

United States Department of the Interior
Bureau of Land Management

Environmental Assessment
LLCAD08000-2014-0020

July 2014

Amargosa Wild and Scenic River Trail Improvements

Location: Tecopa-Amargosa Canyon, 50 miles north of Baker, Ca
Trailhead legal description: T20N, R7E, Sec. 26;
Trail improvements: T20N, R7E, Secs. 26, 35.

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1.0 PURPOSE & NEED

1.1 Introduction

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of the Amargosa Trail Improvements (*Project*). The EA is a site-specific analysis of potential impacts that could result with the implementation of the proposed action or alternatives to the proposed action. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts could result from the analyzed actions. “Significance” is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of “Finding of No Significant Impact” (FONSI). If the decision maker determines that this project has “significant” impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record may be signed for the EA approving the selected alternative, whether the proposed action or another alternative. A Decision Record (DR), including a FONSI statement, documents the reasons why implementation of the selected alternative would not result in “significant” environmental impacts (effects) beyond those already addressed in Amargosa Canyon Natural Area ACEC Management Plan (*June 1983*), the Northern and Eastern Mojave Planning Area Amendments (July 2002) to the California Desert Conservation Plan 1980 as amended.

1.2 Background

The proposed action includes developing the trailhead with picnic tables, shade structures, vault toilets, and information kiosks. Work includes construction of new trail segments, with clearing brush, brushing and restoring tread segments of the existing trail where it intersects the new trail. The proposed new trail segments would connect to the China Ranch trailhead, and tee into existing northward segments of the Amargosa River Trail. Site identification, trail markers and travel management signs would be installed. A section of the new trail would be handicap accessible.

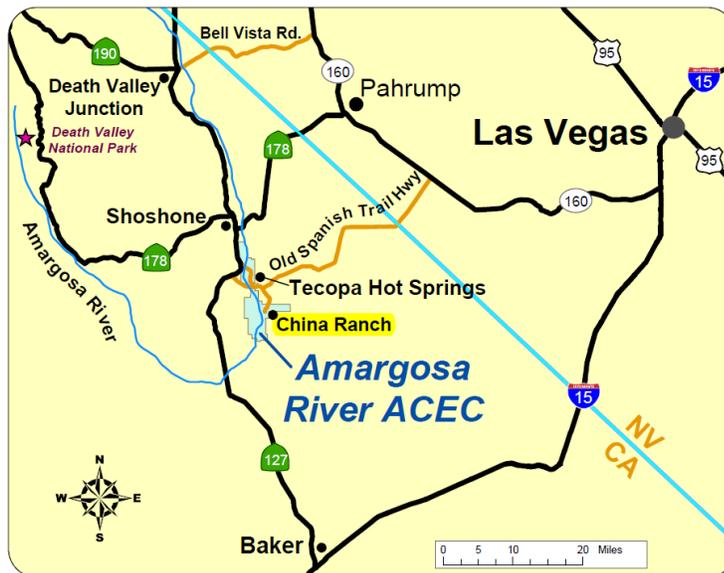


Figure 1 -
Project
Location
Map

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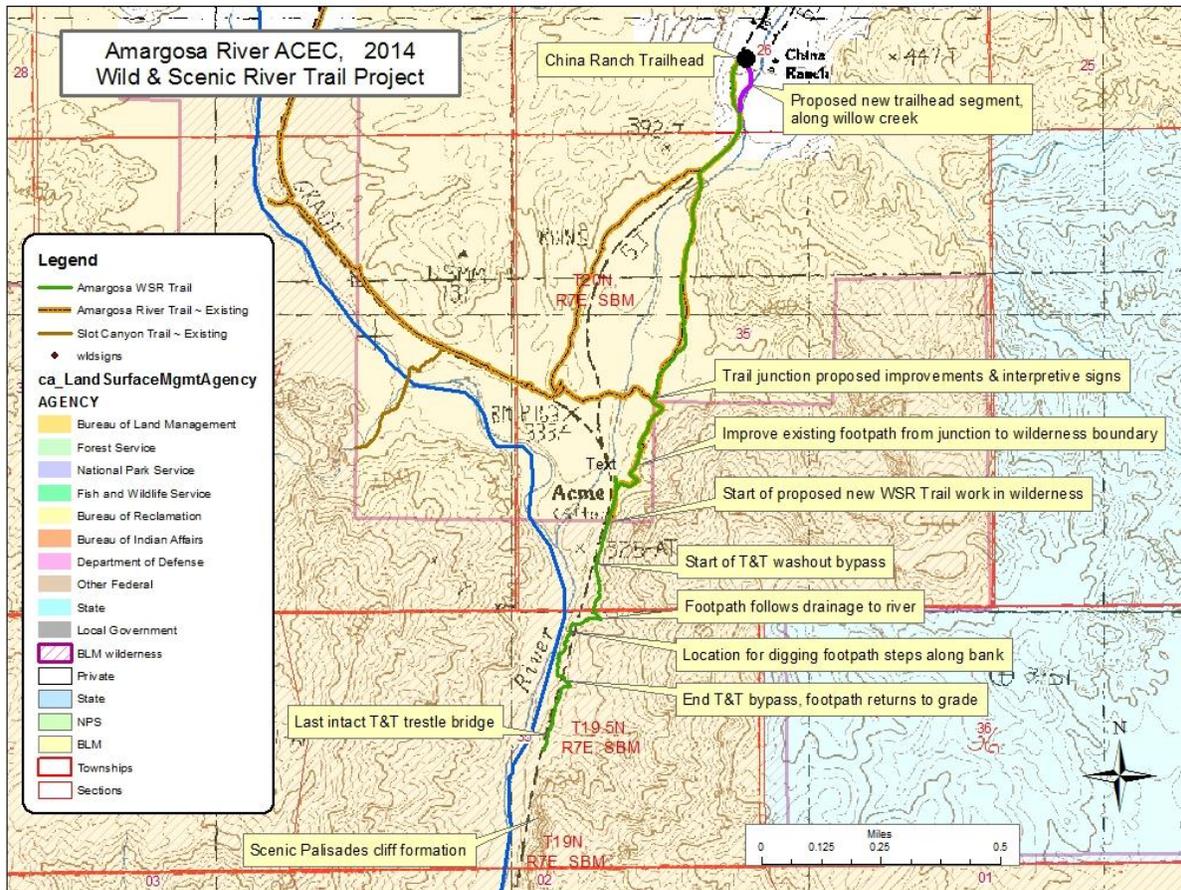


Figure 1 - Project Site Map

Work outlined in the project is one of three concurrent actions occurring within the Amargosa Canyon. The other two projects are the removal of invasive tamarisk plant species and survey for federal and state listed bird species. Both of those actions have been analyzed for NEPA conformance in other existing environmental documents and Endangered Species Act consultation, and therefore are not a subject of this EA.

Public access to the new trail would be assured by a long term agreement between the owners of China Ranch and the State of California pursuant to River Parkways Grant Agreement No. R54003-0 (signed, dated) (include as reference). The proposed action would reestablish public access to a scenic section of the Lower Amargosa Canyon, largely along the old Tonopah and Tidewater (T&T) Railroad grade, and provide a three mile trail, partially through a federal wilderness area. Signs and barriers will continue to be used to enforce long-term closure to motorized access beyond the trailhead.

In a separate planning effort, the Barstow BLM staff is preparing a combined comprehensive Wild and Scenic River Management and Area of Critical Environmental Concern Plan (Joint Plan) that would cover the river and associated riparian areas and govern federal management of

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groundwater, surface water and linked biological, historic, recreation and other resources. The Joint Plan would update and enhance the existing California Desert Conservation Area plan provisions and actions that relate to this specific area. The new plan will incorporate the proposed action and include a trail plan for the Amargosa River corridor.

This assessment is tiered to previous and existing planning action by BLM and the state (wildlife consultation, sec 16 land exchange and grant funding) because the proposed action conforms to existing resource management plan provisions for the area. This EA considers one piece of the full Amargosa River trail-- access from China Ranch into the heart of the Amargosa Canyon along Willow Creek. This includes access south along the river into the lower canyon, wilderness, the scenic geologic Palisades, and on through to Sperry Wash.

The canyon and adjoining riparian areas have a long and documented history of use by Native Americans, Spanish explorers, Mexican traders, and early American explorers and westward migrants. Modern use of the canyon began in 1904 with construction of the T&T Railroad. Motor vehicle access through the canyon replaced rail traffic in 1942, when the T&T tracks were removed. Pedestrian (trail) access replaced vehicle traffic in 1972, when BLM closed the canyon to all motorized use. That closure was confirmed by the CDCA Plan of 1980 (as amended) and the Northern & Eastern Mojave Desert regional plan. BLM desert plans written following enactment of the 1976 Federal Land Policy and Management Act (FLPMA).

Public access to the Amargosa River trail from the north, to and through the spectacular Canyon, is currently very limited. Because of steep topography and few road access points, only a few sites can serve as a trailhead with reasonable access. Historic access from the north was off the Old Spanish Trail Highway in the town of Tecopa, across private land. In the early 2000s the landowner closed their land to public access. There is an alternative access point on public land across the river from the historic trailhead. The BLM has approved plans for a new trailhead on this public land with connecting trail segments to the northern end of the existing river trail. Construction is pending available funding. Another point of public access is in and out of Cowboy Canyon. All alternatives include about a mile hike to the Amargosa River.

