as needed, on active work areas where dirt or fine particles are exposed.
Vegetation	
Veg-1	Only certified weed-free hay, straw or mulch would be used in order to minimize the potential spread of exotic plants.
Veg-2	Native soils would be used whenever possible. Any fill material brought into the park would be acquired from an NPS-approved source.
Veg-3	All vehicles and construction equipment must be pressure or steam-washed before entering the park and would be inspected for the presence of dirt, mud, or plant/animal matter. Cleaning would consist of the removal of all dirt, grease, debris, and materials that

	may harbor noxious weeds, their seeds, sudden oak death or other plant pathogens. Cleaning shall occur off the project site. Park staff would inspect all equipment upon arrival at the park and any equipment in unacceptable condition would need to be immediately removed from the park and cleaned before returning.
Veg-4	To the greatest extent possible, trails would not be constructed within the drip line of any tree in order to prevent damage to tree roots.
Veg-5	The park would survey the project area twice a year, for three years after construction, to monitor for recently introduced species. If any invasive species is detected, the park would take immediate action to control the population.
Veg-6	The trail would be routed around the marble rock outcrops to avoid trampling the vegetation and damage the substrate.
Veg-7	In areas where trail construction passes through populations of these rare plants, prior to the initiation of brushing and construction a biologist will install stakes or fences to delineate sensitive habitat. All foot traffic and disturbance will be limited to the immediate trail corridor. No dirt, brush, materials, or tools will be placed in the sensitive habitat areas.
Veg-8	Where trail construction passes through populations of these rare plants, disturbance will be limited to the immediate trail corridor. No dirt, brush, or construction materials would be placed there, and foot traffic will be confined to the trail only.
Wildlife	
Wildlife-1	Construction personnel would be trained in the biology and conservation of the California red- legged frog, California condor and California tiger salamander. If one of these animals enters the work site, construction staff would halt activity and contact a qualified NPS biologist who would determine when work can proceed.
Wildlife-2	The use of plastic netting or plastic covered erosion control wattles, which could trap small animals, would not be permitted.
Wildlife-3	Vegetation clearing and trail construction should be completed between July 7 and January 31 to the greatest extent possible to reduce and avoid impact to nesting birds. If this is not possible, then vegetation within the trail corridor would be cleared during that timeframe so that construction would occur within nesting season. If work is to occur in a cleared corridor, then work (i.e. noise) should proceed simultaneously along the whole trail alignment until the work is completed or the breeding season ends so that the noise and activity related to the construction would deter birds from starting their nests in the project area. If this is not possible, bird surveys would be completed before construction, and the park would take precautions to protect nesting birds while work occurs.
Water Quality/Soils	
Water-1	Best Management Practices for drainage and sediment control would be implemented to prevent or reduce nonpoint source pollution and minimize soil loss and sedimentation.
Water-2	A Hazardous Spill Plan or Spill Prevention, Control and Countermeasures Plan would be in place prior to construction. This plan would state what actions would be taken in the event of a spill, notification measures, and preventative measures to be implemented, such as the placement of refueling facilities, storage, and handling of hazardous materials, etc. The plan must be submitted at least two days before beginning construction work.
Cultural Resources	
Cultural-1	In the event that a previously unidentified archeological resource is discovered during ground disturbing activities, all construction work involving subsurface disturbance would be halted in the area of the resource and in the surrounding area where further subsurface remains can be reasonably expected to occur. An archeologist meeting the Secretary of the

	Interior’s Professional Qualification Standards (36 CFR 61) would immediately inspect the work site and determine the area and nature of the affected archeological feature. Construction work may then continue in the project area outside the defined area of the resource. Within 48 hours of the discovery, the NPS would notify the California State Historic Preservation Office and such notification would describe the NPS' assessment of the eligibility of the feature for listing on the National Register of Historic Places and proposed actions to resolve potential adverse effects. The CA SHPO would respond within 48 hours of the notification and the NPS shall take into account the CA SHPO's recommendation regarding National Register eligibility and proposed actions, and then carry out appropriate actions.
Cultural-2	The boundary of the archeological site would be flagged so that it can be protected during construction.
Visitor Resources	
Visitor-1	Information would be posted at the West Side VCS and park’s website alerting visitors to the dates and times of trail construction.
Visitor-2	The park would monitor visitor use of the parking lot and mark additional parking spaces as accessible if necessary.

SECTION 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Introduction

Resource descriptions and impacts were identified for a 50-foot construction corridor. This is would not result in clearing or disturbance within the entire 50-foot corridor, but allows the park to have flexibility with trail layout and design so that trails may be routed around trees or other sensitive resources and designed in a way that minimizes impacts to park resources to the greatest extent possible.

NEPA analysis. The environmental analysis includes a factual description of both adverse and beneficial direct, indirect, and cumulative impacts, as well as a discussion of the importance of the impacts. This discussion is guided by consideration of context and intensity (40 CFR 1508.27). Context provides a backdrop against which the intensity of impacts can be applied to understand their importance. A park unit’s purpose and significance can provide important overall context for assessing the importance of many impacts. Intensity is the severity or magnitude of an impact (40 CFR 1508.27(b)). The new NPS Director’s Order 12 Handbook (revised September 2015), removed the use of intensity definitions in an EA to define impacts or substitute for impact analysis. Impacts will not be defined as major, moderate, minor or negligible. Instead, the below analysis discloses the existing conditions of resources and documents the “hard look” standard in a narrative that discusses the impacts of the alternatives.

Endangered Species Act (ESA). The methodology and impact thresholds for assessing effects to species listed under the Endangered Species Act differ from NEPA. Section 7 of the ESA has several effect determinations that include: no effect; may affect; not likely to adversely affect; and may affect, likely to adversely affect. Initial NPS assessments of the level of effect are noted in the analysis. However, consultation with U.S. Fish and Wildlife is underway, and the results and final effect determinations will be disclosed in the decision document.

National Historic Preservation Act (NHPA). The National Historic Preservation Act (NHPA), as amended, is the principal legislative authority for managing cultural resources associated with NPS projects. Generally, Section 106 of the NHPA requires all federal agencies to consider the effects of their actions on cultural resources listed and/or determined eligible for listing in the National Register and to give the Advisory Council of Historic Preservation (ACHP) the opportunity to comment. Such resources are termed “historic properties.” Agreement on mitigation of adverse effects on historic properties is reached through consultation with the State Historic Preservation Officer (SHPO); Tribal Historic Preservation Office, if applicable; and, as required, the ACHP and others. In addition, Section 110 of the NHPA requires federal agencies to take actions to minimize harm to historic properties that would be adversely affected by a federal undertaking. That section also charges federal agencies with establishing preservation programs for the identification, evaluation, and nomination of historic properties under their jurisdiction to the National Register. The NHPA assessment of effect determinations also differ from NEPA effect descriptions. Federal actions have the potential to have no effect, no adverse effect or adverse effect. Consultation with the California State Historic Preservation Office is underway, and the effects determination will be disclosed in this EA’s decision document.

Cumulative Impact Scenario

CEQ regulations require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for all alternatives, including the No Action alternative. Reasonably foreseeable past, present, or future projects or plans that could have a cumulative effect include the following:

- Removal of Chaparral Ranger Station and construction of the new West Side VCS in 2011-2012
- Future approved actions in the General Management Plan for the West Side. The GMP stated the following for the West Side:

New trail connections would be developed, including a trail to link the new visitor contact station with the existing trail system. Improved picnic sites would include shade structures. A small (up to 10 sites) walk-in campground would be provided (possibly at Jawbone Canyon, across from the overflow parking area)... At Chaparral, the existing parking lot, picnic area, comfort station, and road, which currently are located in flood-prone areas, would be removed and relocated to appropriate areas within the frontcountry zone. The relocation areas could include the overflow parking area and the area near the new visitor contact station. West side facilities would be designed to accommodate potential shuttle service.

Reasonably foreseeable actions do not include actions that are speculative or indefinite. During planning for this project, the park discussed the need for a more comprehensive trail plan or potentially completing a Visitor Experience and Resource Protection (VERP) Plan for the West Side. There is no timeline or funding for these plans.

Geology and Soils

Pinnacles National Park is set within an area of granitic, metamorphic, and sedimentary rocks of the Gabilan Mountains, part of California's central Coast Ranges. This land is a remnant of an early Miocene or late Oligocene (about 23-24 million year old) volcanic field. The volcanic formations of Pinnacles National Park are nationally and regionally exceptional; they inspired the first conservation movement in the area and eventually led to Theodore Roosevelt's declaration of Pinnacles National Monument in 1908. Erosion of these rocks has produced talus cave formations, another important geologic feature of the park, and the Pinnacles rock formations are a foundational resource in the park (NPS 2012). The project area has hills but not the spires, peaks, or other geological features that are significant to the purpose of the park.

A geotechnical investigation completed in 2002 for the construction of the West Side VCS found that soils in the area consist of mostly moist clay and local layers of poorly graded sand and well graded sand. The sand is generally dense to very dense, and locally medium dense (Kleinfelder 2002). These soils have little ability to retain nutrients and water. When the plant cover is disturbed, soils become acutely susceptible to erosion during periods of intense rainfall (NPS 2005). Soils generally support extremely drought tolerant chaparral vegetation. Soils at hill toeslopes and valley bottoms are deeper and have more nutrients, higher water holding capacity, and greater rooting depth and are able to support oak woodlands and grasslands.

Environmental Impacts

Alternative A – No Action

With no formal trail, visitors form their own social trails to explore the area. An informal trail is visible from the VCS interpretive plaza and is currently used by some visitors. Use of this trail, or other off-trail visitor use, leads to trampling of vegetation and erosion. If no trail is constructed, these adverse impacts could continue.

Cumulative Impacts: The construction of the VCS resulted in some cut slopes which have been slow to revegetate. Those barren areas, combined with the impacts from social trails, create an adverse cumulative loss of soils.

Alternative B – Proposed Action (Preferred)

Any ground disturbance has the potential to result in erosion. However, the trails would be designed to minimize erosion and increase sustainability. Trails would be cut into the hillside on the upslope side (*Figure 6*), resulting in approximately 2,100 cubic yards of cut soil. Fill would not be added to the downslope side. Some cut slopes for the accessible loop trail could be 5-6 feet high, and cut slopes over 40% would require a rock retaining wall. There would be a slight outslope to the trail. All of these factors would help reduce erosion caused by the construction and ongoing use of the trail.

Although several short sections of the connector trail are steep (10-15% grade), substantial portions of the trail have much more gradual grades which allows for a curvilinear layout to lose elevation. The route would likely require a small number of switchback turns in the steeper areas. The grade in these areas allows for the switchbacks to be widely spaced, and there are opportunities for visual screening. Proper

spacing and screening of switchbacks is essential for reducing erosion caused by short-cutting the switchbacks (NPS 1996). In this way, the trail design would reduce erosion and impacts to soils and vegetation. Wending the trail across the face of the hill, gradually gaining altitude by using sidehill trail construction and broad, sweeping switchbacks, provides for a more stable trail because surface water does not run down the trail (NPS 1996).

The trail would have a compacted, sustainable tread and be designed so to allow water to drain quickly across and then continue down the adjacent hillside. Design features that keep water off trail could include a variety of techniques such as grade reversals, check steps, outsloping and retaining walls. These features would be installed intermittently on the steep sections.

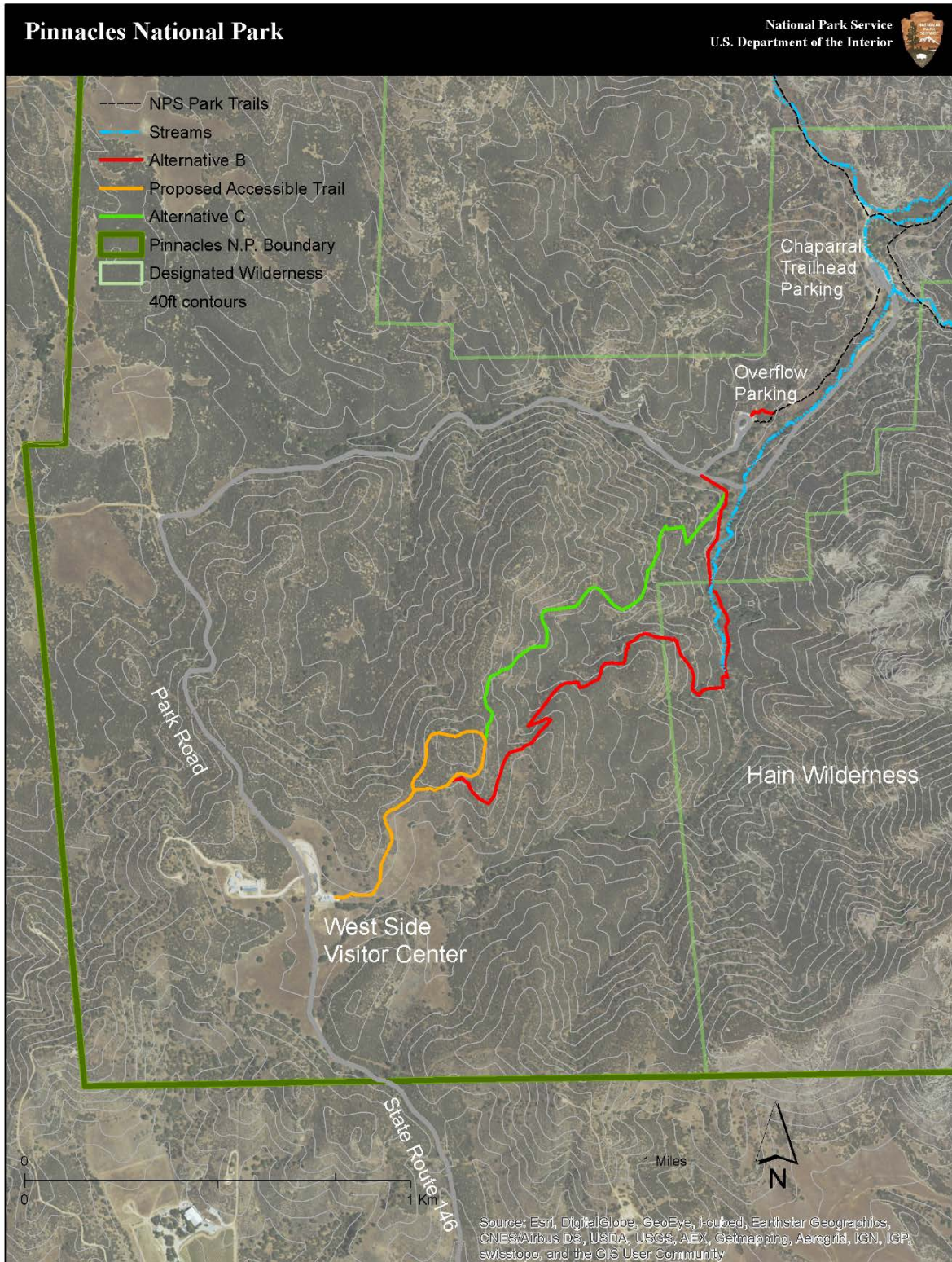
Construction of bridges for stream crossings would be anchored above the banks which have erodible soils so that soil does not enter the streams. Bridges or rock crossings would be constructed in a way that reduces erosion caused by visitors climbing in and out of the streambed. A number of erosion control measures, such as placement of straw wattles and jute matting, would be in place both during and after construction. Both action alternatives provide an opportunity for visitors to view the geology that is interpreted in the VCS.

Cumulative Impacts: Other projects constructed in the area (such as a campground or a more extensive trail network), when combined with Alternative B, could cumulatively increase the loss of soils in the local area.

Alternative C - Accessible Loop and Non-Wilderness Connector

This connector trail alignment, on the northern canyon slope, is limited by its steep topography. The alignment is much steeper (12% or greater) than Alternative B for almost the entire length of the trail. See Figure 9 for the topography of the area. Construction of trails on such steep grades is not recommended when it can be avoided because grades much steeper than 10% have a much higher potential for erosion and should only be used for short distances (Tennessee 2007). The steep grade would require numerous consecutive switchbacks down the hillside to the canyon bottom. The lower portion of the trail which avoids the Hain Wilderness is also very steep and would require switchbacks. Tightly spaced switchbacks are not considered a sustainable trail construction method and should be avoided to the extent possible (NPS 1996). Best trail construction practice is to avoid or minimize the number and frequency of switchbacks because they are difficult to construct and maintain, lengthen the trail, are boring to walk, are difficult to drain, and are often shortcut by hikers (NPS 1996, USFS 2007, Tennessee 2007). Short-cutting results in trampling of vegetation and also increases erosion problems (NPS 1996). Signage is not an effective deterrent to short-cutting the trail; whenever trail users can see that the trail abruptly reverses direction, there is an almost irresistible temptation to “short cut” (Trails for All Ontarians Collaborative 2006). The steep trail design would result in adverse impacts to soils and contribute to increased erosion. This situation occurs on steep trails in several locations in the park and results in resource damage. Consistent short-cutting and erosion is a consistent problem on the High Peaks Trail and Juniper Canyon Trail. Park staff report that any park trail with extensive short switchbacks is short-cutted by visitors.

Figure 9. Topography of the Project Area.



Similar to Alternative B, the trail would be designed to keep water off trail and help prevent erosion. However, the steep grades on the Alternative C connector trail alignment warrant many more erosion control features and structures than Alternative B. Installation of design features such as grade reversals, check steps, outsloping and retaining walls would need to be installed along the majority of the trail. This would create greater ground disturbance, higher costs, and require more annual maintenance. Overall, this connector trail alignment is less sustainable¹ than the Alternative B alignment.