Access mid-canyon is even more limited because of terrain and private land, the only viable alternative is from the China Ranch. In association with this project, the landowners of the ranch have agreed to provide long-term public access, assured by a recorded agreement between the owner and the State of California. The agreement was executed conditioned on the activation of State Grant No R54003-0, which supports construction of the proposed new trail and trailhead improvements. This environmental assessment examines the effects of the proposed action, which would improve and expand public access, and two alternatives. The preferred action is to develop the new trail segments and trailhead improvements at China Ranch. The second alternative is no action, which continues the status quo, and the third option would be to complete the preferred action minus the proposed work in wilderness.

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1.3 Purpose and Need

The purpose and need for the proposed action is to develop and maintain long term public access to the southern end of the developed and maintained Amargosa River trail, to reestablish public foot-path access into a currently inaccessible section of the Amargosa Canyon, and to provide trailhead amenities. The most compelling need is to assure long term public access to the canyon trail system which is compatible with wild and scenic river outstanding and remarkable values; such as natural, cultural and recreational.

There is a significant need for long-term public access, which has steadily grown as knowledge of the opportunities for enjoyment of the Amargosa River Area of Critical Environmental Concern (ACEC) has grown. This includes designation of the Amargosa as a national Wild and Scenic River; designation of the National Historic Old Spanish Trail; and development of the Amargosa River Trail. Long-term public access is required for continued enjoyment of these public opportunities and resources in this outstanding and beautiful natural area.

1.4 Conformance with BLM Land Use Plan(s)

The proposed action is in conformance with the California Desert Conservation Area (CDCA) Plan. Based on a review of the Plan it has been determined that the proposed action is compatible with land use terms and conditions, required by 43 CFR 1610.5-3. The proposed action also conforms with the Amargosa Canyon Natural Area Management Plan (ACNA Plan), approved in June 1983; the Northern and Eastern Mojave (NEMO) Amendment to the CDCA; the 2006 draft plan of the Amargosa Area of Critical Environmental Concern; and provisions of the 2009 designation as a Wild and Scenic River. A Section 7 Determination of no effect is included in **Section XXX** of this EA.

The 1983 ACNA Plan incorporates as a key management objective: to “provide for passive recreation opportunities (non-motorized, day-use) in a manner compatible with the protection of sensitive wildlife species and scenic values”. Plan goal 15 states: “Enhance semi-primitive recreation opportunities in Amargosa Canyon.” Plan action 15 states: “Establish and develop where necessary a hiking trail through Amargosa Canyon along the old T & T Railroad grade. Develop an interpretive brochure to be made available at interpretive signs, visitor registers, and at BLM offices.” Plan Major Action #5 states: “Designate the Tonopah and Tidewater Railroad line through the canyon as a hiking trail.” The plan was approved before the wilderness designation in 1994; therefore the canyon was the portion inside the ACEC boundaries. In the plan, reference to the canyon appears to apply to the river stretch from where the vehicle barrier fence was built 1 mile above Sperry Wash, north up to Tecopa.

The majority of work in the proposed action would be located on lands with the Multiple-Use Class (MUC) designation L (Limited Use), with minor some work proposed in wilderness. Lands within the MUC L designation allow for permanent or temporary facilities for resource protection and public health and safety. This designation also requires the conservation of desert resources. The proposed action also conforms to BLM wilderness management guidelines (see attachment 2, wilderness workbook). The work complies with federal statutory requirements and BLM policy guidelines adopted to implement the Wild and Scenic Rivers Act, and the Old Spanish National Historic Trail. The recreation uses of hiking, photography, and bird-watching are considered passive recreation in conformance with the existing 1983 ACEC plan. The draft

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NEMO plan and joint Wild and Scenic River/Amargosa ACEC Plan include similar management outcomes.

Affected public lands are designated for limited vehicle access, and there are no open vehicle routes into or through the canyon. A paved county-maintained public road provides access to an all-weather gravel road that crosses onto private land at the China Ranch. Here the road provides easy access to the proposed trailhead. The trailhead and trail amenities are on China Ranch lands at the margin of an expanded parking apron at the south end of the gravel road. Most of the new trail segments would be located on public land: proposed trail segments extend into the canyon to the scenic Palisades and the site of a historic railroad trestle, both on public land in wilderness. The work on segments of trail in wilderness was analyzed and approved in the attached Minimum Requirements Decision Guide Workbook. In conclusion, the proposed trail work implements plan actions intended to improve public enjoyment of natural resources in compliance with existing access and land use designations and restrictions.

1.6 Relationship to Statutes, Regulations, or Other Plans

The proposed action was also evaluated for compliance with the Endangered Species Act (ESA). In particular, the proposed trail alignment would transverse through occupied breeding habitat for the federally listed Least Bell's Vireo (*Vireo bellii pusillus*), and potential breeding habitat for the Southwestern Willow Flycatcher (*californicus scirpensis*), but this area has been determined unoccupied by recent surveys. The trail would generally stay outside of potential vole habitat. Therefore, the proposed action has been found to be consistent with the requirements of the ESA and previous consultation, and so formal consultation is not required.

A quarter mile segment of the trail just south of the China Ranch trailhead will meet Americans with Disabilities Act Accessibility Guidelines. Due to the rough terrain construction of the entire trail to these standards has been determined technically infeasible. All the potential trail alignments include traversing several dry washes, each capable of flowing during thunderstorms and heavy rains. No practical or cost effective way could be found to run the trail down and back up the slope of each wash at the grade required to comply with ADA standards. There was no feasible way to build trail segments across the sand and gravel to avoid storm damage, or to design a cost effective crossing over the river to accommodate persons with disabilities. The proposed trail plan for the joint WSR and ACEC management plans includes additional segments in the ACEC that would be accessible for persons with disabilities.

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 Introduction

The 1983 ANCA plan designated three canyon trailhead access points. Point one is identified in action #3: "Provide a parking area near the existing barrier in the southern canyon". This was done in 2000 when a parking area and barrier were built at the confluence of the Amargosa River and Sperry Wash. The new barrier, and original 1973 t-post protective barricade 1 mile up, have both been rebuilt over the years per plan major actions #3, 4, and 8. This work was evaluated and approved in the Sperry Wash Route environmental assessment (2000). This is the only trailhead adjacent to the Amargosa River.

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The China Ranch trailhead is adjacent to Willow Creek, from where it is about a 1 mile hike to the Amargosa. At the north end of the canyon it is about a 1 mile hike across dry uplands to the river from the Tecopa trailhead. The different settings and access conditions provide a wide range of opportunities throughout the canyon for desert experiences, exploration, nature study, hiking & and passive recreation activities.

The second access point identified in the plan is at mid-canyon where the China Ranch is located. Access point two is the purpose for this EA and would result in the completion of plan major action #11: “Develop cooperative agreements with private landowners in the Amargosa Canyon to provide for continued limitations on vehicle use, right of access by hikers using the Tonopah and Tidewater Railroad grade, and opportunity to initiate a program of tamarisk control and eradication.”

The third access point identified in the plan is at the north end of the canyon in Tecopa. The plan major action item #2 calls for: “Obtain an easement across private lands along an existing dirt road in the SE1/4 of Section 9 of Township 20 North, Range 7 East to provide access and parking for recreationists into the northern ACEC area.” However, the landowner has chosen not to provide legal public access across their land, and there is no indication this position will alter. In 2004 the landowner posted their property for no trespassing and blocked access because of negative impacts associated with public use of the canyon. Day use had increased along with dumping trash, shooting, vandalism & and rowdy overnight camping.

Because the proposed project would be funded by an approved State of California Proposition 84 River Parkways Grant, the trail design criteria were required to ensure trail users’ visual enjoyment of the riparian and aquatic features of Willow Creek and the Amargosa River. Therefore, new trail segments often stay within sight or sound of flowing water. The majority of the trail would be designed for pedestrian use, with an ADA-compliant segment constructed at the start of the trail as it leaves China Ranch. The trail would also be available for equestrian use, but closed to use by motor vehicles and mountain bicycles. Mountain bikes are prohibited in wilderness, and are not considered appropriate passive recreation for in the ACEC.

2.2 Alternative A – Proposed Action

The proposed action consists of developing a new trailhead and expanded parking area at China Ranch, installing trail amenities (shaded picnic tables, information kiosks, and vault toilets) and open construct, develop? A new trail segments south into Amargosa Canyon. This would reestablish public access to an area in wilderness along the historic T&T railroad grade. The trail alignment was selected to minimize trail construction & and surface disturbances with their associated potential impacts to habitat, visual resources, sensitive soils, cultural sites, water quality and the wilderness setting. This process included completing the attached minimum tool requirement workbook for wilderness.

About 3 miles of an existing user defined footpath, largely reestablished access over the T&T railroad grade, will be developed into the Amargosa Canyon from the trailhead south to an existing historic railroad trestle. Hikers can continue on to Sperry Wash from here with ease because the vegetation thins continuing down canyon. To the extent possible, the trail would follow the existing grade, with some washed out segments requiring navigation through washes or into the riparian zone. Trimming of riparian vegetation will be limited to the minimum required for trail clearing and visitor passage. Outside of wilderness boundary, the trail would be

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delineated with Carsonite sign markers; within designated wilderness, hikers would rely on rock cairns.



Figure 2 - location for footsteps along river on T&T in wilderness



Figure 3 - Trail looking south

From the trailhead to the wilderness boundary the trail would be constructed using standard BLM trail manual requirements. Generally, a 36-48" tread width would be provided using a partial bench cut technique. Using hand tools like shovels, Pulaskis, picks and McLeod's rakes, cut material from the uphill side would be placed on the downhill side of the cut to create the full tread width. Rocks, debris and vegetation would be grubbed out and cleared from the tread with similar hand tools. A minimum amount of tread leveling would be done with McLeod's and rakes because the trail runs across a relatively flat canyon floor, or on the T&T railroad grade. The tread would have a continuous running out slope with occasional rolling dips for erosion control.

Within designated wilderness the trail continues along on the T&T railroad grade where it becomes a user defined footpath. Without maintenance the rail grade will continue to erode and sections are washing away at intersecting drainages. The footpath weaves around washouts at the drainages, and through boulders and debris fallen on the grade. A minor amount of vegetation trimming would be done with hand pruners the first .5 mile. This work would be done at a few choke points where dense tamarisk and mesquite block access. The tread would be improved to provide foot-steps along a narrow ledge for about 100' where the river flows up against the east side of the canyon as shown in Figure 3.

Future routine maintenance would be completed along new segments on an annual basis, when funding and trail workers are available. Maintenance work involves using hand tools to clear brush (trimming vegetation) and grub (clearing tread) for the trail from the China Ranch Trailhead through the new trail segment along Willow Creek to the existing trail. The tread would be cleared to a minimum of 24" with a standard width of 48" where possible. Brush would be cleared to a minimum width of 5' and a maximum height of 7' from ground level. The Willow Creek crossings would be maintained by removing debris and replacing rocks. Signs and Carsonite trail markers would be replaced if vandalized or missing. In wilderness the rock cairns would be re-built and the footpath would be maintained with the minimum amount of hand trimming and tread work necessary for through passage.

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2.3 Alternative B – No Action

Under the no action, the current situation would continue without public access mid-canyon, or the trailhead amenities and trail improvements. In the no action alternative management and on-going work activities would continue under existing plans, policies and regulations. There could be new efforts to reconsider the same proposal in the future, or changes could be made to add, remove or alter elements. Site conditions and access patterns could change as a result of unforeseen conditions, community, or land use zoning changes. Unknown or unconsidered new possibilities for partnerships or access could occur.

2.4 Alternatives C – No Trail Improvement in Wilderness

Under this Alternative, the trail head improvements would be constructed by our partner agency and the trail on private land may be improved. The portion of the trail that runs south from China Ranch to the boundary of Kingston Range Wilderness would be constructed as in the Alternative A. However, no work would be done within the designated wilderness boundary. The impacts to wilderness values and the designated Wild and Scenic River corridor would be eliminated.

2.5 Alternatives Considered, but Eliminated from Further Analysis

Staged Development:

The work in this alternative would include all the activities in the preferred alternative, but would delay all work in wilderness for 2 years or more until the non-wilderness activities were completed. This alternative was rejected because it would not meet the purpose and need, and would be likely to risk all funding under the state grant, since access to the grant funds expires in two years. It would thus not provide resources for any new river trail, since these activities would be carried out in wilderness.

Postpone Work:

This alternative considered delaying all of the planning and construction of any new access or work in or leading to the canyon until the Joint Wild and Scenic River and ACEC Plan is complete. This alternative was also rejected because it would not meet the purpose and need. The new joint plan may include a trail plan for the entire Amargosa River canyon, but there is no reason to believe that Alternative A would be inconsistent with that plan. In fact, Alternative A is compatible with all existing BLM planning and is specifically designed to serve the goals of the joint plan.

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3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area and presented in Chapter 1 of this assessment. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4.

Due to the limited scope and impact of the proposed action the following resources were not brought forward for analysis:

Air Quality	Sage Grouse Habitat
Greenhouse Gas Emissions	Socio-Economics
Environmental Justice	Wastes (hazardous or solid)
Farmlands (Prime or Unique)	Water Resources/Quality (drinking/surface/ground)
Fish Habitat	Wildlife Excluding Special Status Species
Floodplains	Woodland / Forestry
Fuels/Fire Management	Vegetation Excluding Special Status Species
Geology / Mineral Resources/Energy Production	Visual Resources
Lands/Access	Wild Horses and Burros
Livestock Grazing	Lands with Wilderness Characteristics
Migratory Birds	
National Historic Trails	
Native American Religious Concerns	
Paleontology	
Rangeland Health Standards	

Based on the proposed action and the potential for the action to impact resources, the following resource areas have been analyzed in this assessment.

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Areas of Critical Environmental Concern (ACEC)	Threatened, Endangered, Candidate or Special Status Animal Species
Cultural Resources	Wetlands/Riparian Zones
Invasive Species/Noxious Weeds (EO 13112)	Wild and Scenic Rivers
Recreation	Wilderness

3.2 General Setting

There is an existing paved road that turns off the Old Spanish Trail Highway and leads to the proposed new parking area at China Ranch. The soils are high in clay content and poorly drained. The proposed new trailhead and amenities in the China Ranch parking lot will lead along riparian vegetation (mostly honey mesquite and willows) within sight or sound of water to the confluence of the Amargosa River and Willow Creek. Adjoining land is typical dry upland desert habitat with interspersed mud hills free of vegetation. Salt brush and scrub plant communities dominate the area around the trailhead beyond the riparian zone.

The proposed trail segment that connects with the existing river trail transects several minor drainages running into either Willow Creek or the Amargosa River. Soils are generally mixed clay and sandy. Vegetation is dense in washes and along the stream corridor. There are steep inclines and cliffs on both sides of the canyon where the trail proceeds south of the confluence. Excellent overlooks of the canyon exist at various points along the trail. South of the confluence, the trail would mostly follow the T&T Railroad berm, dipping down into riparian zone to avoid washes and crossing the river at one location.

The canyon floor near the river is covered with an interspersed and patchy network of willow and mesquite, arrow weed and quail brush, with monoculture tamarisk segments. Tamarisk is gradually taking over the river corridor

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3.3 Resources Included for Analysis

3.3.1 Areas of Critical Environmental Concern (ACEC)

The proposed action would accomplish a portion of the Amargosa Canyon Natural Area Major Plan action #11 (June 1983). The proposed action would provide reliable, long term public access with parking and trail amenities; plus renewed trail access on public land from China Ranch into the lower Amargosa Canyon, and thus adjoining a wild reach of the Amargosa Wild and Scenic River. The proposed work would open up to public enjoyment an inaccessible area along the T&T railroad grade.

3.3.2 Cultural Resources

Prehistoric Resources:

Major site concentrations can be found along valley floors in the salt bush-sand dune zone, especially near past and/or present water sources. A second area of site concentration occurs at higher elevations in the black bush, Joshua tree piñon-juniper zone not necessarily near existing water. These two areas of concentration have different resources and differing site types. High elevation sites appear smaller, more scattered, with fewer artifacts than lower elevation sites.

Sites on the valley bottom are concentrated along lake margins and springs and may cover several acres. A wide range of artifacts are found here, suggesting many different activities. The same or different groups of people may have used these same sites repeatedly (Warren et al. 1980:68). The site distribution suggests small bands dispersed across the countryside to exploit scattered resources. The pattern of sites suggests seasonal movement from valley bottoms to higher elevations in search of pine nuts, agave, deer, mountain sheep, etc. The pattern is one in which bands gathered in the valley bottoms and dispersed in small task groups at higher elevations (Warren et al. 1980:70).

The China Ranch area has a number of late sites showing use of spring-related resources, mesquite and game animals. Data represent migratory hunting and foraging people who utilized the spring in the China Ranch area. Sites include China Ranch (McKinney et al. 1971) Shoshone Cave #2 (Gearheart 1974), and Robinson Cave. Robinson Cave (Saratoga Springs and Shoshonean Period) contained Anasazi gray ware & Paiute brown ware pottery, Desert side-notched, Rose Springs series, & possible Gypsum Cave points, mesquite seeds and pods, and pieces of fur. Shoshone Cave #2 (Shoshonean & Historic Period) had a few shards of Paiute brown ware, small triangular and Desert side-notched points, egg shells, small pieces of rabbit skin blanket, and sea shell fragments (as ornaments). Both caves contained manos, metates, scrapers, and knives (Warren et al. 1980:73).

An abundance of lithic debris has been observed along the Amargosa River from Tecopa south to Dumont Dunes. The most common material utilized was local, composed of petrified palm wood, palm roots, and bog bottom (matted fossilized reeds). Obsidian and green slate, non-local lithic material, were also recorded (McKinney et al. 1971:9). Additionally, cobbles of granite and quartzite, as well as schist and volcanic rock, were available for manos, milling stones, and other hand tools (McKinney et al. 1971:10).

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Historic Resources:

In few other regions of the American west has the topography, climate, and geography played such a direct role in its development. Settlement in the Amargosa River region was slow to be established. Between 1776 and 1880, only precious metals or agriculture attracted Mexican, Spanish, and American settlers. The region was mainly used as a corridor for native traders and couriers, Mexican caravans, and later railroads, telegraph, telephone lines, and power lines. Historic sites associated with American settlement and commerce within the Amargosa River ACEC relate to ranches/homesteads, trails and landmarks, military presence, and mining (Stickel and Weinman-Roberts 1980:177). Other early activity in the area consisted of exploration and scientific expeditions. Rather than gold, it was borax that attracted settlers to Death Valley. William T. Coleman of San Francisco was the first to develop borax deposits. His 20-mule teams became famous for hauling borax across the desert to Mojave (Sully et al. 1972:48).

Ephemeral towns and mining camps were linked to these routes of travel and stimulated by their development. Railroad lines and other roads often died when the towns died (Warren et al. 1980:195). Just north of Dumont Dunes, the Tonopah and Tidewater railroad descends into the Amargosa River Canyon and traverses its length along the side of the gorge. Large cuts and fills and three major trestles up to 500 feet long were necessary for passage and to cross the river at several points (Sully et al. 1972:48). As of this year, 2014, one trestle is still intact. It is in wilderness, about a half mile below the Willow Creek and Amargosa River confluence.