Cumulative Impacts: Cumulative impacts are similar to Alternative B, but would have greater adverse impacts because there erosion on the non-wilderness trail alignment is would be consistent and harder to control.

Vegetation, including Wetlands

Vegetation in the project area includes California Xeric Chaparral, Blue Oak Woodland, Wild Buckwheat Shrub Alliance, Mediterranean California Naturalized Annual and Perennial Grassland, and Coast Live Oak Woodland. These vegetation types are all relatively common plant communities in Pinnacles and elsewhere in Central California.

The trails would primarily occur within the California Xeric Chaparral plant community. This vegetation type is a shrub dominated community made up of chamise (*Adenostoma fasciculatum*), buck brush (*Ceanothus cuneatus* var. *cuneatus*), manzanita (*Arctostaphylos* spp.), holly-leaved redberry (*Rhamnus ilicifolia*), blue oak (*Quercus douglasii*) and juniper (*Juniperus californica*). The herbaceous understory of xeric chaparral varies from sparse to dense. Some areas beneath the chaparral shrubs, particularly cooler, north-facing slopes, contain extensive stands of native herbaceous species such as Johnny jump-ups (*Viola pedunculata*), miner's lettuce (*Claytonia perfoliata* ssp. *perfoliata*), and white fiesta flower (*Pholistoma membranaceum*). Occasional openings in the chaparral contain diverse stands of herbaceous native species such as Clarkia (*Clarkia* spp.) and Larkspur (*Delphinium* spp.), and native grasses such as pine blue grass (*Poa secunda* var. *secunda*). In bottom of Jawbone Canyon, the potential trail location passes through flat sandy areas with extensive stands of native forb species, including two species on the California Native Plant Society (CNPS) list of rare species: Douglas' spineflower (*Chorizanthe douglasii*) and virgate eriastrum (*Eriastrum virgatum*). Both species are on the CNPS list 4.3 (limited distribution) (NPS 2015b).

The accessible trail route is near a rocky, marble outcrop, which is a rare rock type in Pinnacles National Park. The outcrop is characterized by shallow soils with scattered native herbaceous vegetation and scattered native shrub species. Vegetation surveys during the site visit did not reveal rare or uncommon plant species on the outcrop, though the plant community contains a high number of native herbaceous and woody species.

¹ The NPS definition of a sustainable trail is one that supports current and future use with minimal impact to the area's natural systems, produces negligible soil loss or movement while allowing vegetation to inhabit the area, and requires little rerouting and minimal trail maintenance (NPS 1991).

Non-native vegetation

Many non-native plant species have become established in Pinnacles National Park. These plants displace native species and quickly colonize disturbed areas. There are over 100 known introduced plant species in the park. Not all non-native species can be managed, so efforts are focused on the most invasive and most controllable of the species present. Currently, yellow starthistle (*Centaurea solstitialis*) and summer mustard (*Hirschfeldia incana*) are the two most in need of management (NPS 2005). The invasive Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*) is found in Jawbone Canyon.

Wetlands

There is a lack of persistent and perennial water in the streams in the project area, so the occurrence of wetlands is extremely unlikely. Park staff noted some typical riparian species in the streambed near the proposed bridge crossings.

Special Status Species Vegetation

No state or federally-listed plants are known to occur in Pinnacles National Park. However, there are 14 plants listed as rare by the California Native Plant Society (Table 2) (CNPS 2010, NPS 2012). Two were found in the project area in a spring 2015 survey: Douglas’ spineflower (*Chorizanthe douglasii*) and virgate eriastrum (*Eriastrum virgatum*) (NPS 2015a). Nineteen species of lichens that occur in the park are also listed as rare by the California Lichen Society.

Table 2. CNPS Rare Plants Potentially Present in Project Area

Common Name	Scientific Name	Potential to Exist in Project Area?
Douglas’ spineflower	<i>Chorizanthe douglasii</i>	Present in the lower reaches of the trail (CNPS list 4.3, limited distribution)
Coast larkspur	<i>Delphinium californicum</i> ssp. <i>interius</i>	Not observed on site visit.
Virgate eriastrum	<i>Eriastrum virgatum</i>	Present in project area (CNPS list 4.3 (limited distribution)
Protruding buckwheat	<i>Eriogonum nudum</i> var. <i>indictum</i>	Not observed on surveys. Project traverses through potential habitat.
San Benito poppy	<i>Eschscholzia hypocoides</i>	Not seen on surveys. Project area traverses through potential habitat.
Indian Valley bush mallow	<i>Malacothamnus aboriginum</i>	Not likely to be found in project area. Not observed. Post fire follower. May be observed if the area burns.
Paso Robles navarretia	<i>Navarretia mitracarpa</i>	Not observed in surveys. Project traverses through potential habitat.
Slender nemacladus	<i>Nemacladus gracilis</i>	Potential – not seen on surveys.
Hooked popcorn flower	<i>Plagiobothrys uncinatus</i>	Not observed on surveys. Project area traverses through potential habitat.
Slender pentachaeta	<i>Pentachaeta exilis</i> ssp. <i>aeolica</i>	Not observed on surveys. Project area traverses potential habitat.
Brewer’s clarkia	<i>Clarkia breweri</i>	Not documented on surveys. Project area traverses potential habitat.

Pinnacles buckwheat	<i>Eriogonum nortonii</i>	Not seen on surveys. Project area traverses potential habitat.
Spring lessingia	<i>Lessingia tenuis</i>	Not seen on surveys. Project area traverses potential habitat.
Dark-mouthed triteleia	<i>Triteleia lugens</i>	Not observed on surveys. Project area traverses potential habitat.

Environmental Impacts

Alternative A – No Action

With no formal trail, visitors form their own social trails to explore the area. An informal trail is visible from the VCS interpretive plaza and is currently used by some visitors. Use of this trail, or other off-trail visitor use, leads to trampling of vegetation. Off trail use also increases the chances of establishment of invasive plant species since seeds could be transported on visitors' shoes. If no trail is constructed, these adverse impacts could continue and worsen leading to a spaghetti network of social trails through native grassland, which could ultimately negatively affect the quality of habitat in the area.

Cumulative Impacts: The construction of the VCS resulted in some cut slopes which have been slow to revegetate. Those barren areas, combined with the impacts from social trails, add a negative cumulative adverse impact to local vegetation at the VCS. The adverse effect is small compared to the overall amount of healthy habitat on the west side of the park.

Alternative B – Proposed Action (Preferred)

Approximately four acres of vegetation would be removed for the construction of the two trails which includes chaparral shrubs, annual native grasses, small juniper trees and non-native grasses.

The plant species on the accessible trail are common and found throughout the park. The loss of this vegetation would not result in any substantial long-term changes to quality or quantity of vegetation populations due to the small amount of removal compared to the abundance of vegetation in the area. The trail traverses mature chaparral that includes large specimens of chamise, buck brush and other species.

Slow-growing, large, mature juniper and oak trees are found within the 50 foot accessible trail construction corridor. Specifically, there are two large oak trees very close to the tentative center line of the trail. A retaining wall could be constructed to keep the trail away from tree roots, which would benefit the health of the trees. Another option would be to construct the trail adjacent to the tree. This option has the potential to compromise tree health due to root damage; this is not expected to result in a big impact to the trees since oaks are generally resistant to a small amount of root disturbance. Removal of or damage to these trees would be avoided to the greatest extent possible.

If the accessible trail traverses through the marble outcrop, it would potentially have a direct adverse impact to vegetation by trampling vegetation and damaging the substrate. To mitigate this impact, the trail would be routed around the rock outcrops and the marble outcroppings would be fenced off during construction. The accessible trail circles a small knoll, and visitors may be tempted to venture off trail to

reach the top of the knoll, as well as the outcrops. This would result in some adverse impacts to vegetation due to trampling of vegetation and erosion. The park would monitor use of the trail and if social trails are being created to reach the top of the knoll. The park would then determine if either 1) a spur trail should be created to the top; or 2) measures could be implemented that discourage creation and use of social trails.

Similar to the accessible trail, plant species on the connector trail corridor are common; exceptions are two CNPS listed species, Douglas' spineflower (*Chorizanthe douglasii*) and Virgate eriastrum (*Eriastrum virgatum*), which are present along the lower reaches of the canyon on flat sandy soil. These plants would be removed during trail construction. Because plant removal would occur on the flat canyon bottoms instead of steep canyon slopes, adverse effects from erosion and loss of vegetation are small. Both listed species are uncommon throughout California; however, they are not uncommon in Pinnacles National Park and elsewhere in San Benito County (NPS 2015h). Where trail construction passes through populations of these rare plants, disturbance will be limited to the immediate trail corridor. No dirt, brush, or construction materials would be placed there, and foot traffic will be confined to the trail only. Removal of individual plants for trail construction would result in small, insignificant impacts to these plant populations.

All cut slopes and obliterated social trails would be covered with either locally sourced seeds or a layer of the excavated topsoil to promote revegetation with native species and impede the growth of invasive weeds; this action would reduce the chances of the introduction of invasive species and provide a stable substrate on which native plants can revegetate. The addition of more people to currently undisturbed areas would increase the chance of introduction of non-native, invasive species – an adverse effect. The park would survey the area twice a year for three years after construction to monitor for recently introduced species. If any invasive species are detected, the park would take immediate action to control the population.

Park staff noted some riparian plants in the streambed near the proposed bridge crossings. Because bridge crossings would span the entire length of the stream, and no structures would be placed in the stream that would remove riparian plants or fill wetlands, no impacts to wetlands would occur. Overall, trail construction would not likely contribute anything greater than small short or long-term adverse impacts to both local and regional vegetation populations.

Cumulative Impacts: The construction of the VCS resulted in some cut slopes which have been slow to revegetate. Those barren areas, combined with the impacts from additional cut slopes for the new trails add a small cumulative adverse impact to vegetation communities. The effect is small compared to the overall amount of healthy habitat on the west side of the park. If a larger trail network or campground is constructed and results in additional vegetation disturbance, the potential for erosion and introduction of non-native invasive species increases. Careful siting, surveys, and mitigation would help reduce impacts of future projects.

Alternative C

The vegetation present along this trail corridor is comparable to Alternative B. No special status species

were detected during a vegetation survey, but have the potential to exist since the vegetation communities are the same as Alternative B. Direct, indirect, and cumulative impacts are expected to be the comparable to Alternative B.

Special Status Wildlife

There are three federally listed species that are found within Pinnacles National Park: the federally threatened California red-legged frog (*Rana draytonii*), federally and state threatened California condor (*Gymnogyps californianus*), and the federally and state threatened tiger salamander (*Ambystoma californiense*).

California Condor. California condors once ranged from British Columbia, Canada through many western states in the U.S., down to Baja California, Mexico. This range shrank with the increase of European settlers in the West for a number of reasons including: poisoning, shooting, habitat degradation, and the collection of eggs, feathers, and whole birds for private and public collections. By the late 1800s, naturalists were already making note of the California condors' declining numbers and in 1967, condors were listed as an endangered species on the first U.S. endangered species list. Pinnacles National Park joined the California Condor Recovery Program as a release and management site in 2003. The park currently manages several dozen free-flying condors. California condors fly over the entire park, which has the trees, snags, cliffs, and rocky outcrops that are optimal for launching into flight. Foraging sites are in grasslands or oak-savannah regions at lower elevations, and roosting and nesting sites are located at higher elevations on cliffs.

California red-legged frog. The California red-legged frog is found primarily in wetlands and streams in coastal drainages of central California (USFWS 1994) but non-breeding habitat for the California red-legged frog includes nearly any area within 1-2 miles of a breeding site that stays moist through the summer. During the dry season, red-legged frogs are usually found near water, sometimes venturing out into adjacent riparian vegetation within 200 feet of water. During the rainy season, frogs (especially newly transformed young) may move 2 miles or more without regard to habitat (USFWS 2001). Red-legged frogs typically breed from late December to early April or after the majority of heavy winter rain events have occurred. In colder areas, they may hibernate in burrows during the winter. They remain active during the summer if provided with access to permanent water. Some frogs remain at or close to their breeding sites year round, while others disperse to non-breeding habitat. Most of the land area of Pinnacles National Park has been designated critical habitat unit SNB-3 by the U.S Fish and Wildlife Service as of March 2010.

Targeted surveys for California red-legged frogs were conducted at Pinnacles in the early 1990s and again in the early 2000s. These surveys, in addition to decades of anecdotal records, have not resulted in any observations of California red-legged frog in the park within 1.5 miles of the project site. Although the project falls within designated Critical Habitat Unit SNB-3, the nearest even marginal habitat to the project site is almost one mile away. The project area contains no suitable habitat in any season of the year. The California red-legged frog habitat closest to the project area is located in the Chalone creek drainage and at the Bear Gulch Reservoir. *Figure 10* shows the location of critical habitat in relation to the proposed trail alignments.

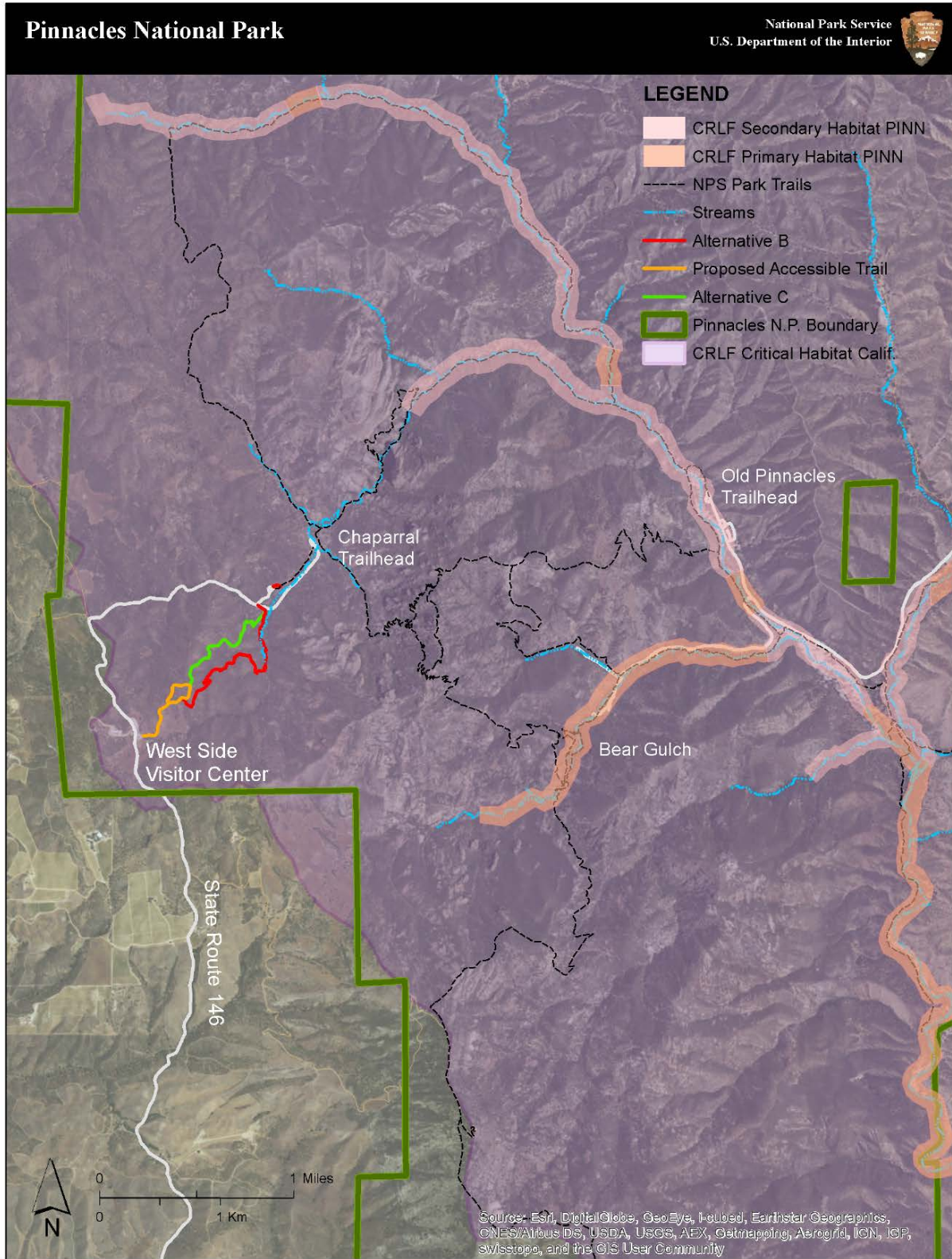
California tiger salamander. The California tiger salamander breeds in natural and artificial ponds in winter and early spring, spending the remainder of the year in upland areas underground in rodent burrows. Breeding ponds can be up to one mile away from the burrow depending upon surrounding area conditions. The primary threats are the modification and destruction of suitable habitat due to urbanization, agricultural conversion, and growth of non-native plants. In addition to habitat loss, fragmented habitat restricts migration between aquatic breeding sites and upland non-breeding habitat, along with dispersal among aquatic breeding sites. California tiger salamanders have been recorded at Pinnacles National Park only on the extreme eastern side of the park, over 4.5 miles from the project site. There is a breeding population at Gloria Lake, 2.75 miles northwest of the project site. The nearest designated critical habitat units are almost 7 miles to the east (Unit EB-16) and 2.5 miles to the northwest (Unit EB-17). There are several agricultural ponds approximately .5-1.5 miles west of the project site, but the park has no information on the occurrence of California tiger salamander in this area.