3.3.3 Vegetation

General Vegetation:

The Central Amargosa ACEC Unit is extremely diverse in vegetation types. It is a mosaic of wetland, riparian, meadow, and upland vegetation. Regional CWHR vegetation types include: Desert Riparian, Freshwater Emergent Wetland, Wet Meadow, Alkali Desert Scrub, Desert Scrub, and Desert Wash. The Desert Riparian system is made up of the Black Willow Series, Arrow Weed Series, Mesquite Series, and Tamarisk Series. The Black Willow Series occupies areas of the Amargosa Canyon and Grimshaw Basin that are occasionally flooded during high water events. This series is dominated by an overgrowth of black willow (*Salix goodingii*) with little or no ground cover beneath (Sawyer 1995).

Found in similar areas, the Arrow Weed Series is dominated by arrow-weed (*Pluchea sericea*), with tamarisk as a secondary species. This series involves an almost continuous canopy of arrow-weed with little or no ground cover (Sawyer 1995). The Mesquite Series is found for the most part in the Willow Creek portion of the ACEC. The Tamarisk Series is found in many portions of the Central Amargosa Unit that were formally populated by black willow. This series is slowly displacing the native black willow stands. The Tamarisk Series is dominated by different species of tamarisk, but may also contain other species such as catclaw acacia (*Acacia gregii*), cheesebush (*Hymenoclea salsola*), black willow (*Salix goodingii*), and various species of saltbush (Sawyer 1995).

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The Freshwater Emergent Wetland CWHR vegetation types, in the Central Amargosa Unit, are made up of the Bulrush Series, Cattail Series, and Bulrush-Cattail Series. These spring-fed emergent wetland areas are found in the Grimshaw Basin area, but are also found in some areas along the water course in the Amargosa Canyon. The Bulrush Series is found in areas that are either permanently or frequently flooded, and is dominated by olney bulrush (*Scirpus olneyi*). Other species that are found in areas classified in the Bulrush Series would include: broadleaf cattail (*Typha latifolia*), spikerush (*Eleocharis parishii*), saltgrass (*Distichlis spicata*), and yerba mansa (*Anemopsis californica*) (Sawyer 1995). The Cattail Series is found in similar areas to the Bulrush Series, but is dominated by broad-leafed cattail. Other species that might occur in these areas include bulrush, saltgrass, and yerba mansa (Sawyer 1995).

Upland vegetation types for the Central Amargosa Unit include Alkali Desert Scrub and Desert Scrub. Some areas of this Central Amargosa Unit may also contain the white bear poppy (*Arctomecon merriamii*). This plant grows on ridges with upland arid alkaline soils (USFWS 1990). The ACEC has a wide array of xeric, mesic, and hydric environments that have specific types of vegetation associated with them. In addition there are varying levels of alkalinity throughout the ACEC that dictate where certain vegetation series and types will be found.

Invasive Species:

Several invasive weeds are present within the Amargosa River ACEC/WSR. Mustards and thistles are present and take advantage of favorable weather conditions. Camel thorn (*Alhagi pseudalhagi*), and African rue (*Peganum harmala*), both State “A” rated noxious weeds, as well as Tree-of-heaven (*Ailanthus altissima*) are known to occur in a limited number of sites. Filaree (*Erodium cicutarium*), red brome (*Bromus rubens*), and Mediterranean split grass (*Schismus barbatus*) are found throughout the ACEC/WSR at varying densities depending on weather conditions. Black locust (*Robinia pseudoacacia*) and honey locust (*Gleditsia triacanthos*) infest spring-fed riparian areas and greatly impact critical riparian habitat by replacing native vegetation.

Tamarisk, aka salt cedar, (*Tamarix ramosissima*) is the invasive weed of greatest concern within the ACEC/WSR. Salt cedar effectively out-competes native flora, provides little wildlife forage, uses massive amounts of water, and is often so dense that many animals cannot reach the associated water sources. If not controlled, salt cedar will replace all native vegetation becoming monotypic. Athel tree (*Tamarix aphylla*) is not considered an invasive species, but causes problems at spring sites due to the extreme water use. The BLM has an active salt cedar control program within the ACEC/WSR. Control efforts for other weed species have been limited.

3.3.4 Recreation

Affected public lands are designated for limited vehicle access, and there are no open vehicle routes into or through the canyon. A paved county-maintained public road provides access to an all-weather gravel road that crosses onto private land at the China Ranch. Here the road provides easy access to the proposed trailhead. The trailhead and trail amenities are on China Ranch lands at the margin of an expanded parking apron at the south end of the gravel road. Most of the new

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trail segments would be located on public land: proposed trail segments extend into the canyon to the scenic Palisades and the site of a historic railroad trestle, both on public land in wilderness. The work on segments of trail in wilderness was analyzed and approved in the attached Minimum Requirements Decision Guide Workbook. In conclusion, the proposed trail work implements plan actions intended to improve public enjoyment of natural resources in compliance with existing access and land use designations and restrictions

3.3.5 Threatened, Endangered, Candidate or Special Status Animal Species

Within the boundary of the Amargosa River ACEC/WSR is an extremely diverse and unique fauna of native wildlife. These wildlife species are associated with different habitat types limited in their extent due to the availability of surface and/or subsurface water, and isolated from other similar habitats by vast expanses of the arid Mojave Desert. Wildlife habitat types for the ACEC/WSR can be broken down into lowland and upland groups based on their vicinity to water. Lowland habitats support the greatest number of sensitive species in the ACEC/WSR, and unfortunately could be the most imperiled by improper land use practices in the area.

The upland habitat types are found at varying distances from the river and contain more common desert species that do not require association with surface water or a high water table. The Central Amargosa Unit can be broken down into seven or eight main wildlife habitat types as described by the California Wildlife Habitat Relationships (CWHR) system. The lowland habitat types are closely associated with the Amargosa River itself or Grimshaw Lake, and include desert riparian, desert wash, freshwater or saline emergent wetland (depending on the salinity of the water), wet meadow, and riverine. The upland CWHR systems include alkali desert scrub, desert scrub, and barren.

Upland mammalian diversity is probably fairly high in the ACEC because of a high diversity of rodent species. This high diversity is the result of Great Basin and Mojave Desert species with ranges that overlap in this area. Genera represented include: 3 species of pocket mice (*Perognathus parvus*, *P. longimembris*, and *P. formosus mohavensis*), 3 species of kangaroo rat (*Dipodomys microps*, *D. merriami*, and *D. deserti*), 2 species of deer mice (*Peromyscus eremicus* and *P. maniculatus*), the western harvest mouse (*Reithrodontomys megalotis*), the southern grasshopper mouse (*Onychomys torridus*), and the desert woodrat (*Neotoma lepida*). All of these rodents lead a fossorial (burrowing) life and are nocturnal.

Two common sciurid rodent (rodents from the family sciuridae) species are likely to occur also: the white-tailed antelope ground squirrel (*Ammospermophilus leucurus*) and the round-tailed ground squirrel (*Citellus tereticaudus*). Both of these species are also fossorial, but tend to lead more of a diurnal existence. The Grimshaw/Amargosa Canyon region also contains the Amargosa pocket gopher (*Thomomys umbrinus amargosae*) and the botta pocket gopher (*Thomomys bottae*). Lagomorphs (rabbits and hares) in the area may include the desert cottontail (*Sylvilagus audobonii*) and the back-tailed jackrabbit (*Lepus californicus*).

Other, larger mammals that may prey on the above mentioned rodent and lagomorph species include the coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), and badger (*Taxidea taxus*). Bats, such as the western pipistrelle (*Pipistrellus hesperus*), big brown bat (*Eptesicus*

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fuscus), Brazilian free-tailed (*Tadarida brasiliensis*), spotted bat (*Euderma maculatum*) and possibly three species of myotis (*Myotis californicus*, *M. lucifugus*, and *M. ciliolabrum*), may be seen feeding in the ACEC, but may only roost in the Amargosa Canyon area due to a lack of adequate crevices, cliffs, or mining shafts in the other sections of the ACEC/WSR.

The pallid bat (*Antrozous pallidus*) may also be found. The pallid bat (*Antrozous pallidus*), which is a California Species of Concern and a BLM sensitive species, is found throughout California, including the Amargosa region. It roosts in caves, rock crevices, mines, and hollow trees, and tends to forage over open ground. The many cliffs and crevices of the Amargosa Canyon, plus numerous abandoned mines in the surrounding area could provide ample roosting sites for this species.

Many of the upland rodents could also be found in lowland areas, but would not be restricted to these areas. Two rodent species, the house mouse (*Mus musculus*) and Amargosa vole (*Microtus californicus scirpensis*), would be restricted to lowland areas with access to water. The Amargosa vole is found nowhere else in the world. This endemic subspecies is restricted to exceedingly small habitat types due to its reliance on ample surface water. “The Amargosa vole is restricted to “tulle marsh” habitats associated with permanent water in the Amargosa River” and “tributary springs above its floodplain”. “The vegetation of these marshes is dominated by bulrush (*Scirpus olneyi*), rush (*Juncus cooperi*), and saltgrass (*Distichilis spicata*) (Rado and Rowlands 1984).

The historical distribution of the Amargosa vole appears to be from Shoshone, CA to the Amargosa Canyon, but the Shoshone population, where the type specimen was collected in 1891, may be completely extirpated due to burning of the marsh in the area and its subsequent use as a hog pasture (Kellog 1918). Critical habitat for the vole was established in 1997, and all of it lies entirely within the new Amargosa River ACEC/WSR.

Reptilian diversity over the ACEC consist partially of common desert lizard species, such as the desert spiny lizard (*Sceloporus magister*), long-tailed brush lizard (*Urosaurus graciosus*), desert night lizard (*Xantusia vigilis*), desert iguana (*Dipsosaurus dorsalis*), zebra-tailed lizard (*Callisaurus draconoides*), desert banded gecko (*Coleonyx variegates variegates*), leopard lizard (*Gambelia wislizenii*), desert side-blotched lizard (*Uta stansburiana*), southern desert horned lizard (*Phrynosoma platyrhinos calidiarum*), great-basin whiptail (*Cnemidophorus tigris tigris*), chuckwalla (*Sauromalus obesus*), and Gilbert’s skink (*Eumeces gilberti*).

There could be a wide snake diversity with species like the coachwhip (*Masticophis flagellum piceus*), western patch-nosed (*Salvadora hexalepis hexalepis*), desert glossy snake (*Arizona elegans eburnata*), Great Basin gopher snake (*Pituophis melanoleucus deserticola*), western shovel-nosed snake (*Chionactis occipitalis occipitalis*), desert night snake (*Hypsiglena torquata*), Mojave sidewinder (*Crotalus cerastes cerastes*), long-nosed snake (*Rhinocheilus lecontei*), common kingsnake (*Lampropeltis getulus*), western blind snake (*Leptotyphlops humilis*), rosy boa (*Lichanura trivirgata*), spotted leaf-nosed snake (*Phllorhynchus decurtatus*), striped whipsnake (*Masticophis taeniatus*), wandering garter (*Thamnophis elegans*), western ground snake (*Sonora semiannulata*), western black headed snake (*Tantilla planiceps*), Sonora lyre snake (*Trimorphodon lambda*), Mojave rattlesnake (*Crotalus scutulatus*), and speckled rattlesnake

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(*Crotalus mitchelli*) (Romero 1972). The desert tortoise (*Gopherus agassizii*) has also been seen in the ACEC.

Avian diversity in the ACEC is very high for the Mojave Desert, owing to its wide diversity of habitats. A comprehensive list of avian species within the ACEC would be too lengthy for this resource summary. Avian sensitive species observed within or near the Grimshaw/Amargosa Canyon region of the ACEC/WSR include the federally endangered southwestern willow flycatcher (*Empidonax traillii extimus*), the least Bell's vireo (*Vireo bellii pusillus*), and the western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), a federal candidate for listing.

The willow flycatcher's breeding habitat consists of patchy to dense riparian habitat along streams or wetlands, near or adjacent to surface water or underlain by saturated soil. Common tree or shrub species include willows (*Salix* spp.), seep willow (*Baccharis* spp.), cottonwood (*Populus* spp.), arrowweed (*Tessaria sericea*), tamarisk (*Tamarisk ramosissima*), (USFWS 2001). Tamarisk is a non-native invasive that is slowly displacing the native trees and shrubs that the flycatcher uses for breeding habitat. In other areas of the US southwest, the flycatcher has begun to use tamarisk for breeding. The Amargosa ACEC/WSR has many elements present in flycatcher breeding habitat. In 2001, one willow flycatcher was detected during a BLM sponsored survey of the canyon. From 2002-2013, additional flycatcher sightings were observed. Although no nests were located, the surveyors deemed it very likely that southwestern willow flycatcher is nesting within Amargosa Canyon.

The least Bell's vireo habitat requirements are similar to the willow flycatchers. Many nesting pairs of vireos have been found in Amargosa Canyon and in the China Ranch riparian area in recent years following brown cowbird trapping and tamarisk removal efforts. The yellow-billed cuckoo has been seen and heard singing in the Amargosa Canyon in recent years. The yellow-billed cuckoo habitat requirements are more restrictive than the flycatcher or vireo. During the breeding season cuckoos are confined to cottonwood-willow riparian areas, with enough continuous habitat to support their 50 to 100 acre home range (Laymon and Halterman 1985). Microhabitat characteristics are very important for nesting in this species. Cuckoos choose to nest in areas with between 40 and 65% canopy closure, mean canopy height of 23-33 feet, and the presence of at least one willow (Laymon et al., 1997). These extremely specific requirements may make it a rare occurrence for cuckoos to be found in the Amargosa.

Other species listed as California Species of Concern, or BLM Sensitive, found within the Grimshaw/Amargosa Canyon region include the long-eared owl (*Asio otus*), yellow warbler (*Dendroica petechia brewsteri*), prairie falcon (*Falco mexicanus*), yellow-breasted chat (*Icteria virens*), brown-crested flycatcher (*Myiarchus tyrannulus*), summer tanager (*Piranga rubra*), vermilion flycatcher (*Pyrocephalus rubinus*), Virginia's warbler (*vermivora virginiae*), northern harrier (*Circus cyaneus*), loggerhead shrike (*Lanius ludovicianus*), and crissal thrasher (*Toxostoma crissale*). The prairie falcon, northern harrier, and loggerhead shrike are considered California Species of Concern (CSC) year round, while the others are only CSCs when nesting. See attached reports on bird monitoring prepared by the Point Reyes Bird Observatory.

Two fish species in the Grimshaw/Amargosa region of the ACEC/WSR are listed by the BLM as sensitive species. These are the Amargosa River pupfish (*Cyprinodon nevadensis amargosae*)

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and the Amargosa River speckled dace (*Rhinichthys osculus* ssp1). These fish prefer similar riverine habitats in the Amargosa Canyon. The pupfish is much more common in the river than the speckled dace, but the Willow Creek drainage, which is a tributary of the Amargosa, is dominated by the speckled dace (Williams 1982). The dace prefers shaded cooler water and the pupfish open water. Both fish prefer transparent water runs, and to a lesser extent 2-meter deep pools for habitat. Gravel riffles of the Amargosa are usually not preferred habitat (Williams 1982). See attached report by Gary Scoppetone on fish in the Amargosa Canyon.

3.3.6 Wetlands/Riparian Zones

Riparian vegetation is important to the proper functioning of the adjacent river. It provides shade, adds chemical energy and nitrogen through plant materials and insects that fall into the river (Kattelman and Embury 1996; Meehan et al. 1977; Cummins et al. 1989). The vegetation protects river banks from erosion and traps sediments & nutrients coming from upriver, thereby ensuring high water quality (Kattelman and Embury 1996). Healthy stands of native riparian vegetation can ameliorate the adverse effects of upslope disturbances (Schlosser and Karr 1981).

Riparian communities that occur near desert springs and along rivers are of special interest. Under the CDCA Plan all riparian areas in the Amargosa River ACEC/WSR are designated as Unusual Plant Assemblages (UPAs). These are given special consideration in management decisions. The best information available on wetland habitats within the ACEC/WSR is the Functioning Condition Assessment data. The riparian riverine segments associated with the Amargosa River have been rated as functioning-at-risk due to upriver water use, groundwater overdraft and/or salt cedar (*Tamarix ramosissima*) infestation. These systems are primarily degraded as a result of diversion, weed establishment, vehicle use, mining, burro use, and livestock grazing.

3.3.7 Wild and Scenic Rivers

In 2009 the Amargosa was designated a component of the national wild and scenic river system, in the reach from Shoshone to Dumont Dunes. The river had been included in the National Wild and Scenic River System (NWSRS) after a finding of eligibility by the Northern and Eastern Mojave (NEMO) California Desert Conservation Area Plan (CDCA) Amendment. The segment flowing through the Central Amargosa Unit of the ACEC, from Tecopa to Sperry Site, is classified as a wild segment. Management guidelines prescribed by this classification parallel the recreation opportunity spectrum (ROS) classifications for the area.

By law, river segments determined eligible for inclusion in the NWSRS are given protective management pending Congressional action, and until the agency prepares a Comprehensive W&S River Management Plan, which is in preparation.

Wild and Scenic River Attributes:

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The Amargosa River is the focal hydrologic system of the eastern half of the Northern and Eastern Mojave Desert (NEMO) Planning Area. The hydrologic systems of the southern Great Basin and northern Mojave Desert are generally characterized by deep water tables. They are also considered primarily closed groundwater basins. One of only two large rivers in the Mojave Desert, the free flowing Amargosa is largely subterranean. It begins its southerly, largely underground flow near Beatty, Nevada. A segment of the river 10 miles in length supports shallow, perennial water flow near in Oasis Valley in Nevada, but this “bitter water” river then generally flows in a sub-surface fashion as it bisects the remainder of the Amargosa Desert in Nevada. It flows adjacent to Stateline, Nevada and then southerly through the towns of Death Valley Junction, Shoshone, Hot Springs and Tecopa, in California. It crosses state highway (SH) 127 and terminates in the lowest elevation area in the United States: Badwater Basin, within Death Valley National Park (DVNP).

The eligibility report for the Amargosa River as described in Appendix O of the NEMO plan included a description of the outstanding remarkable values that exist in the area which led to the rivers designation as a Wild and Scenic River. The following values were described in that report:

Wildlife and Plants: The occurrence of state and federally listed endangered species such as the Amargosa Vole, Least Bells Vireo, Southwestern Willow Flycatcher, Yellow-billed Cuckoo, Swanson’s Hawk, Amargosa Pupfish, Amargosa Speckled Dace, and Amargosa Niterwort.

Geologic: Colorful arrays of spires, mesas cliffs and canyons and the Tecopa Lakebed.

Cultural: High concentration of sites within the ¼ mile study boundary due to the lack of water in the area.