Other species of concern. There are 17 California Species of Concern known to exist in Pinnacles, noted in the Table 3 below.

Table 3. Potential Wildlife Species of Concern in Project Area

Common Name	Scientific Name	Habitat in project area?
Sacramento perch	<i>Archoplites interruptus</i>	None
Western spadefoot	<i>Spea hammondi</i>	Potential non-breeding habitat
Foothill yellow-legged frog	<i>Rana boylei</i>	None
Western pond turtle	<i>Actinemys marmorata</i>	None
Silvery legless lizard	<i>Anniella pulchra</i>	Yes
Coast horned lizard	<i>Phrynosoma blainvillii</i>	Yes
San Joaquin coachwhip	<i>Coluber flagellum ruddocki</i>	Yes
Two-striped garter snake	<i>Thamnophis hammondi</i>	None
Bald Eagle (state endangered)	<i>Haliaeetus leucocephalus</i>	Little to none
Golden eagle (state protected)	<i>Aquila chrysaetos</i>	Little to none
White-tailed Kite (state protected)	<i>Elanus leucurus</i>	Little to none
Peregrine falcon (state protected)	<i>Falco peregrinus</i>	Little to none
Long-eared owl	<i>Asio otus</i>	Little to none
Loggerhead shrike	<i>Lanius ludovicianus</i>	Little to none
Yellow-breasted chat	<i>Icteria virens</i>	None
Grasshopper sparrow	<i>Ammodramus savannarum</i>	Yes
Pallid bat	<i>Antrozous pallidus</i>	None
Townsend's big eared bat	<i>Corynorhinus t. townsendii</i>	None
Western red bat	<i>Lasiurus blossevillii</i>	None
Western mastiff bat	<i>Eumops perotis californicus</i>	None
Big-eared kangaroo rat	<i>Dipodomys elephantinus</i>	Yes
American badger	<i>Taxidea taxus</i>	Yes

Figure 10. California Red-legged frog Critical Habitat Map with Trail Alignments



Environmental Impacts

Alternative A – No Action

Since no ground disturbance would occur, there would be no direct or cumulative effects to any of the special status species in the project area. Indirect adverse effects could occur to wildlife from the continued degradation/trampling of vegetation and habitat.

Alternative B – Proposed Action (Preferred)

The NPS has determined that there would be little to no effect to any of the three federally listed species or their critical habitat as a result of the project because none of these species is known to occur or to possess habitat within the project site. As mitigation, construction personnel would be trained in the biology and conservation of these three species in the rare case that one of these animals enters the work site. Construction staff would halt activity and contact a qualified NPS biologist who would determine when work can proceed.

California Condors. There are no roosts in the project area and the species has not been observed landing in the project area. No conditions would be created that are expected to attract California condors to the project area, although the species has been known to land on parked construction equipment. They also could land in the area if food was detected (such as a dead deer). Due to the small likelihood that California condors would enter the project site, the park determined that the project would have a very small and unnoticeable effect on the species, and result in a *not likely to adversely affect* determination, in accordance with Section 7 of the Endangered Species Act.

California Red-legged frogs. The project site is primarily arid and sunny, with the wettest canyon holding flowing water only during extremely wet periods, perhaps for a couple months once every few years. Due to the large distances of the proposed trails from habitat and past occurrences, the park determined that construction of the trails would not impact the species and would result in a *not likely to adversely affect* determination, in accordance with Section 7 of the Endangered Species Act. And although the entire project site falls within a critical habitat unit, there is no habitat in or near the project site; therefore, no designated critical habitat would be affected.

California tiger salamander. The landscape between the project area and known or potential habitat is steep and covered in dense chaparral. Due to distance from known or possible populations and habitat, and the low habitat quality in and around the project site, it is anticipated that there would be unnoticeable impacts to the species, and the project would result in a *not likely to adversely affect* determination in accordance with Section 7 of the Endangered Species Act to the species or its critical habitat.

Other species of concern. The effects to bald eagle, golden eagle, white-tailed kite, and state protected peregrine falcon would be similar to those for the California condor – very limited and unlikely to have any effect unless the raptors were to land in the area during construction. Construction crews would be trained in how to respond if one entered the work area. After construction is completed, there would be little or no effect on these species.

Construction noise and disturbance has the potential to impact nesting birds. The International Migratory Bird Act and other laws prohibit harming nesting birds. The timing of work would be coordinated with park biologists. Vegetation clearing and trail construction should be completed between July 7 and January 31 to the greatest extent possible to reduce and avoid impact to nesting birds. If this is not possible, then vegetation within the trail corridor would be cleared during that timeframe so that construction would occur within nesting season. It is best if noisy work proceeds continually along the whole trail alignment until the work is completed or the breeding season ends so that birds are deterred from starting their nests in the project area. If this is not possible, bird surveys would be completed before construction, and the park would take precautions to protect nesting birds while work occurs.

The project site falls within the general distribution range of the western spadefoot (a toad), although none have ever been documented in the park within 4.5 miles of the project site. Habitat requirements are very similar to those of California tiger salamander, so impacts are expected to be similar, and have little to no to adverse effect.

The silvery legless lizard spends almost its entire life underground or under surface objects. Even though it is generally thought to occupy loose soils and leaf litter, it has occasionally been observed at Pinnacles in a wide array of habitat conditions. Although it has never been recorded in or near the project site, it is possible that it occurs there, so excavation activities could harm individuals. However, considering the lack of high quality habitat in the project area and the extremely small footprint of the project relative to the extent of legless lizard habitat in the park, adverse effects are expected to be minimal.

The coast horned lizard is active on moderately warm days and spends the rest of the time buried in loose, sandy soils at a fairly shallow depth. Although horned lizards are expected to occur in the project site, there is little or no loose, sandy soil there. Therefore only surface active animals are expected to be encountered in excavation areas, and these can easily flee from harm's way. Effects are expected to be to be minimal to none.

The San Joaquin coachwhip is expected to occur in grassy areas in the project site. It is surface active on hot days and spends the rest of its time underground in burrows. Excavation activities have the potential to harm individuals in their burrows, or impact burrow habitat. Considering the extremely small footprint of the project relative to the extent of coachwhip habitat in the park, effects are expected to be minimal.

The grasshopper sparrow feeds and nests in open grasslands, and has been recorded as uncommon at Pinnacles from April to June. Construction during those months could result in nest failure. Scheduling work outside of this season would reduce adverse impacts to the species. Increased human presence in grasslands may displace birds that would have nested along the trail corridor, but this is not expected to be significant due to the small footprint of the trail and the extent of grasslands in the area.

Big-eared kangaroo rats occur in chaparral habitat in the vicinity of the park. Big-eared kangaroo rats are nocturnal, spending the daylight hours underground in burrows. Thus, excavation activities could impact individuals and their habitat. However, considering the small footprint of the project, and the fact that approximately 80% of the Pinnacles landscape is vegetated with chaparral, the overall impact to the species would not be significant.

Although rarely seen, American badgers are fairly common in and around Pinnacles National Park. They are found primarily in grasslands and oak woodlands, but may also occupy open chaparral. They live in large underground burrows, but range far from these during part of the year. No burrows have been observed in or near the proposed trail routes, although they have been documented about half a mile away. A biologist will survey for American badger burrows before initiation of trail construction, and any active burrows will be avoided. Increased human presence on the new trails could negatively impact badgers living in the vicinity. Based on the small footprint of this project, and the lack of badger observations in the immediate vicinity, impacts to this species are not expected to be significant.

Cumulative impacts: All of the projects listed in the cumulative impact scenario, when combined with Alternative B have the potential to cause adverse effects to wildlife. However, with careful planning and mitigation, any cumulative impact would be insignificant.

Alternative C - Accessible Loop and Non-Wilderness Connector

The direct, indirect, and cumulative impacts of Alternative C on special status wildlife are the same as described above for Alternative B.

Cultural Resources

Pinnacles National Park contains cultural resources that include archeological sites, ethnographic sites, historic structures, cultural landscapes, and museum objects. Of these, archeological sites and a potential historic district are present in and around the project area. There are no museum objects in the area, and no ethnographic resources (objects, landscapes or sites that are important to a people's sense of purpose or way of life) have yet been formally documented in the park.

General Historical Context of Pinnacles West Side

Pinnacles National Park has a rich human history that began at least 8,000 years ago. There were many human inhabitants, both native and immigrants, that used the land and shaped what it is today. The groups present at the time of European contact were part of the Ohlonean (or Costanoan) subfamily of Penutian-speaking peoples who are believed to have migrated to the east shore of the San Francisco Bay about 3,500 years ago. From there, they moved south, reaching Pinnacles between 2,500 and 1,500 years ago. The Ohlone who settled in the vicinity of Pinnacles became known as the Chalon (NPS 2012).

Agricultural development began around 1770 when the Spanish formed missions in the area. During the mission period (1769-1833), native peoples were removed from their homes, forced to live in and around the missions and convert to Christianity and the Spanish way of life. In 1833, mission lands distributed in large land grants to Mexican citizens, known as *rancheros*, who raised large herds of longhorn cattle. Pinnacles was not within any of the *rancheros* but surrounded by them. After the end of the Mexican-American War in 1848, large number of American immigrants arrived in California for gold mining. By the late 1860s, the gold rush had subsided and new immigrants turned to agriculture and established homesteads. Most of the good land was already taken by the Mexican land grants. The rugged hill country around Pinnacles remained open, but the conditions were only marginally favorable for farming. Despite the challenges, some homesteading did occur in and around the park. Mining also occurred on the west side of the park. Miners such as Henry Melville played a significant role in the early exploration

and settlement of the interior South Coastal Range of California. They were among the first to settle in the Gabilan Mountains west of the Pinnacles (following the removal of the native Chalon) and helped open up the country by establishing some of the earliest trails and roads. Henry Melville, for example, constructed the first wagon road leading up to the Pinnacles from the Salinas Valley in about 1874. Henry Melville's control of this road would discourage tourism on the west side of the park after 1908 and compelled the National Park Service to concentrate most of its infrastructure development and management operations on the east side after 1921 (Babalís 2009).

During the early 1900's, there were several homesteading families using the Pinnacles. One of these homesteaders, Schuyler Hain, helped establish Pinnacle National Monument in 1908. In January 2013, Pinnacles became a National Park. A more detailed history of Pinnacles can be found in *The Heart of the Gabilans: An Administrative History of Pinnacles National Monument* (<http://parkplanning.nps.gov/pinn-admin-history>)(Babalís 2009).

Archeological Resources

In April 2011, the Anthropological Studies Center of Sonoma State University completed an archeological overview and assessment for the park (ASC 2011). This survey covered 25 acres of the 44 acre project area; 19 acres could not be surveyed due to the presence of extremely dense vegetation on steep slopes. Within the project area/area of potential effect, one prehistoric archeological site and three historic-era archeological sites were identified. The assessment determined that two of the three historic-era sites (a road and surface historic refuse) were ineligible for the National Register of Historic Places (ASC 2011). Further investigation of the prehistoric archaeological site determined that the site is eligible for listing in the National Register of Historic Places under Criterion D (Engel 2015). The third historic-era archeological site is discussed below as the Lyons Homestead Historical and Archeological District.

Proposed Lyons Homestead Historical Archeological District

The APE and portions of the study area are within the vicinity of the late nineteenth century Lyons Homestead (CA-SBN-124H) (*Figure 3*). It begins at the west entrance of the park and extends north to the mouth of Jawbone Canyon where the canyon is crossed by the entrance road. To the west and north, the site is bounded by the entrance road while its east boundary is along the bottom of Jawbone Canyon.

Harrison and Margaret Lyons established a homestead on the west side of Pinnacles in 1885. They remained here until about 1906, farming, grazing livestock, and growing orchard fruit and nuts. The homestead remained in the family until 1915 when their son sold it for \$10.00. The land subsequently became part of a neighboring ranch and was used for grazing livestock. It was acquired by the National Park Service in 1976 for inclusion in Pinnacles National Monument (NPS 2015f).

Although fire has destroyed wooden buildings and structures, masonry features and landscape characteristics remain largely unchanged since the period of significance, making this the best preserved homestead site within the park. Three professional archeological surveys have been made of the Lyons Homestead site, the first in 1980 following a boundary adjustment that brought the property into the park. The site was surveyed again in 2008 in the course of preparing the park's baseline Archeological Overview and Assessment. A follow-up survey made in 2011 slightly increased the size of the site with the

discovery of additional contributing features (ASC 2011). The consensus of all surveys has been that the site is eligible for listing on the National Register of Historic Places and should be nominated as a historic archeological district. The NPS has submitted a National Register district nomination to the State Historic Preservation Office.

Environmental Impacts

Alternative A - No Action

The No Action alternative and existing condition would continue to cause negative impacts to the cultural resources. Visitors create social trails and wander into the proposed historic district. The risk of people illegally collecting or damaging artifacts increases. The existing social trail traverses directly through the proposed district and creates a visual intrusion on the landscape. No Action is also in conflict with the EA to Relocate the West Side Maintenance Facility and Visitor Contact Station (VCS), which stated that visitor use of the area would not be permitted without a plan to manage visitor use and protect cultural resources.

Cumulative Impacts: The construction of a trailhead at the VCS, without an accompanying trail, has caused impacts to cultural resources. Not constructing a trail would add to these impacts and contribute to adverse cumulative impacts. This alternative, when combined with impacts from the VCS construction or future development, would likely have some adverse cumulative impacts to cultural resources.

Alternative B - Proposed Action (Preferred)

Trail construction requires ground disturbance. Approximately two acres of soil would be disturbed for the two trails and erosion control measures. Soil disturbance would also occur with the installation of signs and wayside panels. The accessible loop trail route was surveyed for archeological resources and none were found. The small 70-foot reroute of steep trail from the overflow lot to Chaparral was also surveyed; no resources were found. However, there is potential, although unlikely, that presently buried archeological resources may be present within the project area. If buried archeological resources are encountered during construction, work in the vicinity of the discovery would cease and a qualified NPS Archeologist would be contacted for further direction. The likelihood of inadvertently discovering an archaeological resource in the course of construction is low.

The connector trail passes through the outer edge of the prehistoric archaeological resource discussed above. The trail would be routed along the outer edge of the site, and intersect the site at locations where prehistoric materials are not present. Therefore, the proposed trail would have minimal effects on the archeological resource or its integrity of location, design, materials, or association (Engel 2015). The boundaries of the site would be flagged to ensure the area is avoided during construction.

There is the potential for small long-term, ongoing adverse effects to archeological sites resulting from increased visitation, particularly from the occasional departures off the trail by some hikers. However, since visitor traffic would be confined largely to the established trail alignments, these effects should be small, relatively unnoticeable, and insignificant.

Both of the proposed trails would pass through the proposed Lyons Homestead Historic Archeological District. The trails have been routed to 1) avoid sensitive portions of the district and 2) allow for views that help tell the history of the homestead. The new trails would better protect the district by keeping visitor use focused on the trail which would ultimately reduce damage to the overall site, preserving it for future generations. Interpretive waysides would provide a benefit to furthering the understanding of the area's historical significance.

The trails are not within the Melville Mine area, and would therefore have no effect on these historic resources. There are no other recorded historic properties on the west side that could be impacted.

Cumulative Impacts: The proposed action, when combined with the potential construction of a larger trail network or campground could create negative impacts to archeological resources. Additional ground disturbance could increase the chances of disturbing unknown buried resources. Construction of the walk-in campground in the location proposed in the GMP would further disturb the archeological site; as such, any future campground would most likely be located in another, less archeology-sensitive location.

Alternative C - Accessible Loop and Non-Wilderness Connector

The impacts of Alternative C on cultural resources would be similar to Alternative B. The impact would be slightly less than Alternative B because the trail alignment would be outside of the boundaries of the archeological site mentioned above. However, due to the steep and inaccessible nature, this alignment has not been surveyed and the potential exists for archeological resources to be present. Archeological monitoring would occur during construction if this alternative was selected.

Cumulative Impacts: The cumulative effects would be the same as Alternative B.

Wilderness and Scenic Quality

The Pinnacles Wilderness was designated on October 20, 1976, protecting 12,952 acres as wilderness. Boundary adjustments and an additional Congressional designation in 2002 brought the total Pinnacles Wilderness acreage to over 65% of the park or 16,048 acres (*Figure 3*). The Pinnacles Wilderness was renamed the Hain Wilderness January 2013 in honor of Schuyler Hain, a homesteader who led tours to Bear Valley and through the caves, advocating for the preservation of the region. Hain's efforts moved Theodore Roosevelt to establish Pinnacles National Monument in 1908.

Under the Wilderness Act of 1964, the wilderness and naturalness of these lands are to be preserved and managed for their "wilderness character." They also have greater protection from development. As defined by the Act, "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain."

Wilderness character can be considered to have four qualities:

- Untrammeled: Wilderness is an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain;
- Natural: Wilderness is an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions;
- Undeveloped: Wilderness generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; and
- Opportunities for Solitude or Primitive and Unconfined Recreation: Wilderness has outstanding opportunities for solitude or a primitive and unconfined type of recreation.

The Wilderness Act also prohibits certain activities such as the use of motorized equipment, mechanical transport, structures or installations, and landing of aircraft unless it is considered in the minimum requirement for the administration of the area for the purpose of preserving wilderness character. In addition, NPS policies mandate that management decisions affecting wilderness are consistent with the minimum requirement concept.