Historic: Old Spanish Trail and the Tonopah and Tidewater Railroad.

Recreational: All portions provide unique hiking and bird watching along with challenging terrain and the excellent opportunity to experience solitude in the natural condition of the Mojave Desert.

Wilderness: The central segment would encompass a portion of the Kingston Range Wilderness, an area where little human modification of the landscape is evident.

3.3.8 Wilderness

Wilderness:

The proposed action would be conducted partially within a designated wilderness area. The existing trail segment located in the Amargosa River area is passible but can be hazardous to hikers and general visitors. The trails in their current condition provide limited access to the scenic values in the canyon and their current state may cause braiding and trailblazing by means that are not in compliance with the Wilderness designation.

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4.0 ENVIRONMENTAL IMPACTS

Wetlands/Riparian Zones

Wild and Scenic Rivers

Recreation Wilderness

4.1 Alternative A – Proposed Action

4.1.1 Areas of Critical Environmental Concern (ACEC)

Overall, the proposed action would likely result in positive outcomes for ACEC values. The proposed action was planned and designed to eliminate or reduce existing and ongoing impacts from current un-developed access. The construction of the proposed new trailhead and trail amenities (shaded picnic tables, vault toilet, and information kiosks) would have negligible impacts on the values managed in the ACEC. The work on private land at the China Ranch outside the boundaries of the ACEC and would not invade or unreasonably diminish river values.

Generally, the trail segments, once they leave private land at China Ranch, are located within or adjacent to the boundaries of the Amargosa River ACEC and a stretch of the Amargosa Wild and Scenic River. The trail as it leaves China Ranch will follow the riparian corridor of Willow Creek until it reaches the confluence of Willow Creek and the Amargosa River. The trail continues south into the lower canyon and enters wilderness just upstream of that confluence. The trail continues as a footpath in wilderness to the Palisades (a common turnaround point), and on south about 4 miles to the Sperry Wash Route.

The Proposed Action would have direct impacts on the ACEC, resulting in an increase in public visitation, and the improvements to the trail. This increase in use of the area is likely to be relatively light during the foreseeable future, since the area is remote and the trail traverses difficult terrain. The trail will follow, for the most part, the T&T railroad grade, a historically disturbed route through the canyon. Accordingly, adverse impacts on federally protected areas and resources are likely to be slight.

Positive effects would likely outweigh the negative. First, the public would secure long term, convenient access to the Amargosa Canyon trail, an invaluable asset, with trailhead amenities that would make the experience enjoyable and informative. Concurrently, this would alleviate the sufferance and impacts visitors cause private land owners while currently seeking access to the canyon. Second, the trail would open particularly scenic segments of the canyon to public use along a trail designed, built and maintained for such use. This provides handicapped individuals opportunities for the first time to enjoy views of the spectacular Amargosa Canyon. Third, this alternative would provide funding for the selective eradication of invasive tamarisk, which threatens flow in a portion of the wild segment of the Wild and Scenic Amargosa River, and would provide monitoring for and protect the habitat of listed bird species.

An exceptionally positive benefit of the proposed action is an improvement in visitor experience. Most of the proposed trail—which would follow alongside Willow Creek and the Amargosa River--would be within sight or sound of perennially flowing water, a most unusual and unexpected experience in the most arid area of the US.

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The proposed action would reduce negative impacts associated with visitors trespassing on other private lands, or finding and making multiple paths to the river, and into the canyon. Without delineated legally permissible trail access, visitors familiar with the canyon or looking for the canyon would likely create their own paths and may inadvertently negatively impact ACEC, WSR and or wilderness. The proposed trailhead would provide an access point for non-motorized use of the entire canyon and would help to focus and guide visitor use to both segments. This would reduce the impacts from concentrated use at trailheads in the area and would enhance the visitor experience by reducing trail congestion.

4.1.2 Cultural Resources

Prehistoric and Historic Resources:

A Class III survey has been conducted and it has been determined that there would be no effect to cultural resources.

The proposed trail segments would provide exceptionally positive benefits for public enjoyment of the National Historic Old Spanish Trail. The proposed new segment would provide outstanding remarkable recreation experiences because visitors can closely follow the most likely route of the historic path, which traversed the canyon.

4.1.3 Vegetation

General Vegetation:

The proposed action would require cutting some vegetation to establish the trail, primarily mesquite, arrow weed, and quail brush. However, since tamarisk would also be removed from a significant riparian portion of the trail, the proposed action would have offsetting, strongly positive effects on vegetation in the area as a whole —by allowing native riparian plants to reestablish. Minor impacts, consisting of annually trimming vegetation, would be conducted along the trail and at the site of the new river foot crossing, plus the approaches.

The vegetative communities and plant species at sites of proposed work would be directly and indirectly impacted by the activities associated with implementing the Proposed Action. Directly, some minor vegetative loss, disturbance, and/or mortality would occur from the construction of the improved parking area, vehicle barriers, trail amenities and signs and trail segments on private land at China Ranch. The vegetative loss/mortality would be temporary in some cases, but would ultimately be permanent on the trail due to the associated maintenance and on-going trail use. Indirectly, the possibility of a vegetative community type conversion could occur from weed establishment as a result of soil disturbance. There is a slight possibility the proposed action could result in permanent and/or temporary tamarisk invasion in limited areas, but this would be more than offset by eradication efforts.

Invasive Species

Tamarisk, (*Tamarix ramosissima*) is the invasive weed of greatest concern within the ACEC/WSR. The proposed action includes some removal of Tamarisk within the project area. The impacts of Tamarisk removal have been reviewed in a separate analysis and this proposed

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action will not modify those requirements. Any removal of invasive plants will be done in accordance with the stipulations contained in the previous analysis. Athel tree (*Tamarix aphylla*) is not considered an invasive species, but causes problems at spring sites due to the extreme water use.

4.1.4 Recreation

The improvement of the existing trail system will result in increased access to prime scenic and recreational resources. As with any increase in visitation to an area, concerns arise from over use, OHV intrusion, trail braiding and other indirect impacts. However, properly improved trails should help eliminate further erosion on the trail, forcing hikers into other area. In all the proposed action would improve access and enjoyment of the existing recreational resources in the area.

4.1.5 Threatened, Endangered, Candidate or Special Status Animal Species

General Wildlife:

Direct impacts to wildlife and wildlife habitat may include injury/mortality, temporary/permanent displacement of reptiles and small mammals along the proposed trail segments. Similarly, raptors perching on cliff walls adjacent to the proposed trail could be temporarily/permanently displaced by trail activity. The promotion of this trail may potentially result in indirect impacts. An increase in use of this trail may lead to an increase in wildlife related disturbances in the main and adjacent canyons. A limited potential would exist for recreational shooters or off highway vehicles to illegally use the trail areas, especially along the Amargosa River, although access would be difficult and other areas would likely be more attractive for these incompatible uses. Trail use may potentially result in an increase in trash and possibly wildlife injury/mortality. Where perennial flows do occur, indirect impacts to fish may occur due to limited stream channel alterations and damaged emergent vegetation resulting from throwing rocks in the river and wading or bathing activity. Emergent vegetation provides cover, breeding habitat, and dissipates high flow events. Fish may also be indirectly affected by a change in stream flow regime resulting from soil profile alterations associated with trail travel.

T & E Species:

The majority of the length of the trail is within the potential habitat of the southwestern willow flycatcher and least Bell's vireo. The latest survey data indicates that the Amargosa vole does not exist in the area where the trail and stream crossing would be installed (Neuwald 2002). Bulrush is not common in this area (bulrush provides escape cover and an adequate food supply for the Amargosa vole) and trapping for voles within the canyon has not been successful.

The portion of the trail adjacent to or within listed bird habitat is an area occupied by mixed stands of native trees and tamarisk that provides potential habitat for both listed flycatchers and vireos. Singing, migrant flycatchers have been detected in this area in recent years, but no nesting pairs have been found. Nesting vireo pairs have been detected. The proposed action would protect the habitat of both species (in addition to that of other neotropical migrants), since trail construction would not take place during times when these birds are present (mid-March to

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mid-September), known sensitive habitat types would be avoided as much as possible, birds would be monitored, and invasive tamarisk selective eradication would improve habitat quality for these species.

More specifically, the least Bell's vireo is more susceptible to nest abandonment from human disturbance than the southwestern willow flycatcher; vireos are sensitive to many forms of human disturbance including noise, night lighting, and consistent human presence in an area such that excessive noise can cause vireos to abandon an area (51 Federal Register 16474). In contrast, disturbance is expected to disrupt nesting of the southwestern willow flycatcher only when human activities are continuous, intrusive, and immediately adjacent to the vegetation that supports the nest (60 Federal Register 10694). However, neither species would experience direct effects from installation of the trail and stream crossing as work would be confined to the periods outside of the March 15 to September 15 period when birds, whether foraging only or actually nesting in nearby suitable habitat, may be present. Furthermore, live trees would only be removed or disturbed by the proposed action in ways that would prevent removal of nests or nest-bearing trees, and to improve the quality of native habitats. Also, the establishment of designated trails would reduce disturbance associated with uncontrolled access to habitat areas by the public during the breeding season.

Increased human activity associated with trail workers near nests could attract predators of nesting birds. Improperly disposed food wastes and trash can attract numerous nest predators. The BLM will require trail workers to pack out their trash to minimize waste left in riparian habitat.