Although Pinnacles was originally set aside to protect the unique rocks and caves, it is now also celebrated for its healthy native ecosystems. Wilderness lands provide clean air, water, and habitat critical for rare and endangered plants and animals. In Wilderness, visitors can enjoy challenging recreational activities and extraordinary opportunities for solitude. Visitors can enjoy expansive, high quality, undeveloped vistas; explore natural landscapes; breathe clean air; engage in a variety of recreational opportunities and have the ability to experience outdoor solitude and natural quiet.

The overall scenic quality of the West District is high, even outside of designated Wilderness. Scenic viewsheds from the High Peaks trail (in Wilderness) are important values to visitors. The existing facilities at Chaparral can be seen from the High Peaks trail. The VCS and parking lot were intentionally located as far outside of the viewshed of Wilderness as possible.

Environmental Impacts

Alternative A - No Action

There would be no direct, indirect, or cumulative impacts to Wilderness as a result of the No Action alternative, and no cumulative impacts.

Alternative B - Proposed Action (Preferred)

Portions of the accessible loop trail, particularly the overlook, and small sections of the connector trail can be seen from the Hain wilderness. Several design components would be integrated into the project to reduce the impact on the scenic viewshed as seen from that location, including: 1) keeping the size of the overlook small, 2) using native colored rocks for the retaining wall at the overlook, 3) keeping the hardened trail tread the color of the natural soil, 4) concealing the trail in vegetation to the greatest extent feasible, and 5) siting the connector trail lower than "The Fingers" formations for a large portion of the route, screening it from the view of visitors in designated wilderness.

In order to locate the majority of the connector trail out of the Hain Wilderness viewshed, approximately 500 yards (approximately 1/3 mile) of connector trail would be constructed through the designated Wilderness, near the western portion of the Wilderness boundary. NPS Management Policies 6.3.10.2 states that trails will be permitted within wilderness when they are determined to be necessary for resource protection and/or for providing for visitor use for the purposes of wilderness. The Wilderness Act also states that wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use. In this area, the NPS determined that a short section of trail in wilderness was an appropriate use of the land because routing the trail through the edge of wilderness provides additional protection for one of Pinnacles National Park two designated integral vistas. "Integral vistas" are views from inside a mandatory Class I airshed area looking outward to specific important panoramas or landmarks beyond the class I area's boundaries, where views have scenic, scientific, or cultural importance to the class I area. The High Peaks vista is integral to the visitor experience and has scientific value. The High Peaks area includes the most popular trails for visitors which provide views in all directions. The scientific value of this vista is associated with the geologic story of the monument (NPS 2012).

Further, the portion of the connector trail within Wilderness follows an old road bed, which is disturbed, and existed before the area was designated as Wilderness. This would reduce the amount of ground disturbance required for construction within Wilderness. The trail would pass through wilderness, not start or end there, so no signs would be necessary. The trail would allow for recreation in Wilderness, and visitors would be able to experience the natural environment and solitude as they pass through the area.

One stream crossing is within wilderness. The bridge crossing would be constructed to require minimal maintenance, be low profile and blend into the landscape. The bridge crossing would result in less short and long term damage to the stream bed, soils and vegetation, by directing foot and stock traffic to one stable, non-erodible area. The bridge abutments would be constructed outside of the stream, above the mean high water mark, and would not interfere with stream flow. An armored stream crossing without a bridge is more likely to disrupt natural stream processes and have more impact on wilderness character.

The trail would be brushed and constructed utilizing hand tools and power tools such as loppers, saws, chain saws, weed eaters, pick-mattocks, rock bars, shovels, etc. Motorized and mechanized equipment would not be used. Erosion control features (such as water bars, check steps, dry stone walls, switchbacks and trail drains) would be installed using traditional tools such as single [hand] jack hammers, double [hand] jack hammers, chisels, grip hoists, rock bars, shovels, pick mattocks, blocks, McLeods, and other hand tools. Erosion control measures along trails would help protect water quality.

Construction and existence of the trail could have some negative effects on the solitude/primitive recreation, untrammled, undeveloped, and natural wilderness values for the area. However, this is minimal when compared against Alternative C and very small when examined in the context of the much larger wilderness area. The adverse effect to this section of wilderness is insignificant.

A Minimum Requirements Decision Guide (MRDG) was completed for the project and may be found in Appendix A. This decision guide analyzed eight alternatives and their impact on wilderness. The analysis

determined that the proposed action is appropriate and necessary and would not cause unacceptable impacts on wilderness resources and character, in accordance with the Wilderness Act.

Cumulative Impacts: The addition of these trails, combined with the existing Chaparral lot and VCS parking lot and structure, result in some small cumulative visual impacts from wilderness areas. As more trails and visitor amenities are added to the west side of the park, the potential for adverse cumulative impacts to wilderness increases. Design considerations would reduce this impact. If the Chaparral lot is removed in the future, there would be a benefit to viewsheds from wilderness.

Alternative C - Accessible Loop and Non-Wilderness Connector

Alternative C has negative effects on Wilderness. In this scenario, there are no direct impacts from the construction of a trail within the designated Wilderness. However, this alignment would be almost entirely within the viewshed of the High Peaks area of the Hain Wilderness. The ridge and open meadow provide little to no opportunity to conceal the trail, which would have a large impact on the High Peaks integral vista described above. Further, the trail corridor has extensive rock outcroppings which would require blasting or drilling; this unnaturally broken rock would further impact the viewshed. The NPS Wilderness Stewardship Reference Manual 41 confirms that facility improvements outside of the wilderness, such as trails, can indirectly detract from the opportunity for solitude or primitive and unconfined recreation within the wilderness (NPS 2013).

The effects on the viewshed from the accessible loop trail are the same as with Alternative B.

Cumulative Impacts: Cumulative impacts are similar to Alternative B, but the degree of adverse cumulative impact is greater. The combination of the Alternative C connector alignment and existing Chaparral parking lot results in substantial impacts to the High Peaks integral vista. If other trails or structures are added to the viewshed in the future, the adverse impact would be substantial and have serious effects on the ability to experience natural and untrammeled landscapes from the Hain Wilderness.

Recreation and Visitor Use

Visitor Use, Service and Opportunities

Pinnacles National Park is an important recreation destination for the region. Visitation fluctuates but averages about 250,000 visitors each year. Approximately 85% of the visitors enter from the east side of the park, and the remaining 15% enter the park from the west side. Visitor use varies with the seasons. There are surges in visitation in early spring when wildflowers are blooming and the weather is comfortable for hiking. School groups at all grade levels visit to study geology and ecology. Visitation also increases during the three day holiday weekends of Memorial Day, Fourth of July, and Labor Day.

The Pinnacles Visitor Center and campground store are the main points for visitor services on the east side. The recently constructed West Side Visitor Contact Station (VCS) is the only point of information on the west side of the park. Recreational opportunities for park visitors include hiking, rock climbing, viewing scenery, photography, bird and wildlife viewing, picnicking, camping, star gazing, caving, and viewing wildflowers in the spring. Another draw to Pinnacles is the rare chance to see a California condor. The park also offers visitors both formal and informal interpretive programs and has informal education programs.

There are approximately 32 miles of maintained trails and several miles of cross-country trails. The trails range from easy, flat walks to more challenging all-day hikes. The hiking trails and technical rock climbing are internationally known. The trails give visitors an opportunity to experience geologic features, historic sites, scenic views, and wilderness.

The primary trailhead on the east side of the park is the Bear Gulch Day Use Area. Several east side trails can be accessed from the Pinnacles Campground, Peaks View Picnic Area, and the Old Pinnacles Trailhead. The Chaparral Day Use Area on the west side has three trailheads: Balconies Trail, Juniper Canyon Trail, and North Wilderness Trail. The Chaparral Area also has restrooms, wayfinding and interpretive signage, a picnic area, and 56-car parking lot.

State Route 146 ends at the park entrance, near the West Side VCS. The road continues inside the park another two miles, ending at the Chaparral Area and existing park trailheads, picnic area, and restrooms (*Figure 3*). There are a picnic area and restrooms at the Chaparral Area. The road that connects the VCS and Chaparral Area is a one lane curvy road without shoulders that is unsafe for hiking. The Chaparral Ranger Station was removed in 2012 due to its location in flood prone and environmentally sensitive area. The new West Side VCS has a staffed information desk, interpretive and informational displays, space for classes and programs, public restrooms and water fountains. There are currently no trails at the VCS.

Accessibility

Because of the rugged volcanic terrain, most natural areas of Pinnacles National Park are not easily accessible beyond developed areas to visitors with physical disabilities or other mobility challenges. On the east side of the park, a section of the Bench Trail that starts at the Peaks View Picnic Area (east side) has been hardened and graded for some wheelchair access. There are no accessible trails on the west side. Chaparral Area offers views of Pinnacles rock formations from the parking lot and picnic area. The visitor center and VCS are fully accessible. The West Side VCS offers tactile displays, Braille translations of interpretive display text and an audio tour of the interpretive displays.

Parking, Access and Circulation

State Route 146 is located in Monterey and San Benito Counties, serving as an entryway to the Pinnacles National Park from both the Salinas Valley on the west and off of State Route 25 on the east. There are no connecting roads between the two entrances of Pinnacles National Park. The western part of Route 146 passes from U.S. Route 101 near Soledad to the west area of Pinnacles, terminating at the west boundary of Pinnacles National Park. The final five miles of road before ending at the boundary are narrow and winding and shrinks to one lane at some points. It is owned and maintained by the State of California. Lack of easements has prevented improvements such as widening shoulders or expanding parking areas outside of the boundary (NPS 2012).

The West Side VCS has a parking lot with a capacity for 40 cars and two RVs or buses. Two parking spaces are accessible. The park does not have specific data on parking, but has observed that visitors who park at the VCS stay only a short time as they obtain information from the VCS, view the few exhibits, or use the restroom facilities.

The Chaparral lot has 56 spaces and the overflow lot has 75 parking spaces. The overflow lot, located .3 miles from the Chaparral lot, is open occasionally throughout the year when the Chaparral lot is full. On the holiday weekends of Memorial Day, Fourth of July, and Labor Day all west side parking lots, including the VCS lot, are full between approximately noon and 4:00 p.m. When the Chaparral and overflow lots are full, NPS rangers line vehicles up to wait for an available parking space. This line starts at the end of the VCS lot, and sometimes NPS rangers close the park road until parking spaces open up. The wait can be from two to four hours. Some visitors enter the VCS while a driver waits with the vehicle; others opt not to wait and leave the park with a refund. Some visitors park at the VCS lot and walk two miles to the Chaparral Area, on a narrow road that has no shoulders (NPS 2015g).

Environmental Impacts

Alternative A- No Action

The No Action alternative and the existing condition adversely affect the visitor experience on the west side of Pinnacles National Park. This impact is noticeable deficiency to visitor services on the west side. Visitors want and expect to be able to park at a visitor center, learn about the resources in the park, and then take a hike. This experience is currently missing on the west side, and can result in frustrated and lost visitors. Some visitors attempt to hike on the social trails that start from the interpretive plaza, but instead of walking on a stable trail with views, they find themselves navigating a hillside covered in dense vegetation. The potential exists for visitors to get lost or hurt navigating the hillside off of an established trail. Visitors are not able to learn about park resources as they are seen on the trail. Visitors must return to the vehicles and drive two miles farther to reach the Chaparral Area and trailheads. Or, visitors may still opt to walk down the park road from the VCS to reach Chaparral. Either scenario presents visitors with inconvenient or a potentially hazardous situation.

When the Chaparral and overflow parking lots fill up on holiday weekends, cars can be held at the VCS lot. Since there are no trails, some visitors spend a short amount of time in the VCS while waiting to park; others choose to remain in their cars, which is an extremely unpleasant experience for visitors.

Cumulative Impacts: Relocating the Chaparral Ranger Station and the West Side VCS with no associated trails has created adverse effects to the visitor experience. Combined with the No Action alternative, these adverse effects would persist. If the Chaparral parking lot is removed in the future (per the GMP) and there are no trails from the VCS, there could be serious adverse impacts to the visitor experience. If the Chaparral lot is damaged and closed due to flooding and a replacement parking has not already been established elsewhere on the west side, then visitors would either have to park at the overflow lot or the VCS lot. Without a trail at the VCS, there would be fewer options to reach the west side trailheads. The overflow and VCS lots would then fill faster due to decreased parking availability. The overflow lot would likely fill first, and then visitors would hike the .3 mile trail to the other trailheads at the Chaparral Area. A portion of this trail is steep and eroding and currently intended for limited use, so this could result in some hazardous conditions for hikers. If visitors park at the VCS lot, there is no way to reach the trailheads except walking down the narrow windy road to Chaparral. Visitors would perceive this as an adverse cumulative impact. A future shuttle service could lessen this adverse impact.

If the Chaparral parking is relocated, visitors would still have to walk from the parking lots or down the road. There would be more parking in this scenario, and as such, negative effects to the visitors would be lessened, but the same negative cumulative impacts still exist from the lack of a trail from the VCS to other west side trailheads. There would be no cumulative impacts associated with no action combined with construction of a campground or larger trail network.

Alternative B- Proposed Action (Preferred)

Construction of both trails would substantially improve the visitor experience on the west side of Pinnacles National Park. Construction of an accessible trail fills a void in the current trail system and allows a broader audience to access and experience the park. These visitors would get many of the key visitor park experiences on one trail: viewing the scenic character and wild vistas of the park, bird watching and viewing wildflowers, wildlife and historic landscapes. The accessible trail not only creates recreational opportunities for visitors with disabilities, but also for seniors, families with small children or strollers, or others who cannot walk long distances. The accessible trail also creates opportunities for new programs, such as night sky/astronomy talks or school programs. The accessible trail route, despite its short length, would provide visitors an opportunity to experience four or five distinct and characteristic habitat types in the park, each with its own suite of native wildflowers, trees and shrubs.

The connector trail also provides a variety of benefits. It gives visitors an additional trail option, allows hikers the opportunity to see views not available elsewhere in the park, and provides an essential link to the other west side trail heads at Chaparral. The connector trail would provide visitors with a full array of terrain and views, including Pinnacles' rock formations, cultural landscapes, abundant spring wildflowers, and blue oak and juniper woodlands (*Figure 5*). The Alternative B alignment would be cited below "the Fingers" formation, allowing visitors to hike in the shade. The trail would also be designed to be physically appealing short steep sections would be balanced by long gradual stretches.

On busy weekends, when the other lots are full, visitors could park at the VCS lot and hike the connector trail to reach other west side trailheads. This would benefit those who want to get out of their cars and enjoy a hike around the VCS area. It could also slightly reduce the wait time for the cars in line waiting for parking during busy holiday weekends. The proposed action would not increase parking capacity on the west side because it is not anticipated that the new trails would adversely affect the existing parking issue or significantly reduce the availability of parking on the west side. The rationale for this determination is due to the fact that visitation on the west side is very low except for three holiday weekends. Further, NPS Management Policies Section 9.2.4 states that parking areas "will be limited to the smallest size appropriate" and "sized not for the peak use day, but rather for the use anticipated on the average weekend day during the peak season of use." The current parking lots are sized in accordance with this policy.

The project could result in some noticeable adverse impacts to parking availability in the VCS lot, throughout the year. Other than the holiday weekends, the VCS is rarely, if ever, full. Currently, vehicle turnover in the VCS lot is high, since visitors usually spend a short amount of time in the lot and then proceed to the Chaparral Area. With the addition of the new trails, visitors would spend a longer time hiking in the VCS area, leading to less vehicle turnover. The park does not expect that this situation would

result in a serious parking issue since the addition of these two trails is not expected to dramatically increase the existing low levels of west side park visitation.

Further, visitation counts have not shown that the addition of services in any area of the park has resulted in any sharp spikes in visitation. Park staff estimate that visitation grew only slightly with the change of designation from national monument to national park. The addition of the accessible trail may attract a different population of user, but it is not expected to be a substantial increase. The park would monitor use, and mark additional spaces as accessible if needed. Overall, people visit Pinnacles National Park to hike, and usually select the trail once they arrive. If the VCS lot is full, the other west side lots may still have spaces available.

Construction would have little effect on visitors. The trails are mostly out of the public view, in areas not currently open to the public. The duration of construction noise would be a maximum of 10 hours each day, Monday through Friday. If soil is staged and stored at the overflow parking lot, there could be some small traffic delays while driving down the two mile curvy road, since there is no passing allowed.

Cumulative Impacts: If the Chaparral lot is damaged and closed due to flooding and replacement parking has not already been established elsewhere on the west side, then visitors would either have to park at the overflow lot or the VCS lot. The addition of the connector trail would benefit visitors by providing a trail connection down to the Chaparral Area. Construction of additional West Side trails, as approved in the GMP, would provide visitors with additional recreational benefits by providing opportunities to experience the park. As more trails are constructed, the parking lots could start to fill up more often than three weekends each year, adversely impacting the visitor experience and parking; these effects could be substantial and long-term until additional parking (if deemed appropriate), is constructed. Providing a walk-in campground or shuttle service, when combined with this project, would create even more benefits for visitors. Visitors would be able to hike down and take the shuttle back to the VCS. The connector trail traverses the area described in the GMP as a potential location for the campground, but states the GMP that future site planning would be completed to determine specific locations. Potential impacts to archeological resources may require the campground to be located elsewhere. Other locations would be examined in the future.