Protective measure to prevent ground-disturbing activities outside of the March 15 to September 15 period when breeding birds are likely to be in Amargosa Canyon is an avoidance strategy which is likely to be protective of individual birds but does not wholly eliminate effects to habitat. In general, the ground disturbance restriction (including limiting trimming or removal of live, native trees and selective cutting of tamarisk) would at most cause minor disturbance; informative and well-placed interpretive signs and exhibits will increase visitor awareness regarding these species; people who are informed about listed bird species are less likely to behave inappropriately when around them or within their habitat (Service 2001).

For the lit. cit. section:

Neuwald, JJ. 2002. Genetic Variation and Gene Flow in Fragmented Populations of the Amargosa Vole, *Mictotus californicus scirpensis*. Unpublished Master's Thesis, Washington University. St. Louis, Missouri.

U.S. Fish and Wildlife Service. 1998. Draft recovery plan for the least Bell's vireo. Portland, Oregon.

U.S. Fish and Wildlife Service. 2001. Biological Opinion for the General Management Plan for Death Valley National Park (1-8-00-F-32). Ventura, California.

U.S. Forest Service. 2001. Southwestern Willow Flycatcher and Bell's Vireo Surveys

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for Amargosa Canyon and Willow Creek, Inyo County, California. Prepared for the Bureau of Land Management, Ridgecrest Field Office, Ridgecrest, California. Southern Sierra Research Station. Weldon, California.

U.S. Forest Service. 2002. Draft report: Least Bell's Vireo and Willow Flycatcher Surveys for the Bureau of Land Management, Ridgecrest Field Office, Ridgecrest, California. Southern Sierra Research Station. Weldon, California.

4.1.6 Wetlands/Riparian Zone

There would be few direct impacts to the riparian zone from development of the trailhead. The trailhead is located primarily on a previously disturbed upland site (the T&T railroad berm), above the riparian zone. There would be few direct impacts to the riparian zone from construction and subsequent use of the majority of the trail because it is mostly outside the riparian zone. There would be minor negative impacts to the riparian zone where the trail enters the zone, especially along Willow Creek and where the trail must enter the riparian zone because of topography or where it crosses the river. It is estimated trail construction along Willow Creek would result in the loss of riparian plants in a 36" wide path for perhaps 400 yards. The trail would provide a corridor for larger wildlife such as coyote, fox, badger, skunk and bobcats.

4.1.7 Wild and Scenic Rivers

There would be a positive impact to the outstandingly remarkable values (ORV) associated with the designated segments of the Wild and Scenic Amargosa River since recreation is an identified ORV. People have a very positive experience sitting on the banks of a free flowing river deep in the desert. The proposed action would also have the positive benefit of enhancing public use of the trail on the T & T railroad grade. Negative impacts to visual, biological and cultural ORVs would be minimized or avoided by implementation of the mitigation measures listed below. There would be no impact to the river's free flowing values, in fact, removal of tamarisk may increase flows within the river system.

In wilderness the trail narrows to a footpath and runs along the T&T most of the way. Proposed work here consists of building rock cairns, trimming unavoidable vegetation growing in cuts, and clearing rock fall or debris blocking the path. This would occur above the active drainage. The proposed work along the river bank consists of cutting in footsteps and trimming vegetation to clear a narrow foot path. The steps/path would be carved into the bank above the high water mark on a ledge. A small amount of displaced soil would be leveled. The small amount of trimming would be insignificant. Therefore, these actions would have no impact to the free flowing river or water quality.

Wild and Scenic River Section 7 Determination:

The proposed action will clear a footpath for human travel along the bank of the Amargosa River, in a segment with the WSR wild classification. Clearing a narrow footpath that contours with the river is compatible with management goals for the canyon, the river, the ACEC and

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wilderness. This action was evaluated for potential impacts to the national wild and scenic Amargosa River, in conformance with the requirements of the Wild and Scenic Rivers Act. Based on the above environmental analysis of the proposed project, the work would result in several beneficial effects to the Outstanding Remarkable Values listed below. There would be negligible effects to river water quality and the conditions of free flowing. To avoid impacts mitigation measures require all cuttings, soil and loose material to be deposited above the high water mark.

Wildlife and Plants: The occurrence of state and federally listed endangered species such as the Amargosa Vole, Least Bells Vireo, Southwestern Willow Flycatcher, Yellow-billed Cuckoo, Swanson's Hawk, Amargosa Pupfish, Amargosa Speckled Dace, and Amargosa Niterwort.

Geologic: Nothing in the proposed action would change or modify this value.

Cultural: The limited work area and the review of the project site that has been completed will not impact any of the outstanding cultural resources in the area.

Historic: The proposed action will increase knowledge and experience for the visitor to the railroad and the route of the Old Spanish Trail. The project would not impact any of the sites associated with these values..

Recreational: The improvement of the trail head, trail foot bed, and access to the outstanding resources would result in a positive impact to recreational uses. The construction period would occur during times of low visitation, further reducing any impacts to visitors.

Wilderness: By utilizing primitive tools and techniques, the proposed action would not eliminate or impact the characteristics of the wilderness experience.

Based on the limited scope of the project and the use of primitive tools the impacts to the Outstanding Remarkable Values would be minimal and mostly beneficial. In conclusion, the project as proposed would not result in direct and adverse effects to the values for which the river was added to the national system.

4.1.8 Wilderness

The proposed action would construct and improve trail segments located within designated wilderness. The construction would include using hand tools for trail improvement and vegetation trimming. Although all the construction would take place within the wilderness, using primitive methods of construction would not deter from the overall wilderness experience. Additionally, the work would be completed outside of the nesting season for listed bird species and therefore would not impact visitors or scientific research. Over all the direct impacts to wilderness would be minimal based on the limited nature of the work. Indirect impacts would be minimized by the use of primitive tools and methods along with timing the work to avoid high visitation periods.

4.1.9 Mitigation Measures

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General

1. Vehicle traffic associated with this project will be confined to existing designated open routes; parking will be confined to existing previously disturbed areas. All public vehicle use for accessing the trail will be restricted to the designated trailhead.
2. None of the vegetation trimmings or loose soil from the trail work are to be pushed or tossed into the river. Cuttings, soil and loose materials are to be deposited above the high water mark. Leave all work appearing natural.
3. The trailhead will be signed with the message “Pack it in – Pack it out.”
4. Where topography allows, surface disturbances shall be minimized to take advantage of natural terrain. All trail cuts will be left with a running out-slope of at least 15% to minimize erosion. Rolling dips will also be used to control erosion.
5. Low height trail signs will be used to minimize visual impacts. The top height is not to exceed 24” for trail markers. Interpretive signs are to be placed to avoid silhouettes. No trail signs will be placed in wilderness.
6. To the extent possible, grading clearing, grubbing, or the placement of boulders, signs and barriers, shall be constructed/placed to minimize impacts to perennial vegetation.
7. All Trail work and maintenance shall occur within the designated time period to avoid impacts to nesting birds. Project lead shall coordinate trail construction, rehab, brush clearing and similar work shall occur outside the March 15 to September 15 period when listed birds may be foraging or nesting in the area or based on the opinion of the Barstow Field Office Biologist.
8. There shall be minimal removal of live trees, except seedlings in tread and selected tamarisk, during trail projects. Selective removal of tamarisk will follow guidance of BLM to avoid cutting or disturbing likely nest sites

Cultural Resources

1. Project participants will be advised that, as property of the United States, no person may, without authorization, excavate, remove, damage, or otherwise alter or deface any historic or prehistoric site, artifact, or object of antiquity located on public land in accordance with the Archaeological Resources Protection Act of 1979.
2. Any cultural resource (historic/prehistoric site or object) discovered on or below the surface during the proposed action shall immediately be reported to the Area Manager. All operations in the immediate area of the discovery shall be suspended until written authorization to proceed is issued. An evaluation of the discovery shall be made by a qualified archaeologist to determine appropriate actions to prevent the loss of significant cultural values. Section 106 consultation may be initiated with the State Historic Preservation Officer.
3. Protocol - Discovery of Human Remains in California

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All discovered human remains shall be treated with respect and dignity. California state law (California Health & Safety Code 7050.5) and federal law and regulations ([Archaeological Resources Protection Act (ARPA) 16 USC 470 & 43 CFR 7], [Native American Graves Protection & Repatriation Act (NAGPRA) 25 USC 3001 & 43 CFR 10] and [Public Lands, Interior 43 CFR 8365.1-7]) require a defined protocol if human remains are discovered in the state of California regardless if the remains are modern or archaeological.

Upon discovery of human remains in California, all work in the area must cease immediately, nothing disturbed and the area is to be secured. The County Coroner's Office of the county where the remains were located must be called. The Coroner has two working days to examine the remains after notification. The appropriate land manager/owner or the site shall also be called and informed of the discovery. If the remains are located on federal lands, federal land managers/federal law enforcement/federal archaeologist are to be informed as well because of complementary jurisdiction issues. It is very important that the suspected remains and the area around them remain undisturbed and the proper authorities called to the scene as soon as possible as it could be a crime scene. Disturbing human remains is against federal and state laws and there are criminal/civil penalties including fines and/or time in jail up to several years. In addition, all vehicles and equipment used in the commission of the crime may be forfeited. The Coroner will determine if the bones are historic/archaeological or a modern legal case.

Modern Remains

If the Coroner's Office determines the remains are of modern origin, the appropriate law enforcement officials will be called by the Coroner and conduct the required procedures. Work will not resume until law enforcement has released the area.

Archaeological Remains

If the remains are determined to be archaeological in origin and there is no legal question, the protocol changes depending on whether the discovery site is located on federally or non-federally owned/managed lands.