Alternative C - Accessible Loop and Non-Wilderness Connector

The effects of Alternative C are similar to Alternative B, but there are some differences. This connector trail alignment would be very steep, with consecutively stacked switchbacks for the majority of the trail. Trails should avoid or minimize the number and frequency of switchbacks because they lengthen the trail, are boring to walk, and are often shortcut by hikers (NPS 1996, USFS 2007, Tennessee 2007). This degrades the visitors' trail experience. Short-cutting the trail would lead to trampling of vegetation and erosion, which would impact the natural visual experience on the trail. Short-cutting the trail also has the potential to be dangerous for visitors where steep drop-offs exist.

The switchback and steepness of the trail could also make it more challenging and less appealing to visitors. This conflicts with the goals of the project, since the purpose is to provide a user-friendly connection between the west side VCS and the other west side trails at the Chaparral area.

Because the trail would be exposed and visible from the High Peaks area, the experience of visitors hiking in that area would be adversely impacted. One of the important aspects of the High Peaks vista is the ability to see natural and untrammled land in all directions. Seeing a trail cut into the landscape, particularly one that has trampled vegetation and erosion slopes, could degrade this experience.

Cumulative Impacts: The cumulative impacts of Alternative C are similar to Alternative B, but would be greater because the connector trail alignment has larger overall impacts to the visitor experience.

SECTION 4: CONSULTATION AND COORDINATION

The NPS consulted with the public on the project during scoping, as discussed in Section 1. Public comments were considered during the development of the alternatives and EA. Internal scoping with NPS staff occurred during the duration of the planning process. Agency scoping was conducted as well and letters were sent to the State Historic Preservation Office, US Fish and Wildlife Service, Army Corps of Engineers, Regional Water Quality Control Board, and the CA Department of Fish and Wildlife.

Tribal organizations received letters requesting feedback on the project. One general letter was received from Ohlone/Costanoan-Esselen Nation that requested notice of projects for which the park was the lead agency under the California Environmental Quality Act.

Below is a summary of the consultation and permitting requirements for the project.

State Historic Preservation Office (SHPO)

A letter was sent to the CA SHPO on June 24, 2015 initiating consultation. SHPO responded in a letter on July 17, 2015 requesting additional clarification of the project's APE. This was subsequently sent. January 25, 2015 the park sent a letter identifying affected historic properties with accompanying historic and archeological documentation. Consultation remains in progress.

US Fish and Wildlife Service

The NPS made the determination that the project would be not likely to adversely affect federally listed species because 1) none are known to inhabit the area; 2) the project does not contain critical habitat; and 3) contractors would receive training on protocols if a listed species are encountered during construction. The NPS sent the USFWS a letter on February 18, 2016 with a request for concurrence with this determination.

Army Corps of Engineers

Under Section 404 of the Clean Water Act (33U.S.C. 1344), the U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material to Waters of the U.S., including wetlands. The NPS consulted with the Army Corps of Engineers, San Francisco District at the project site on October 14, 2015. Construction of bridges, with all structures above the mean high water mark, would be outside of the USACE jurisdiction. Rock/armored bank crossings would require Section 404 and 401 permits. Since the project proposes bridge crossings, no further consultation with the USACE is needed.

Regional Water Quality Control Board

The RWQCB regulates all surface and groundwater in the state of California. The NPS also consulted with the Central Coast Regional Water Quality Control Board (RWQCB), and the parties had a conference call on the project on November 2, 2015. As a result of this conversation (and the park proposing a bridge instead of rock crossing), it was determined that no further consultation with the RWQCB was needed.

This EA will be available for formal public and agency review for 30 days. Interested individuals, agencies, and organizations will be notified of its availability. The EA will be available for public review at <http://parkplanning.nps.gov/pinn/westsidetrails>. Copies of the EA will also be available at the Soledad Branch Library, King City Library, and San Benito County Library. The EA will be available upon request.

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Appendix A. Minimum Requirements Decision Guide (MRDG) for Wilderness

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ARTHUR CARHART NATIONAL WILDERNESS TRAINING CENTER

MINIMUM REQUIREMENTS DECISION GUIDE

WORKBOOK

"...except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act..."

-- The Wilderness Act of 1964

Project Title: Provide Hiking Access from West VCS to Chaparral Trailheads

MRDG Step 1: Determination

Determine if Administrative Action is Necessary

Description of the Situation

What is the situation that may prompt administrative action?

Hiking access from the new visitor contact station needs to be provided in order to connect the visitor contact station to the Chaparral trailheads per the 2013 General Management Plan.

Action is needed now because there are no formal trails that start from the recently constructed West Side VCS. The absence of trails impacts both the visitor experience and park resources. Without a formalized trail, visitors hike around the VCS and create their own 'social' trails, which results in damage to native vegetation, contributes to erosion, and threatens the cultural landscape of nearby historic sites. There is, however, a trailhead constructed as part of the interpretive plaza at the VCS that inadvertently leads hikers to a social trail, exacerbating the problem. The 2001 EA for the project to Relocate West Side Maintenance Facility and Visitor Contact Station (VCS) disclosed potential impacts to cultural resources since a trails were not included in the project, and stated "public visitation would not be encouraged until a plan for the site is developed." Further, when the park road is closed, visitors have no way to reach Chaparral and the other park trailheads. The connector would provide a safe trail to that area.

In addition to causing resource damage, a lack of trails at the VCS is also frustrating and potentially dangerous for park visitors. From the VCS, there is no safe way to access the hiking trails within the park by foot. The road that connects the visitor contact station and Chaparral Area is a one-lane curvy road without shoulders or sidewalks that is unsafe for hiking. However, some visitors opt to walk down this dangerous road anyway, particularly if the Chaparral and overflow lots are full. A connector trail is needed to provide a safe, scenic and enjoyable trail for visitors to hike to existing park trailheads.

Options Outside of Wilderness

Can action be taken outside of wilderness that adequately addresses the situation?

YES

NO

EXPLAIN & COMPLETE STEP 1 OF THE MRDG

Explain:

There is an option outside of wilderness, but it does not adequately address the situation. Options for trail corridors are limited due to the area's steep topography, and are located on opposite sides of Jawbone Canyon. The alignment within wilderness minimizes impacts to the views as seen from the Hain Wilderness, particularly the High Peaks integral vista. The non-wilderness alternative, although not constructed within designated wilderness, would be almost entirely within the viewshed of the High Peaks area of the Hain Wilderness. The ridge and open meadow provide little to no opportunity to conceal the trail, which would have a large impact on the High Peaks integral vista.

Criteria for Determining Necessity

Is action necessary to meet any of the criteria below?

A. Valid Existing Rights or Special Provisions of Wilderness Legislation

Is action necessary to satisfy valid existing rights or a special provision in wilderness legislation (the Wilderness Act of 1964 or subsequent wilderness laws) that **requires** action? Cite law and section.

YES

NO

Explain:

No special provision is included for the construction of trails or trail structures in Section 4d of the Wilderness Act.

B. Requirements of Other Legislation

Is action necessary to meet the requirements of other federal laws? Cite law and section.

 YES NO

Explain:

H.R. 3641 December 30, 2012 To establish Pinnacles National Park in the State of California as a unit of the National Park System, and for other purposes

Sec. 3 Establishment of Pinnacles National Park

(a) Establishment and purpose

There is hereby established Pinnacles National Park in the State of California for the purposes of—
(1) preserving and interpreting for the benefit of future generations the chaparral, grasslands, blue oak woodlands, and majestic valley oak savanna ecosystems of the area, the area's geomorphology, riparian watersheds, unique flora and fauna, and the ancestral and cultural history of native Americans, settlers and explorers

C. Wilderness Character

Is action necessary to preserve one or more of the qualities of wilderness character including: *Untrammeled, Undeveloped, Natural, Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation, or Other Features of Value?*

UNTRAMMELED

 YES NO

Explain:

Not applicable.

UNDEVELOPED

 YES NO

Explain:

If no action is taken in wilderness, the wilderness will remain natural. Because the trail would be almost entirely within the viewshed of the High Peaks area of the Hain Wilderness, it greatly affects the High Peaks integral vista. The High Peaks vista is integral to the visitor experience and has scientific value. The High Peaks area includes the most popular trails for visitors which provide undeveloped views in all directions. The scientific value of this vista is associated with the geologic story of the monument. Further, the trail corridor has extensive rock outcroppings which would require blasting or drilling; this unnaturally broken rock would further impact the viewshed.

NATURAL

 YES NO

Explain:

No action is taken in wilderness, the wilderness will remain natural. Because the trail would be almost entirely within the viewshed of the High Peaks area of the Hain Wilderness, it greatly affects the natural character of the High Peaks integral vista. The High Peaks vista is integral to the visitor experience and has scientific value. The High Peaks area includes the most popular trails for visitors which provide views in all directions. The scientific value of this vista is associated with the geologic story of the monument. Further, the trail corridor has extensive rock outcroppings which would require blasting or drilling; this unnaturally broken rock would further impact the viewshed.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

 YES NO

Explain:

Not applicable.

OTHER FEATURES OF VALUE

 YES NO

Explain:

The trail alignment will avoid preserve the viewshed from the High Peaks area of the Hain Wilderness and provide a safe method for visitors to hike from the VCS to Chaparral on a trail that allows for the least resource damage.

Step 1 Determination

Is administrative action necessary in wilderness?

Decision Criteria

- A. Existing Rights or Special Provisions
- B. Requirements of Other Legislation
- C. Wilderness Character
 - Untrammeled
 - Undeveloped
 - Natural
 - Outstanding Opportunities
 - Other Features of Value

Summary Responses

Action IS NOT necessary to meet this criterion.

Action IS necessary to meet this criterion.

Action IS NOT necessary to meet this criterion.

Action IS NOT necessary to meet this criterion.

Action IS NOT necessary to meet this criterion.

Action IS NOT necessary to meet this criterion.

Action IS necessary to meet this criterion.

Is administrative action necessary in wilderness?

 YES

EXPLAIN & PROCEED TO STEP 2 OF THE MRDG

 NO

Explain:

Administrative action is necessary to satisfy the 2013 General Management Plan by providing access from the new visitor contact station with the existing trail system.

Alternative trail alignments would negatively affect the viewshed from the High Peaks and cause greater resource damage due to construction in steeper terrain. They would put the trail through heavy brush on a hillside that is not shaded and very hot for hiking.

Project Title: Provide Hiking Access from West VCS to Chaparral Trailheads

MRDG Step 2

Determine the Minimum Activity

Other Direction

Is there "special provisions" language in legislation (or other Congressional direction) that explicitly **allows** consideration of a use otherwise prohibited by Section 4(c)?

AND/OR

Has the issue been addressed in agency policy, management plans, species recovery plans, or agreements with other agencies or partners?

YES

DESCRIBE OTHER DIRECTION BELOW

NO

Describe Other Direction:

"2006 Management Policies, The Guide to Managing the National Park Service" (2006):
Trails will be permitted within wilderness when they are determined necessary for resource protection and/or for providing for visitor use for the purpose of wilderness. p.84, 6.3.10.2

Trail maintenance structures (such as water bars, gabions) may be provided, under minimum requirement protocols, where they are essential for resource preservation or where significant safety hazards exist during normal periods. p. 85, 6.3.10.2

Draft General Management Plan and Environmental Assessment October 2012 (p.80):
New trail connections would be developed, including a trail to link the visitor contact station with the existing trail system.

Time Constraints

What, if any, are the time constraints that may affect the action?

No time constraints affect the action at this time.

Components of the Action

What are the discrete components or phases of the action?

Component X	<i>Example: Transportation of personnel to the project site</i>
Component 1	Brushing of trail alignment
Component 2	Benching of trail alignment
Component 3	Construction of erosion control and other trail features
Component 4	Construct Bridge(s)
Component 5	Construct Armored Wash Crossing
Component 6	
Component 7	
Component 8	
Component 9	

Proceed to the alternatives.

Refer to the [MRDG Instructions](#) regarding alternatives and the effects to each of the comparison criteria.

Project Title: Provide Hiking Access from West VCS to Chaparral Trailheads

MRDG Step 2: Alternatives

Alternative 1: No action alternative

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

No trail will be constructed between the West Visitor Contact Station and Chaparral Trailhead Area. The area between the West Visitor Contact Station and the Chaparral Trails will remain available for guest to navigate independently. This would create a safety hazard to visitors. Visitors creating their own trails through the canyon will inevitably cause unnecessary resource damage.

Component Activities

How will each of the components of the action be performed under this alternative?

	Component of the Action	Activity for this Alternative
X	<i>Example: Transportation of personnel to the project site</i>	<i>Example: Personnel will travel by horseback</i>
1	Brushing of trail alignment	No brushing will take place
2	Benching of trail alignment	No benching will take place
3	Construction of erosion control and other trail features	No construction will take place
4	Construct Bridge(s)	No bridges
5	Construct Armored Wash Crossing	No armored crossing
6		
7		
8		
9		

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	No brushing will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	No benching will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	No construction will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	No bridges	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	No armored crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	0	NE
Untrammed Total Rating		0		

Explain:

No action is taken, the area will remain untrammed.

UNDEVELOPED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	No brushing will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	No benching will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	No construction will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	No bridges	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	No armored crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	0	NE
Undeveloped Total Rating		0		

Explain:

No action is taken, the area will remain undeveloped.

NATURAL

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	No brushing will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	No benching will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	No construction will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	No bridges	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	No armored crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	0	NE
Natural Total Rating		0		

Explain:

No action is taken, the area will remain natural

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	No brushing will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	No benching will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	No construction will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	No bridges	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	No armored crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	0	NE
Solitude or Primitive & Unconfined Recreation Total Rating		0		

Explain:

No action is taken however the area will remain available to guest for solitude or primitive and unconfined recreation.

OTHER FEATURES OF VALUE

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	No brushing will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	No benching will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	No construction will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	No bridges	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	No armored crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	0	NE
Other Features of Value Total Rating		0		

Explain:

No action is taken

Traditional Skills

What is the effect of each component activity on traditional skills?

TRADITIONAL SKILLS

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	No brushing will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	No benching will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	No construction will take place	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	No bridges	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	No armored crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	0	NE
Traditional Skills Total Rating		0		

Explain:

No trail will be constructed.

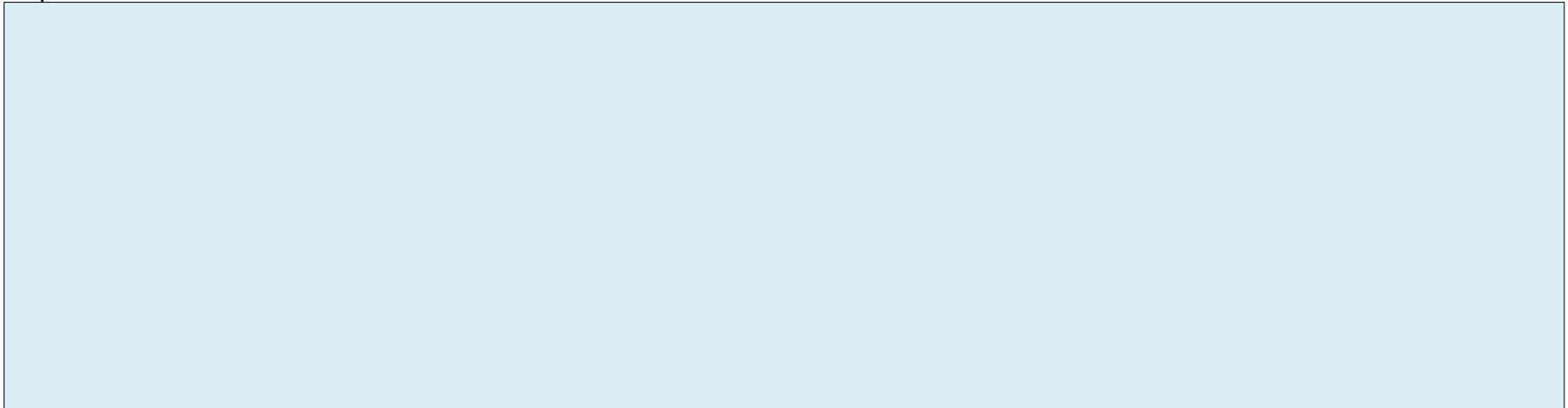
Economics

What is estimated cost of each component activity?

COST

Component Activity for this Alternative		Estimated Cost
X	<i>Example: Personnel will travel by horseback</i>	\$1,900
1	No brushing will take place	\$0
2	No benching will take place	\$0
3	No construction will take place	\$0
4	No bridges	\$0
5	No armored crossing	
6		
7		
8		
9		
Total Estimated Cost		\$0

Explain:



Safety of Visitors & Workers

What is the risk of this alternative to the safety of visitors and workers? What mitigation measures will be taken?

RISK ASSESSMENT Severity of Accident	Probability of Accident				
	Frequent	Likely	Common	Unlikely	Rare
Catastrophic: Death or permanent disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Critical: Permanent partial disability or temporary total disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Marginal: Compensable injury or illness, treatment, lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Negligible: Superficial injury or illness, first aid only, no lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Risk Assessment	Low Risk				

Explain:

No trail will be constructed. Cuts, scratches and scrapes may be frequent to guest navigating the brush. Sprains and strains may occur to some guest on the steep terrain between the West Side Visitor Contact Station and the Chaparral Trail Heads.

Summary Ratings for Alternative 1	
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Wilderness Character	
Untrammeled	0
Undeveloped	0
Natural	0
Solitude or Primitive & Unconfined Recreation	0
Other Features of Value	0
Wilderness Character Summary Rating	0

Traditional Skills	
Traditional Skills	0

Economics	
Cost	\$0

Safety of Visitors & Workers	
Risk Assessment	Low Risk

Project Title: Provide Hiking Access from West VCS to Chaparral Trailheads

MRDG Step 2: Alternatives

Alternative 2: Construct west side connector trail with erosion controls and armored stream bank crossings

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

Construct the connector trail utilizing hand tools such as loppers, saws and pick-mattocks to brush the trail alignment. Bench the trail route using hand tools such as pick-mattocks, mcclouds, rock bars and shovels. Construct erosion control features where needed along the entire connector trail using traditional tools such as single jack hammers, double jack hammers, chisels, grip hoist, rock bars, shovels, pick mattocks, blocks, mccloud's and other hand tools. Erosion control features will include water bars, check steps, dry stone walls, switchbacks and trail drains. Construct stream crossings using armored drain pans and armor the stream banks to prevent erosion. Install check steps into and out of the stream crossing to ensure visitors can utilize the crossings safely.

This option will exclusively utilize the use of primitive hand tools, which are approved in the Wilderness Act and is included in the MRA due to the erosion control features being installed along the trail alignment and wash crossings.

The connector trail would be sited lower than “The Fingers” formations for a large portion of the route, screening it from the view of visitors in designated wilderness. This trail location would provides protection for one of Pinnacles National Park two designated integral vistas. “Integral vistas” are views from inside a mandatory Class I airshed area looking outward to specific important panoramas or landmarks beyond the class I area’s boundaries, where views have scenic, scientific, or cultural importance to the class I area. The High Peaks vista is integral to the visitor experience and has scientific value. The High Peaks area includes the most popular trails for visitors which provide views in all directions. The scientific value of this vista is associated with the geologic story of the monument.

Component Activities

How will each of the components of the action be performed under this alternative?

	Component of the Action	Activity for this Alternative
X	<i>Example: Transportation of personnel to the project site</i>	<i>Example: Personnel will travel by horseback</i>
1	Brushing of trail alignment	Loppers, saws, pick-mattocks
2	Benching of trail alignment	Pick-mattocks, mcclouds, rock bars and shovels
3	Construction of erosion control and other trail features	Hand tools and construct features of stone
4	Construct Bridge(s)	N/A
5	Construct Armored Wash Crossing	Hand tools and construct features of stone
6		
7		
8		
9		

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Untrammed Total Rating		-4		

Explain:

The trail corridor and associated structures will compromise the untrammed character of the Hain Wilderness.

UNDEVELOPED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Undeveloped Total Rating		-4		

Explain:

The trail corridor and associated structures will be compromising the undeveloped character of the Hain Wilderness.

NATURAL

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Natural Total Rating		-4		

Explain:

The trail corridor and associated structures will be compromising the natural character of the Hain Wilderness.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Solitude or Primitive & Unconfined Recreation Total Rating		-4		

Explain:

The trail corridor and associated structures will allow more access to the wilderness and compromise solitude or primitive and unconfined recreation.

OTHER FEATURES OF VALUE

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	1	NE
Other Features of Value Total Rating		-1		

Explain:

Historic armoring is located at the location of the upper stream crossing. This historic armoring will be altered by the construction of new armoring for the purpose of the stream crossing.

The contextual information we know about the road is that it was being used at least up through the 1920's. A reliable end date for its use might be the construction of the dam beginning in 1934, since the road leads right into the reservoir. The road is mentioned by the first monument custodian Herman Hermansen in the 1920's and appears to be a feature that existed prior to his arrival.

The road segment was surveyed and documented by the Sonoma State archeologists in 2014 when they surveyed the Lyons Homestead and Melville Mine sites for the Jawbone trail project. They determined that it is a non-contributing feature to those historic sites, but the park should manage the road as a historically significant feature even though it has no formal status.

Information provided by Timothy Babalis, Environmental Historian

Traditional Skills

What is the effect of each component activity on traditional skills?

TRADITIONAL SKILLS

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand tools and construct features of stone	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		4	0	NE
Traditional Skills Total Rating		4		

Explain:

Traditional tools, skills and techniques will be utilized in the construction of the connector trail.

Economics

What is estimated cost of each component activity?

COST

Component Activity for this Alternative		Estimated Cost
X	<i>Example: Personnel will travel by horseback</i>	\$1,900
1	Loppers, saws, pick-mattocks	x
2	Pick-mattocks, mcclouds, rock bars and shovels	y
3	Hand tools and construct features of stone	z
4	N/A	
5	Hand tools and construct features of stone	\$16,000
6		
7		
8		
9		
Total Estimated Cost		\$16,000

Explain:

Throughout this MRDG the options stay the same for brushing, benching and constructing erosion control features. No alternative was assessed to construct the trail without erosion control features as the trail would be unsustainable, become a location for erosion and cause resource damage. Those cost are represented by X,Y and Z and will be weighted with either a static, positive or negative value depending on the alternative.

The stream crossings differ in construction techniques and cost and are estimated on labor and material.

Armored stream crossings = 4 weeks construction per crossing (Gathering and installing stone)

Safety of Visitors & Workers

What is the risk of this alternative to the safety of visitors and workers? What mitigation measures will be taken?

RISK ASSESSMENT Severity of Accident	Probability of Accident				
	Frequent	Likely	Common	Unlikely	Rare
Catastrophic: Death or permanent disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Critical: Permanent partial disability or temporary total disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Marginal: Compensable injury or illness, treatment, lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Negligible: Superficial injury or illness, first aid only, no lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Risk Assessment	Low Risk				

Explain:

Trail construction has a negligible risk due to the nature of the work. Greater than negligible risk will be avoided through proper tool use and the use of required personal protective equipment.

Summary Ratings for Alternative 2

Wilderness Character	
Untrammeled	-4
Undeveloped	-4
Natural	-4
Solitude or Primitive & Unconfined Recreation	-4
Other Features of Value	-1
Wilderness Character Summary Rating	-17

Traditional Skills	
Traditional Skills	4

Economics	
Cost	\$16,000

Safety of Visitors & Workers	
Risk Assessment	Low Risk

Project Title: Provide Hiking Access from West VCS to Chaparral Trailheads

MRDG Step 2: Alternatives

Alternative 3: Construct west side connector trail with erosion controls and bridges at stream crossings

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

Construct the connector trail utilizing hand tools such as loppers, saws, pick-mattocks etc. to brush the trail alignment. Bench the trail route using hand tools such as pick-mattocks, rock bars and shovels. Construct erosion control features where needed along the entire connector trail using traditional tools such as single jack hammers, double jack hammers, chisels, grip hoist, rock bars, shovels, pick mattocks, blocks, McLeod's and other hand tools. Erosion control features will include water bars, check steps, dry stone walls, switchbacks and trail drains. Construct bridges to span the stream/wash crossings. Bridge abutments will be constructed outside of the stream level under normal conditions.

This option will only utilize the use of primitive hand tools which are approved in wilderness legislation and is included in the MRA due to the erosion control features being installed along the trail alignment as well as the bridges crossing the stream.

The connector trail would be sited lower than "The Fingers" formations for a large portion of the route, screening it from the view of visitors in designated wilderness. This trail location would provide protection for one of Pinnacles National Park two designated integral vistas. "Integral vistas" are views from inside a mandatory Class I airshed area looking outward to specific important panoramas or landmarks beyond the class I area's boundaries, where views have scenic, scientific, or cultural importance to the class I area. The High Peaks vista is integral to the visitor experience and has scientific value. The High Peaks area includes the most popular trails for visitors which provide views in all directions. The scientific value of this vista is associated with the geologic story of the monument.

Component Activities

How will each of the components of the action be performed under this alternative?

	Component of the Action	Activity for this Alternative
X	<i>Example: Transportation of personnel to the project site</i>	<i>Example: Personnel will travel by horseback</i>
1	Brushing of trail alignment	Loppers, saws, pick-mattocks
2	Benching of trail alignment	Pick-mattocks, mcclouds, rock bars and shovels
3	Construction of erosion control and other trail features	Hand tools and construct features of stone
4	Construct Bridge(s)	construct bridges using hand tools
5	Construct Armored Wash Crossing	N/A
6		
7		
8		
9		

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	construct bridges using hand tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Untrammeled Total Rating		-4		

Explain:

The trail corridor and associated structures will compromise the untrammeled character of the Hain Wilderness

UNDEVELOPED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	construct bridges using hand tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Undeveloped Total Rating		-4		

Explain:

The trail corridor and associated structures will be compromising the undeveloped character of the Hain Wilderness.

NATURAL

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	construct bridges using hand tools	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	3	NE
Natural Total Rating		-3		

Explain:

The trail corridor and associated structures will be compromising the natural character of the Hain Wilderness. The bridges will span the stream crossing and have no effect on the stream. Further, installation of a bridge would provide long term protection from erosion and water quality. The banks of the stream are highly erodable. If visitors were continuously climbing in and out of the stream bed, the trail would become wider, most likely causing loss of vegetation and soils, which could then affect water quality.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	construct bridges using hand tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Solitude or Primitive & Unconfined Recreation Total Rating		-4		

Explain:

The trail corridor and associated structures will allow more access to the wilderness and compromise solitude or primitive and unconfined recreation.

OTHER FEATURES OF VALUE

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	construct bridges using hand tools	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	0	NE
Other Features of Value Total Rating		0		

Explain:

Bridge will not only span normal stream level but will also be constructed over historic armoring located along the road alignment that crossed in the same location. Spanning the historic armoring will have no effect on the historic structure.

The contextual information we know about the road is that it was being used at least up through the 1920's. A reliable end date for its use might be the construction of the dam beginning in 1934, since the road leads right into the reservoir. The road is mentioned by the first monument custodian Herman Hermansen in the 1920's and appears to be a feature that existed prior to his arrival.

The road segment was surveyed and documented by the Sonoma State archeologists in 2014 when they surveyed the Lyons Homestead and Melville Mine sites for the Jawbone trail project. They determined that it is a non-contributing feature to those historic sites, but the park should manage the road as a historically significant feature even though it has no formal status.

Information provided by Timothy Babalis, Environmental Historian

Traditional Skills

What is the effect of each component activity on traditional skills?

TRADITIONAL SKILLS

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	construct bridges using hand tools	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		4	0	NE
Traditional Skills Total Rating		4		

Explain:

Traditional tools, skills and techniques will be utilized in the construction of the connector trail. Any work requiring modern tools will be performed outside of wilderness.

Economics

What is estimated cost of each component activity?

COST

Component Activity for this Alternative		Estimated Cost
X	<i>Example: Personnel will travel by horseback</i>	\$1,900
1	Loppers, saws, pick-mattocks	x
2	Pick-mattocks, mcclouds, rock bars and shovels	y
3	Hand tools and construct features of stone	z
4	construct bridges using hand tools	\$20,000
5	N/A	
6		
7		
8		
9		
Total Estimated Cost		\$20,000

Explain:

Throughout this MRDG the options stay the same for brushing, benching and constructing erosion control features. No alternative was assessed to construct the trail without erosion control features as the trail would be unsustainable, become a location for erosion and cause resource damage. Those cost are represented by X,Y and Z and will be weighted with either a static, postive or negative value depending on the alternative.

The stream crossings differ in construction techniques and cost and are estimated on labor and material.

Bridges = 3 weeks construction per bridge x 2 people and additional labor for moving material when needed. (excavating abutments, pouring concrete, installing stringers and decking. Materials include; concrete, form material, bridge stringers, decking, associated hardware.

Safety of Visitors & Workers

What is the risk of this alternative to the safety of visitors and workers? What mitigation measures will be taken?

RISK ASSESSMENT Severity of Accident	Probability of Accident				
	Frequent	Likely	Common	Unlikely	Rare
Catastrophic: Death or permanent disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Critical: Permanent partial disability or temporary total disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Marginal: Compensable injury or illness, treatment, lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Negligible: Superficial injury or illness, first aid only, no lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Risk Assessment	Low Risk				

Explain:

Trail construction has a negligible risk due to the nature of the work. Greater than negligible risk will be avoided through proper tool use and the use of required personal protective equipment. Bridge crossings will provide the safest year round access for visitors. A bridge would also allow for safer access for stock animals.

Summary Ratings for Alternative 3

Wilderness Character	
Untrammeled	-4
Undeveloped	-4
Natural	-3
Solitude or Primitive & Unconfined Recreation	-4
Other Features of Value	0
Wilderness Character Summary Rating	-15

Traditional Skills	
Traditional Skills	4

Economics	
Cost	\$20,000

Safety of Visitors & Workers	
Risk Assessment	Low Risk

Project Title: Provide Hiking Access from West VCS to Chaparral Trailheads

MRDG Step 2: Alternatives

Alternative 4: Construct west side connector trail with erosion controls, one bridge and armored stream bank crossings

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

Construct the connector trail utilizing hand tools such as loppers, saws, pick-mattocks etc. to brush the trail alignment. Bench the trail route using hand tools such as pick-mattocks, rock bars and shovels. Construct erosion control features where needed along the entire connector trail using traditional tools such as single jack hammers, double jack hammers, chisels, grip hoist, rock bars, shovels, pick mattocks, blocks, McLeod's and other hand tools. Erosion control features will include water bars, check steps, dry stone walls, switchbacks and trail drains. Construct one bridge to span the stream/wash crossings at the upper crossing and armor the lower crossing. Bridge abutments will be constructed outside of the stream level under normal conditions.

This option will only utilize the use of primitive hand tools which are approved in wilderness legislation and is included in the MRA due to the erosion control features being installed along the trail alignment as well as the bridge and armored crossing at the stream.

This alternative is the result of a site visit and the determination that the historic armoring located at the upper crossing made that location best suited for a bridge and the terrain of the lower crossing is better suited for an armored crossing.

The connector trail would be sited lower than "The Fingers" formations for a large portion of the route, screening it from the view of visitors in designated wilderness. This trail location would provide protection for one of Pinnacles National Park two designated integral vistas. "Integral vistas" are views from inside a mandatory Class I airshed area looking outward to specific important panoramas or landmarks beyond the class I area's boundaries, where views have scenic, scientific, or cultural importance to the class I area. The High Peaks vista is integral to the visitor experience and has scientific value. The High Peaks area includes the most popular trails for visitors which provide views in all directions. The scientific value of this vista is associated with the geologic story of the monument.

Component Activities

How will each of the components of the action be performed under this alternative?

	Component of the Action	Activity for this Alternative
X	<i>Example: Transportation of personnel to the project site</i>	<i>Example: Personnel will travel by horseback</i>
1	Brushing of trail alignment	Loppers, saws, pick-mattocks
2	Benching of trail alignment	Pick-mattocks, mcclouds, rock bars and shovels
3	Construction of erosion control and other trail features	Hand tools and construct features of stone
4	Construct Bridge(s)	construct bridges using hand tools
5	Construct Armored Wash Crossing	Hand tools and construct features of stone
6		
7		
8		
9		

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	construct bridges using hand tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	5	NE
Untrammed Total Rating		-5		

Explain:

The trail corridor and associated structures will compromise the untrammed character of the Hain Wilderness

UNDEVELOPED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	construct bridges using hand tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	5	NE
Undeveloped Total Rating		-5		

Explain:

The trail corridor and associated structures will be compromising the undeveloped character of the Hain Wilderness.

NATURAL

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	construct bridges using hand tools	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Natural Total Rating		-4		

Explain:

The trail corridor and associated structures will be compromising the natural character of the Hain Wilderness.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	construct bridges using hand tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Hand tools and construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	5	NE
Solitude or Primitive & Unconfined Recreation Total Rating		-5		

Explain:

The trail corridor and associated structures will allow more access to the wilderness and compromise solitude or primitive and unconfined recreation.

OTHER FEATURES OF VALUE

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Hand tools and construct features of stone	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	construct bridges using hand tools	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand tools and construct features of stone	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	0	NE
Other Features of Value Total Rating		0		

Explain:

The bridge at the upper crossing will not only span normal stream level but will also be constructed over historic armoring located along the road alignment that crossed in the same location. Spanning the historic armoring will have no effect on the historic structure.

The contextual information we know about the road is that it was being used at least up through the 1920's. A reliable end date for its use might be the construction of the dam beginning in 1934, since the road leads right into the reservoir. The road is mentioned by the first monument custodian Herman Hermansen in the 1920's and appears to be a feature that existed prior to his arrival.

The road segment was surveyed and documented by the Sonoma State archeologists in 2014 when they surveyed the Lyons Homestead and Melville Mine sites for the Jawbone trail project. They determined that it is a non-contributing feature to those historic sites, but the park should manage the road as a historically significant feature even though it has no formal status.

Traditional Skills

What is the effect of each component activity on traditional skills?

TRADITIONAL SKILLS

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	Loppers, saws, pick-mattocks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Hand tools and construct features of stone	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	construct bridges using hand tools	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Hand tools and construct features of stone	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		5	0	NE
Traditional Skills Total Rating		5		

Explain:

Traditional tools, skills and techniques will be utilized in the construction of the connector trail. Any work requiring modern tools will be performed outside of wilderness.

Economics

What is estimated cost of each component activity?

COST

Component Activity for this Alternative		Estimated Cost
X	<i>Example: Personnel will travel by horseback</i>	\$1,900
1	Loppers, saws, pick-mattocks	x
2	Pick-mattocks, mcclouds, rock bars and shovels	y
3	Hand tools and construct features of stone	z
4	construct bridges using hand tools	\$10,000
5	Hand tools and construct features of stone	\$8,000
6		
7		
8		
9		
Total Estimated Cost		\$18,000

Explain:

Throughout this MRDG the options stay the same for brushing, benching and constructing erosion control features. No alternative was assessed to construct the trail without erosion control features as the trail would be unsustainable, become a location for erosion and cause resource damage. Those cost are represented by X,Y and Z and will be weighted with either a static, postive or negative value depending on the alternative.

The stream crossings differ in construction techniques and cost and are estimated on labor and material.

Bridges = 3 weeks construction per bridge x 2 people and additional labor for moving material when needed. (excavating abutments, pouring concrete, installing stringers and decking. Materials include; concrete, form material, bridge stringers, decking, associated hardware.

Armored stream crossings = 4 weeks construction per crossing (Gathering and installing stone)

Safety of Visitors & Workers

What is the risk of this alternative to the safety of visitors and workers? What mitigation measures will be taken?

RISK ASSESSMENT Severity of Accident	Probability of Accident				
	Frequent	Likely	Common	Unlikely	Rare
Catastrophic: Death or permanent disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Critical: Permanent partial disability or temporary total disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Marginal: Compensable injury or illness, treatment, lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Negligible: Superficial injury or illness, first aid only, no lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Risk Assessment	Low Risk				

Explain:

Trail construction has a negligible risk due to the nature of the work. Greater than negligible risk will be avoided through proper tool use and the use of required personal protective equipment.

Bridge crossings will provide the safest year round access for visitors and stick animals.

Summary Ratings for Alternative 4	
--	--

Wilderness Character	
Untrammeled	-5
Undeveloped	-5
Natural	-4
Solitude or Primitive & Unconfined Recreation	-5
Other Features of Value	0
Wilderness Character Summary Rating	-19

Traditional Skills	
Traditional Skills	5

Economics	
Cost	\$18,000

Safety of Visitors & Workers	
Risk Assessment	Low Risk

Project Title: Provide Hiking Access from West VCS to Chaparral Trailheads

MRDG Step 2: Alternatives

Alternative 5: Construct west side connector trail with erosion controls and armored stream bank crossings

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

Construct the connector trail utilizing hand tools and power tools such as loppers, saws, chain saws, weed eaters, pick-mattocks etc. to brush the trail alignment. Bench the trail route using hand tools such as pick-mattocks, rock bars and shovels. Construct erosion control features where needed along the entire connector trail using traditional tools such as single jack hammers, double jack hammers, chisels, grip hoist, rock bars, shovels, pick mattocks, blocks, McLeod's, drills, generators and other hand and power tools. Erosion control features will include water bars, check steps, dry stone walls, switchbacks and trail drains. Construct stream/wash crossings using armored drain pans and armor the stream banks to prevent erosion. Install check steps into and out of the stream/wash crossing to ensure visitors can utilize the crossings safely.

The connector trail would be sited lower than "The Fingers" formations for a large portion of the route, screening it from the view of visitors in designated wilderness. This trail location would provide protection for one of Pinnacles National Park two designated integral vistas. "Integral vistas" are views from inside a mandatory Class I airshed area looking outward to specific important panoramas or landmarks beyond the class I area's boundaries, where views have scenic, scientific, or cultural importance to the class I area. The High Peaks vista is integral to the visitor experience and has scientific value. The High Peaks area includes the most popular trails for visitors which provide views in all directions. The scientific value of this vista is associated with the geologic story of the monument.

Component Activities

How will each of the components of the action be performed under this alternative?

	Component of the Action	Activity for this Alternative
X	<i>Example: Transportation of personnel to the project site</i>	<i>Example: Personnel will travel by horseback</i>
1	Brushing of trail alignment	Loppers, saws, pick-mattocks, chain-saws, weed eaters
2	Benching of trail alignment	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks
3	Construction of erosion control and other trail features	Hand and power tools to construct features of stone
4	Construct Bridge(s)	N/A
5	Construct Armored Wash Crossing	Hand and power tools to construct features of stone
6		
7		
8		
9		

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Untrammed Total Rating		-4		

Explain:

The trail corridor and associated structures will compromise the untrammed character of the Hain Wilderness, the use of power tools during construction will negatively impact the wilderness during construction.

UNDEVELOPED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Undeveloped Total Rating		-4		

Explain:

The trail corridor and associated structures will be compromising the undeveloped character of the Hain Wilderness.

NATURAL

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Natural Total Rating		-4		

Explain:

The trail corridor and associated structures will be compromising the natural character of the Hain Wilderness, the use of power tools during construction will negatively impact the natural character of the wilderness during construction.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Solitude or Primitive & Unconfined Recreation Total Rating		-4		

Explain:

The trail corridor and associated structures will allow more access to the wilderness and compromise solitude or primitive and unconfined recreation, the use of power tools during construction will negatively impact the solitude in the wilderness during construction.

OTHER FEATURES OF VALUE

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	1	NE
Other Features of Value Total Rating		-1		

Explain:

Historic armoring is located at the location of the upper stream crossing. This historic armoring will be altered by the construction of new armoring for the purpose of the trail stream crossing.

The contextual information we know about the road is that it was being used at least up through the 1920's. A reliable end date for its use might be the construction of the dam beginning in 1934, since the road leads right into the reservoir. The road is mentioned by the first monument custodian Herman Hermansen in the 1920's and appears to be a feature that existed prior to his arrival.

The road segment was surveyed and documented by the Sonoma State archeologists in 2014 when they surveyed the Lyons Homestead and Melville Mine sites for the Jawbone trail project. They determined that it is a non-contributing feature to those historic sites, but the park should manage the road as a historically significant feature even though it has no formal status.

Information provided by Timothy Babalis, Environmental Historian

Traditional Skills

What is the effect of each component activity on traditional skills?

TRADITIONAL SKILLS

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Traditional Skills Total Rating		-4		

Explain:

The use of power tools diminishes the traditional skills utilized in the construction.

Economics

What is estimated cost of each component activity?

COST

Component Activity for this Alternative		Estimated Cost
X	<i>Example: Personnel will travel by horseback</i>	\$1,900
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	-\$1,000
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	y
3	Hand and power tools to construct features of stone	-\$2,000
4	N/A	
5	Hand and power tools to construct features of stone	\$15,000
6		
7		
8		
9		
Total Estimated Cost		\$12,000

Explain:

Throughout this MRDG the options stay the same for brushing, benching and constructing erosion control features. No alternative was assessed to construct the trail without erosion control features as the trail would be unsustainable, become a location for erosion and cause resource damage. Those cost are represented by X,Y and Z and will be weighted with either a static, positive or negative value depending on the alternative.

The stream crossings differ in construction techniques and cost and are estimated on labor and material.

Armored stream crossings = 4 weeks construction per crossing (Gathering and installing stone)

Brushing will be faster with the use of power tools, benching will remain the same and erosion control features/armored crossings will be completed in faster.

Safety of Visitors & Workers

What is the risk of this alternative to the safety of visitors and workers? What mitigation measures will be taken?

RISK ASSESSMENT Severity of Accident	Probability of Accident				
	Frequent	Likely	Common	Unlikely	Rare
Catastrophic: Death or permanent disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Critical: Permanent partial disability or temporary total disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Marginal: Compensable injury or illness, treatment, lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Negligible: Superficial injury or illness, first aid only, no lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Risk Assessment	Low Risk				

Explain:

Trail construction has a negligible risk due to the nature of the work. Greater than negligible risk will be avoided through proper tool use and the use of required personal protective equipment.

Summary Ratings for Alternative 5	
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Wilderness Character	
Untrammeled	-4
Undeveloped	-4
Natural	-4
Solitude or Primitive & Unconfined Recreation	-4
Other Features of Value	-1
Wilderness Character Summary Rating	-17

Traditional Skills	
Traditional Skills	-4

Economics	
Cost	\$12,000

Safety of Visitors & Workers	
Risk Assessment	Low Risk

Project Title: Provide Hiking Access from West VCS to Chaparral Trailheads

MRDG Step 2: Alternatives

Alternative 6: Construct west side connector trail with erosion controls and bridges at stream crossings

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

Construct the connector trail utilizing hand tools and power tools such as loppers, saws, chain saws, weed eaters, pick-mattocks etc. to brush the trail alignment. Bench the trail route using hand tools such as pick-mattocks, rock bars and shovels. Construct erosion control features where needed along the entire connector trail using traditional tools such as single jack hammers, double jack hammers, chisels, grip hoist, rock bars, shovels, pick mattocks, blocks, McLeod's, drills, generators and other hand and power tools. Erosion control features will include water bars, check steps, dry stone walls, switchbacks and trail drains. Construct bridges to span the stream/wash crossings. Bridge abutments will be constructed outside of the stream level under normal conditions.

The connector trail would be sited lower than "The Fingers" formations for a large portion of the route, screening it from the view of visitors in designated wilderness. This trail location would provide protection for one of Pinnacles National Park two designated integral vistas. "Integral vistas" are views from inside a mandatory Class I airshed area looking outward to specific important panoramas or landmarks beyond the class I area's boundaries, where views have scenic, scientific, or cultural importance to the class I area. The High Peaks vista is integral to the visitor experience and has scientific value. The High Peaks area includes the most popular trails for visitors which provide views in all directions. The scientific value of this vista is associated with the geologic story of the monument.

Component Activities

How will each of the components of the action be performed under this alternative?

	Component of the Action	Activity for this Alternative
X	<i>Example: Transportation of personnel to the project site</i>	<i>Example: Personnel will travel by horseback</i>
1	Brushing of trail alignment	Loppers, saws, pick-mattocks, chain-saws, weed eaters
2	Benching of trail alignment	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks
3	Construction of erosion control and other trail features	Hand and power tools to construct features of stone
4	Construct Bridge(s)	Construct bridges using hand and power tools
5	Construct Armored Wash Crossing	N/A
6		
7		
8		
9		

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Construct bridges using hand and power tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Untrammeled Total Rating		-4		

Explain:

The trail corridor and associated structures will compromise the untrammeled character of the Hain Wilderness, the use of power tools during construction will negatively impact the wilderness during construction.

UNDEVELOPED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Construct bridges using hand and power tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Undeveloped Total Rating		-4		

Explain:

The trail corridor and associated structures will be compromising the undeveloped character of the Hain Wilderness.

NATURAL

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Construct bridges using hand and power tools	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	3	NE
Natural Total Rating		-3		

Explain:

The trail corridor and associated structures will be compromising the natural character of the Hain Wilderness, the use of power tools during construction will negatively impact the natural character of the wilderness during construction.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Construct bridges using hand and power tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Solitude or Primitive & Unconfined Recreation Total Rating		-4		

Explain:

The trail corridor and associated structures will allow more access to the wilderness and compromise solitude or primitive and unconfined recreation, the use of power tools during construction will negatively impact the solitude in the wilderness during construction.

OTHER FEATURES OF VALUE

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Construct bridges using hand and power tools	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	0	NE
Other Features of Value Total Rating		0		

Explain:

Bridge will not only span normal stream level but will also be constructed over historic armoring located along the road alignment that crossed in the same location. Spanning the historic armoring will have no effect on the historic structure.

The contextual information we know about the road is that it was being used at least up through the 1920's. A reliable end date for its use might be the construction of the dam beginning in 1934, since the road leads right into the reservoir. The road is mentioned by the first monument custodian Herman Hermansen in the 1920's and appears to be a feature that existed prior to his arrival.

The road segment was surveyed and documented by the Sonoma State archeologists in 2014 when they surveyed the Lyons Homestead and Melville Mine sites for the Jawbone trail project. They determined that it is a non-contributing feature to those historic sites, but the park should manage the road as a historically significant feature even though it has no formal status.

Traditional Skills

What is the effect of each component activity on traditional skills?

TRADITIONAL SKILLS

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Construct bridges using hand and power tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Traditional Skills Total Rating		-4		

Explain:

The use of power tools diminishes the traditional skills utilized in the construction.

Economics

What is estimated cost of each component activity?

COST

Component Activity for this Alternative		Estimated Cost
X	<i>Example: Personnel will travel by horseback</i>	\$1,900
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	-\$1,000
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	y
3	Hand and power tools to construct features of stone	-\$2,000
4	Construct bridges using hand and power tools	\$18,000
5	N/A	
6		
7		
8		
9		
Total Estimated Cost		\$15,000

Explain:

Throughout this MRDG the options stay the same for brushing, benching and constructing erosion control features. No alternative was assessed to construct the trail without erosion control features as the trail would be unsustainable, become a location for erosion and cause resource damage. Those cost are represented by X,Y and Z and will be weighted with either a static, positive or negative value depending on the alternative.

The stream crossings differ in construction techniques and cost and are estimated on labor and material.

Bridges = 3 weeks construction per bridge x 2 people and additional labor for moving material when needed. (excavating abutments, pouring concrete, installing stringers and decking. Materials include; concrete, form material, bridge stringers, decking, associated hardware.

Brushing will be faster with the use of power tools, benching will remain the same and erosion control features/armored crossings will be completed in faster.

Safety of Visitors & Workers

What is the risk of this alternative to the safety of visitors and workers? What mitigation measures will be taken?

RISK ASSESSMENT Severity of Accident	Probability of Accident				
	Frequent	Likely	Common	Unlikely	Rare
Catastrophic: Death or permanent disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Critical: Permanent partial disability or temporary total disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Marginal: Compensable injury or illness, treatment, lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Negligible: Superficial injury or illness, first aid only, no lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Risk Assessment	Low Risk				

Explain:

Trail construction has a negligible risk due to the nature of the work. Greater than negligible risk will be avoided through proper tool use and the use of required personal protective equipment.

Summary Ratings for Alternative 6	
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Wilderness Character	
Untrammeled	-4
Undeveloped	-4
Natural	-3
Solitude or Primitive & Unconfined Recreation	-4
Other Features of Value	0
Wilderness Character Summary Rating	-15

Traditional Skills	
Traditional Skills	-4

Economics	
Cost	\$15,000

Safety of Visitors & Workers	
Risk Assessment	Low Risk

Project Title: Provide Hiking Access from West VCS to Chaparral Trailheads

MRDG Step 2: Alternatives

Alternative 7: Construct west side connector trail with erosion controls, one bridge and armored stream bank crossings

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

Construct the connector trail utilizing hand tools and power tools such as loppers, saws, chain saws, weed eaters, pick-mattocks etc. to brush the trail alignment. Bench the trail route using hand tools such as pick-mattocks, rock bars and shovels. Construct erosion control features where needed along the entire connector trail using traditional tools such as single jack hammers, double jack hammers, chisels, grip hoist, rock bars, shovels, pick mattocks, blocks, McLeod's, drills, generators and other hand and power tools. Erosion control features will include water bars, check steps, dry stone walls, switchbacks and trail drains. Construct one bridge to span the stream/wash crossings at the upper crossing and armor the lower crossing. Bridge abutments will be constructed outside of the stream level under normal conditions.

This alternative is the result of a site visit and the determination that the historic armoring located at the upper crossing made that location best suited for a bridge and the terrain of the lower crossing is better suited for an armored crossing.

The connector trail would be sited lower than "The Fingers" formations for a large portion of the route, screening it from the view of visitors in designated wilderness. This trail location would provide protection for one of Pinnacles National Park two designated integral vistas. "Integral vistas" are views from inside a mandatory Class I airshed area looking outward to specific important panoramas or landmarks beyond the class I area's boundaries, where views have scenic, scientific, or cultural importance to the class I area. The High Peaks vista is integral to the visitor experience and has scientific value. The High Peaks area includes the most popular trails for visitors which provide views in all directions. The scientific value of this vista is associated with the geologic story of the monument.

Component Activities

How will each of the components of the action be performed under this alternative?

	Component of the Action	Activity for this Alternative
X	<i>Example: Transportation of personnel to the project site</i>	<i>Example: Personnel will travel by horseback</i>
1	Brushing of trail alignment	Loppers, saws, pick-mattocks, chain-saws, weed eaters
2	Benching of trail alignment	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks
3	Construction of erosion control and other trail features	Hand and power tools to construct features of stone
4	Construct Bridge(s)	Construct bridges using hand and power tools
5	Construct Armored Wash Crossing	Hand and power tools to construct features of stone
6		
7		
8		
9		

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Construct bridges using hand and power tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	5	NE
Untrammed Total Rating		-5		

Explain:

The trail corridor and associated structures will compromise the untrammed character of the Hain Wilderness, the use of power tools during construction will negatively impact the wilderness during construction.

UNDEVELOPED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Construct bridges using hand and power tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	5	NE
Undeveloped Total Rating		-5		

Explain:

The trail corridor and associated structures will be compromising the undeveloped character of the Hain Wilderness.

NATURAL

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Construct bridges using hand and power tools	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	4	NE
Natural Total Rating		-4		

Explain:

The trail corridor and associated structures will be compromising the natural character of the Hain Wilderness, the use of power tools during construction will negatively impact the natural character of the wilderness during construction.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Construct bridges using hand and power tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	5	NE
Solitude or Primitive & Unconfined Recreation Total Rating		-5		

Explain:

The trail corridor and associated structures will allow more access to the wilderness and compromise solitude or primitive and unconfined recreation, the use of power tools during construction will negatively impact the solitude in the wilderness during construction.

OTHER FEATURES OF VALUE

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Construct bridges using hand and power tools	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	Hand and power tools to construct features of stone	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	0	NE
Other Features of Value Total Rating		0		

Explain:

The bridge at the upper crossing will not only span normal stream level but will also be constructed over historic armoring located along the road alignment that crossed in the same location. Spanning the historic armoring will have no effect on the historic structure.

The contextual information we know about the road is that it was being used at least up through the 1920's. A reliable end date for its use might be the construction of the dam beginning in 1934, since the road leads right into the reservoir. The road is mentioned by the first monument custodian Herman Hermansen in the 1920's and appears to be a feature that existed prior to his arrival.

The road segment was surveyed and documented by the Sonoma State archeologists in 2014 when they surveyed the Lyons Homestead and Melville Mine sites for the Jawbone trail project. They determined that it is a non-contributing feature to those historic sites, but the park should manage the road as a historically significant feature even though it has no formal status.

Traditional Skills

What is the effect of each component activity on traditional skills?

TRADITIONAL SKILLS

Component Activity for this Alternative	Positive	Negative	No Effect
X <i>Example: Personnel will travel by horseback</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 Loppers, saws, pick-mattocks, chain-saws, weed eaters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2 Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3 Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4 Construct bridges using hand and power tools	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5 Hand and power tools to construct features of stone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals	0	5	NE
Traditional Skills Total Rating	-5		

Explain:

The use of power tools diminishes the traditional skills utilized in the construction.

Economics

What is estimated cost of each component activity?

COST

Component Activity for this Alternative		Estimated Cost
X	<i>Example: Personnel will travel by horseback</i>	\$1,900
1	Loppers, saws, pick-mattocks, chain-saws, weed eaters	-\$1,000
2	Pick-mattocks, mcclouds, rock bars and shovels, muck trucks	y
3	Hand and power tools to construct features of stone	-\$2,000
4	Construct bridges using hand and power tools	\$9,000
5	Hand and power tools to construct features of stone	\$7,500
6		
7		
8		
9		
Total Estimated Cost		\$13,500

Explain:

Throughout this MRDG the options stay the same for brushing, benching and constructing erosion control features. No alternative was assessed to construct the trail without erosion control features as the trail would be unsustainable, become a location for erosion and cause resource damage. Those cost are represented by X,Y and Z and will be weighted with either a static, positive or negative value depending on the alternative.

Bridges = 3 weeks construction per bridge x 2 people and additional labor for moving material when needed. (excavating abutments, pouring concrete, installing stringers and decking. Materials include; concrete, form material, bridge stringers, decking, associated hardware.

Armored stream crossings = 4 weeks construction per crossing (Gathering and installing stone)

Brushing will be faster with the use of power tools, benching will remain the same and erosion control features/armored crossings and bridges will be completed in faster.

Safety of Visitors & Workers

What is the risk of this alternative to the safety of visitors and workers? What mitigation measures will be taken?

RISK ASSESSMENT Severity of Accident	Probability of Accident				
	Frequent	Likely	Common	Unlikely	Rare
Catastrophic: Death or permanent disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Critical: Permanent partial disability or temporary total disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Marginal: Compensable injury or illness, treatment, lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Negligible: Superficial injury or illness, first aid only, no lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Risk Assessment	Low Risk				

Explain:

Trail construction has a negligible risk due to the nature of the work. Greater than negligible risk will be avoided through proper tool use and the use of required personal protective equipment.

Summary Ratings for Alternative 7	
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Wilderness Character	
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Untrammeled	-5
Undeveloped	-5
Natural	-4
Solitude or Primitive & Unconfined Recreation	-5
Other Features of Value	0
Wilderness Character Summary Rating	-19

Traditional Skills	
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Traditional Skills	-5
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Economics	
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Cost	\$13,500
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Safety of Visitors & Workers	
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Risk Assessment	Low Risk
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Project Title: Provide Hiking Access from West VCS to Chaparral Trailheads

MRDG Step 2: Alternatives

Alternative 8: Constructing Trail outside of Wilderness

Description of the Alternative

What are the details of this alternative? When, where, and how will the action occur? What mitigation measures will be taken?

Connect the west side visitor contact station with the Chaparral trailhead without entering designated wilderness. Other impacts would occur if the trail was constructed completely outside of the wilderness boundary.

An alternative route, west of the proposed and preferred alternative, was examined. The non-wilderness connector trail provides users with impressive views of Pinnacles' rock formations and the surrounding landscape. The trail corridor would be consistently steep for the majority of its length and require numerous consecutive switchbacks down the hillside to the canyon bottom. These steep areas are generally unavoidable. Erosion control measures would be more intrusive and prevalent; multiple retaining walls, check steps, and other measures would be required along the majority of the trail. The trail corridor contains many rock outcroppings that could require micro-blasting or extensive rock drilling.

No stream crossings are encountered on this route. Staging would occur in the disturbed trail corridor.

Component Activities

How will each of the components of the action be performed under this alternative?

	Component of the Action	Activity for this Alternative
X	<i>Example: Transportation of personnel to the project site</i>	<i>Example: Personnel will travel by horseback</i>
1	Brushing of trail alignment	No activity in wilderness but would affect vistas from wilderness
2	Benching of trail alignment	No activity in wilderness but would affect vistas from wilderness
3	Construction of erosion control and other trail features	No activity in wilderness but would affect vistas from wilderness
4	Construct Bridge(s)	No activity in wilderness
5	Construct Armored Wash Crossing	No activity in wilderness
6		
7		
8		
9		

Wilderness Character

What is the effect of each component activity on the qualities of wilderness character? What mitigation measures will be taken?

UNTRAMMELED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	No activity in wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	No activity in wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	3	NE
Untrammed Total Rating		-3		

Explain:

No action is taken in wilderness, the wilderness itself will remain untrammed. However, located on the south facing slope, the trail would be fully exposed to summer sun and highly visible from the High Peaks area of the Hain Wilderness. With this alternative, there are no direct impacts from the construction, or ongoing use of a trail within the designated Wilderness. This alignment would be almost entirely within the viewshed of the High Peaks area of the Hain Wilderness. The ridge and open meadow provide little to no opportunity to conceal the trail, which would have a large impact on the High Peaks integral vista. The High Peaks vista is integral to the visitor experience and has scientific value. The High Peaks area includes the most popular trails for visitors which provide views in all directions. The scientific value of this vista is associated with the geologic story of the monument. Further, the trail corridor has extensive rock outcroppings which would require blasting or drilling; this unnaturally broken rock would further impact the viewshed.

UNDEVELOPED

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	No activity in wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	No activity in wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	3	NE
Undeveloped Total Rating		-3		

Explain:

This alignment would be almost entirely within the viewshed of the High Peaks area of the Hain Wilderness which greatly affects the undeveloped nature of the High Peaks integral vista. The High Peaks vista is integral to the visitor experience and has scientific value. The High Peaks area includes the most popular trails for visitors which provide views in all directions. The scientific value of this vista is associated with the geologic story of the monument. Further, the trail corridor has extensive rock outcroppings which would require blasting or drilling; this unnaturally broken rock would further impact the viewshed.

NATURAL

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	No activity in wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	No activity in wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	3	NE
Natural Total Rating		-3		

Explain:

No action is taken in wilderness, the wilderness will remain natural. Because the trail would be almost entirely within the viewshed of the High Peaks area of the Hain Wilderness, it greatly affects the natural character of the High Peaks integral vista. The High Peaks vista is integral to the visitor experience and has scientific value. The High Peaks area includes the most popular trails for visitors which provide views in all directions. The scientific value of this vista is associated with the geologic story of the monument. Further, the trail corridor has extensive rock outcroppings which would require blasting or drilling; this unnaturally broken rock would further impact the viewshed.

SOLITUDE OR PRIMITIVE & UNCONFINED RECREATION

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	No activity in wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	No activity in wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	0	NE
Solitude or Primitive & Unconfined Recreation Total Rating		0		

Explain:

No action is taken in wilderness, the wilderness will remain for solitude or primitive and unconfined recreation.

OTHER FEATURES OF VALUE

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	No activity in wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	No activity in wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	3	NE
Other Features of Value Total Rating		-3		

Explain:

Brushing the trail : The brushing along the corridor will be visible from the High Peaks and negatively affect the viewshed from the High Peaks.

Benching the trail: The benching of the trail will be placed in a known archaeological site. While the extent of the archaeological site is not known, any impact to the site would be negative to this site associated with the larger cultural landscape of Pinnacles National Park.

Erosion Control Features: A greater number of erosion control features would need to be constructed if the trail is moved outside of the wilderness. All alternative routes are located in steeper terrain and would add more structures visible from the High Peaks and negatively affect the viewshed from the High Peaks.

If any stream crosses are needed they will be located outside of the wilderness and have no effect on the wilderness.

Traditional Skills

What is the effect of each component activity on traditional skills?

TRADITIONAL SKILLS

Component Activity for this Alternative		Positive	Negative	No Effect
X	<i>Example: Personnel will travel by horseback</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	No activity in wilderness but would affect vistas from wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	No activity in wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	No activity in wilderness	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Totals		0	0	NE
Traditional Skills Total Rating		0		

Explain:

No action is taken in wilderness and no consideration will be given towards the use of traditional skills.

Economics

What is estimated cost of each component activity?

COST

Component Activity for this Alternative		Estimated Cost
X	<i>Example: Personnel will travel by horseback</i>	\$1,900
1	No activity in wilderness but would affect vistas from wilderness	\$8,000
2	No activity in wilderness but would affect vistas from wilderness	\$10,000
3	No activity in wilderness but would affect vistas from wilderness	\$20,000
4	No activity in wilderness	\$0
5	No activity in wilderness	\$0
6		
7		
8		
9		
Total Estimated Cost		\$38,000

Explain:

Throughout this MRDG the options stay the same for brushing, benching and constructing erosion control features. No alternative was assessed to construct the trail without erosion control features as the trail would be unsustainable, become a location for erosion and cause resource damage. Those cost are represented by X,Y and Z and will be weighted with either a static, positive or negative value depending on the alternative.

Additional cost for this alternative take into account material and labor associated with constructing a longer trail through steeper terrain. No extra cost is considered for additional maintenance to the trail or rehabilitation of resources due to construction in steeper terrain.

More erosion control measures such as check steps, retaining walls, switchbacks, etc. would be required for this consistently steep trail (12% grade and above).

Safety of Visitors & Workers

What is the risk of this alternative to the safety of visitors and workers? What mitigation measures will be taken?

RISK ASSESSMENT Severity of Accident	Probability of Accident				
	Frequent	Likely	Common	Unlikely	Rare
Catastrophic: Death or permanent disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Critical: Permanent partial disability or temporary total disability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Marginal: Compensable injury or illness, treatment, lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Negligible: Superficial injury or illness, first aid only, no lost work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Risk Assessment	Low Risk				

Explain:

Trail construction has a negligible risk due to the nature of the work. Greater than negligible risk will be avoided through proper tool use and the use of required personal protective equipment.

Summary Ratings for Alternative 8	
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Wilderness Character	
Untrammeled	-3
Undeveloped	-3
Natural	-3
Solitude or Primitive & Unconfined Recreation	0
Other Features of Value	-3
Wilderness Character Summary Rating	-12

Traditional Skills	
Traditional Skills	0

Economics	
Cost	\$38,000

Safety of Visitors & Workers	
Risk Assessment	Low Risk

MRDG Step 2: Alternatives Not Analyzed

Alternatives Not Analyzed

What alternatives were considered but not analyzed? Why were they not analyzed?

1) Not constructing structures on the trail:

The proposed trail is intended to provide a safe, sustainable and deliberate route from the west side visitor contact station to the Chaparral trail head. This alternative was not analyzed because the structures along the proposed trail are necessary to prevent erosion, provide visitor safety and limit maintenance to the trail. Without these structures, the proposed trail would not provide resource protection or provide for visitor safety.

Project Title: Provide Hiking Access from West VCS to Chaparral Trailheads

MRDG Step 2: Alternative Comparison

Alternative 1: No action alternative

Alternative 2: Construct west side connector trail with erosion controls and armored stream bank crossings

Alternative 3: Construct west side connector trail with erosion controls and bridges at stream crossings

Alternative 4: Construct west side connector trail with erosion controls, one bridge and armored stream bank crossings

Wilderness Character	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Untrammeled	0	0	0	4	0	4	0	5
Undeveloped	0	0	0	4	0	4	0	5
Natural	0	0	0	4	0	3	0	4
Solitude/Primitive/Unconfined	0	0	0	4	0	4	0	5
Other Features of Value	0	0	0	1	0	0	0	0
Totals	0	0	0	17	0	15	0	19
Wilderness Character Rating	0		-17		-15		-19	

Traditional Skills	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Traditional Skills	0	0	4	0	4	0	5	0
Traditional Skills Rating	0		4		4		5	

Economics	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Cost	\$0	\$16,000	\$20,000	\$18,000

Safety of Visitors & Workers	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Risk Assessment	Low Risk	Low Risk	Low Risk	Low Risk

- Alternative 5:** Construct west side connector trail with erosion controls and armored stream bank crossings
- Alternative 6:** Construct west side connector trail with erosion controls and bridges at stream crossings
- Alternative 7:** Construct west side connector trail with erosion controls, one bridge and armored stream bank crossings
- Alternative 8:** Constructing Trail outside of Wilderness

Wilderness Character	Alternative 5		Alternative 6		Alternative 7		Alternative 8	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Untrammelled	0	4	0	4	0	5	0	3
Undeveloped	0	4	0	4	0	5	0	3
Natural	0	4	0	3	0	4	0	3
Solitude or Primitive & Unconfined Rec.	0	4	0	4	0	5	0	0
Other Features of Value	0	1	0	0	0	0	0	3
Totals	0	17	0	15	0	19	0	12
Wilderness Character Rating	-17		-15		-19		-12	

Traditional Skills	Alternative 5		Alternative 6		Alternative 7		Alternative 8	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Traditional Skills	0	4	0	4	0	5	0	0
Traditional Skills Rating	-4		-4		-5		0	

Economics	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Cost	\$12,000	\$15,000	\$13,500	\$38,000

Safety of Visitors & Workers	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Risk Assessment	Low Risk	Low Risk	Low Risk	Low Risk

Project Title: Provide Hiking Access from West VCS to Chaparral Trailheads

MRDG Step 2: Determination

Refer to the [MRDG Instructions](#) before identifying the selected alternative and explaining the rationale for the selection.

Selected Alternative

- Alternative 1: No action alternative

- Alternative 2: Construct west side connector trail with erosion controls and armored stream ban

- Alternative 3: Construct west side connector trail with erosion controls and bridges at stream cr

- Alternative 4: Construct west side connector trail with erosion controls, one bridge and armored

- Alternative 5: Construct west side connector trail with erosion controls and armored stream ban

- Alternative 6: Construct west side connector trail with erosion controls and bridges at stream cr

- Alternative 7: Construct west side connector trail with erosion controls, one bridge and armored

- Alternative 8: Constructing Trail outside of Wilderness

Explain Rationale for Selection:

The National Park Service has a "commitment to the public's appropriate use and enjoyment, including education and interpretation, of park resources, while preventing unacceptable impacts." (2006 Management Policies 2006)

While this Minimum Resource Decision Guide addressed proposed work in the Hain Wilderness, the scope of the connector trail took in many considerations both inside and outside of wilderness. Resource protection is paramount, these considerations include impacts to integral vistas from Wilderness, impacts to archeologically sensitive areas, and the potential for erosion due to the steepness of the grade.

This selection was also influenced by the best practices of trail construction and will provide a safe and sustainable route that will accomplish the goal defined in the Pinnacles National Park General Management Plan of connecting the West Side visitor contact station with the greater Pinnacles trail system.

The alignment for the trail was selected for these reasons. It avoids culturally sensitive and historic areas, protects the viewshed from the High Peaks area and follows curvilinear trail design principles that will provide the safest most sustainable route between the West Side visitor contact station and the Chaparral trailhead.

Trail structures are necessary in trail construction. Trail structures prevent erosion, provide resource protection by defining the route and provide for visitor safety. An alternatives without structures was

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Explain Rationale for Selection, Continued:

Bridges were selected due to their value in protecting the cultural resource of the historic armoring as well as protecting the stream itself by preventing erosion to the stream banks and sediment deposits associated with that erosion. While armored crossings could accomplish the goal of providing safe access from the West Side visitor contact station to the Chaparral trailhead, defining the stream bank through armoring would essentially control the stream bank and not offer the resource protection that bridges will accomplish.

All work will be accomplished utilizing hand tools and traditional skills. The work will take longer and the associated labor cost will be greater versus utilizing power tools, however, all work associated with this section of trail is practicable utilizing hand tools that are allowed in the Wilderness Act.

Alternative 3 accomplishes the task of providing hiking access from the West Side visitor contact station to the Chaparral trailheads with the least impact to the Hain Wilderness and the many other resources of Pinnacles National Park.

Describe Monitoring & Reporting Requirements:

Monitoring and reporting requirements are not applicable to this project.

Approvals

Which of the prohibited uses found in Section 4(c) of the Wilderness Act are approved in the selected alternative and for what quantity?

<u>Prohibited Use</u>	<u>Quantity</u>
<input type="checkbox"/> Mechanical Transport:	
<input type="checkbox"/> Motorized Equipment:	
<input type="checkbox"/> Motor Vehicles:	
<input type="checkbox"/> Motorboats:	
<input type="checkbox"/> Landing of Aircraft:	
<input type="checkbox"/> Temporary Roads:	
<input checked="" type="checkbox"/> Structures:	2 bridges and trail features as needed to prevent erosion and provide vis
<input type="checkbox"/> Installations:	

Record and report any authorizations of Wilderness Act Section 4(c) prohibited uses according to agency policies or guidance.

Refer to agency policies for the following review and decision authorities:

Prepared	Name		Position	
	Signature			Date
Recommended	Name		Position	
	Signature			Date
Recommended	Name		Position	
	Signature			Date
Approved	Name		Position	
	Signature			Date