Remains discovered on federally owned/managed lands: After the Coroner has determined the remains are archaeological or historic and there is no legal question, the appropriate Field Office Archaeologist must be called. The archaeologist will initiate the proper procedures under ARPA and/or NAGPRA. If the remains can be determined to be Native American, then the steps outlined in NAGPRA, 43 CFR 10.6 Inadvertent discoveries, must be followed.

Remains discovered on non-Federally owned/managed lands: After the Coroner has determined the remains on non-federally owned/managed lands are archaeological and there is no legal question, the Coroner will make recommendations concerning the treatment and disposition of the remains to the person responsible for the excavation, or to his or her authorized representative. If the Coroner believes the remains to be those of a Native American he/she shall contact by telephone within 24 hours, the California Native American Heritage Commission (NAHC). The NAHC will immediately notify the person it believes to be the most likely descendent of the remains. The most likely descendent has 48 hours to make recommendations to the land owner for treatment or disposition of the human remains. If the descendent does not make recommendations within 48 hours, the land owner shall reinter the remains in an area of the property secure from further disturbance. If the land owner does not accept the descendent's recommendations, the owner or the descendent may request mediation by the NAHC.

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4.1.10 Residual Impacts

Amargosa ACEC, Wild and Scenic River, and wilderness

Regardless of the intent of plans, the number of signs, or the legal use restrictions, some people will continue to violate rules and to do what they want. There would likely be some inappropriate human use of the canyon. There could potentially be minor negative residual impacts associated with off trail hiking, off highway vehicles (motorcycles), shooting, littering, vandalism and destruction of natural resources. These impacts would likely occur at a manageable level in the canyon because of its remote location and the difficulty to get there.

Cultural Resources

Increased access to the Amargosa Canyon area could potentially result in the discovery and theft of prehistoric and historic remains. Such negative impacts may be partially mitigated by interpretive and educational materials associated with the signage.

General Vegetation

Some amount of native vegetative injury/mortality would likely occur after implementing applicable mitigation measures. Vegetative injury and loss would most likely occur at the river crossing and the approaches. There would likely be the loss of a few unavoidable plants while the new segments are built.

General Wildlife

The proposed improvements would concentrate visitors on a single path and reduce the potential for likely disturbances from visitors making multiple paths into the canyon. However, not all impacts can be mitigated. Some temporary/permanent displacement of raptors and neo-tropical migratory birds would likely occur away from the maintained trail.

Invasive Species

There would be an opportunity for invasive weeds to colonize along the trail as a result of surface disturbances. Visitors to the area come from all over the world and could potentially introduce invasive seeds by their presence. However, any species that could potentially be introduced by foot traffic is far more likely to be carried into the canyon by the river. The river drains a large watershed to the north transected by several highways and numerous settlements and these developments provide opportunities for the spread of invasive species.

T & E Species

The southwestern willow flycatcher and least Bell's vireo (birds) would potentially be affected directly and/or indirectly by continuation of the proposed construction and management scheme, time restriction on construction and maintenance activities would minimize those effects.

Water Quality

There might continue to be increased amounts of sediment transport introduced into the river from the compacted surface of the hiking trail. The level of sediment transport resulting from the proposed hiking trail is insignificant when compared to sediment transport from the watershed from precipitation events and would be minimized through trail maintenance activities.

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Wetlands/Riparian Zones

There would not likely be any residual impacts to the riparian area from implementing the proposed action. The proposed developments consist of clearing a trail and constructing a foot crossing over the river. The proposed action encourages visitors to hike on a defined trail so that effects on the riparian areas of Willow Creek and the Amargosa River would be limited. No reasonably foreseeable residual impacts to the riparian zone would result from passive recreation use of the canyon, made possible by access on the trail.

Wild & Scenic River

There would be no long-term impacts to the free flowing values of the river; in fact the free flowing values would likely be enhanced by removal of tamarisk. Neither would there be only minimal negative impacts to the outstandingly remarkable values associated with the river. In the long term, providing public access into the canyon would allow the public to enjoy a national treasure and thus enhance the recreational ORV. The positive benefits to be realized from this would include recognition of the value of free flowing rivers. This may lead to increased indirect support for the protection of the Amargosa watershed and the WSR Act. It is extremely unlikely impacts from human use of the trail on the river would be long lasting. One large good high flow event would likely erase all signs of previous human use.

Public benefits derived from the proposed action include personal experiences. The only way to get into the canyon is to hike. Once here people realize they are in a relatively undisturbed setting. The canyon appears today much as it did thousands of years ago. People come here today for the same reason they have for thousands of years. There is water here, and it is free flowing in an undisturbed state. By getting here under their own power, and experiencing the natural free flowing river, people will experience feelings of personal accomplishment. They will pride themselves in seeking out and finding this jewel in the desert. They will feel comfortable with the knowledge that there are places like this. People will likely feel better about themselves and their world long after they leave the canyon. They are likely to have an increased appreciation for managing public lands in a natural state. They may feel an increased sense of self-accomplishment and security in knowing their limits.

4.1.11 Cumulative Impacts of Alternative A – Proposed Action

Increasing access to the Amargosa Canyon area could potentially result in the discovery and theft of prehistoric and historic remains. Such negative impacts to cultural resources may be partially mitigated by interpretive and educational programs. There would be the long-term loss of plants in the direct path of the trail. There would be fewer direct long-term impacts to wildlife by limiting trail segments in the riparian area. There would also be fewer intrusions into inappropriate areas if the proposed action is implemented. The new trail segments have been designed to minimize impacts to sensitive desert resources. There would be long-term positive benefits to the public seeking remote recreation experiences by providing access to the canyon both to the north and south.

4.2. Alternative B – No Action

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The no action alternative would likely result in increased uncertainty about long-term public access to the mid and upper canyon reaches because there are few alternatives. Absent access from the China Ranch at mid-canyon visitors seeking to visit the canyon or see the river would have difficulty. Choices to access the canyon would be limited to parking along China Ranch Road (public road before entering private land) or in Tecopa. Efforts to develop a trailhead at the north end in Tecopa would continue independently. Plans are approved for a basic parking & hiking trailhead on the west side of the river in Tecopa. The site is on public land adjacent to the paved road and close to the river. However, funding has not been secured. There would continue to be access from the far south end from the Sperry Wash Route, although this is limited to visitors with 4wheel drive capabilities.

The trail segment providing handicap access to the canyon vista would not be developed, nor would the proposed trailhead amenities and signing. If the trailhead and trail work would not be completed it is unlikely the grant agreement could be amended to only do the work on invasive plant removal and bird monitoring. Based on previous experience, without an increased BLM enforcement presence, it is likely visitors knowledgeable with the area would blaze their own trails into the canyon. This was the case up until the late 1990s when the BLM began to formally manage the trail. Visitors used mechanized equipment and hand tools to build and maintain the trail from the private land. This action would likely result in negative impacts because the visitors would not be constrained by mitigating measures or concerns for natural resources.

4.2.1 Areas of Critical Environmental Concern (ACEC)

The no action alternative would likely result in a setback for long term plans to manage the Amargosa River ACEC. This would likely require re-scoping on-going work for trail maintenance and tamarisk removal. Adjustments would be required in planning efforts for the Amargosa ACEC, the wild & scenic river, and the Old Spanish National Historic Trail. On-going strategies for managing sensitive natural & cultural resources in the canyon would be reviewed. Funding would likely continue to remain available through the state trails grant program and park bond acts

4.2.2 Cultural Resources

Current access to the Amargosa Canyon area could potentially result in the discovery and theft of prehistoric and historic remains. Such negative impacts may be partially mitigated by interpretive and educational programs and site monitoring.

4.2.3 Vegetation

In the no action alternative there would likely be greater impacts to vegetation as in the proposed action alternative. This is because visitors to the canyon have a long history of clearing the trail without authorization. If no formal action is taken to ensure public access it appears likely visitors knowledgeable with the canyon would do so on their own using the equipment and

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method of their choice. Some amount of native vegetative injury/mortality would occur without applicable mitigation measures. Vegetative injury and loss would occur along new paths chosen.

4.2.4 Recreation

Selection of the No Action alternative would leave the existing trail in its current condition without the necessary improvements to provide safe and reliable access to the wild and scenic river area. The no action would not improve the opportunities for recreation and without other modifications to this segment of trail, may reduce the public's access to the outstanding characteristics located within the area.

4.2.5 Threatened and Endangered Species

General Wildlife:

In the no action alternative the potential impacts to wildlife are similar to those in the proposed action, although the area south of the confluence might experience less human activity. Based on previous public behavior, though, it is most likely visitors will blaze their own trail, or re-establish the previous user defined trail. In such a case there could be inappropriate destruction and cutting of vegetation comprising habitat for special status and sensitive species. If the no action alternative is implemented subsequent plan actions might address this issue. Therefore, potential negative impacts that result from the no action alternative could be short lived and addressed within a couple of years, again assuming that BLM resources were available.

Invasive Species:

If no action is taken there would be negative impacts because no invasive plant removal would be done through this project. The ongoing invasive removal program being conducted along the Amargosa River would continue, but would be incrementally set back by exclusion of this funding source.

T & E Species:

There could be minor negative direct and indirect impacts to special status species if the no action alternative is implemented. The ongoing sensitive bird monitoring program being conducted along the Amargosa River would continue, but would be incrementally set back by exclusion of this funding source. Direct impacts could result from visitor's un-wittingly altering or destroying habitat while engaged in unauthorized trail construction or maintenance. The same impacts that would occur from implementing the proposed action would also likely occur from visitors finding their own way into the southern end of the canyon but on a more widespread and uncontrolled manner.

4.2.6 Wetlands/Riparian Zone

There would not likely be long term direct impacts to the riparian zone from implementing the no action alternative. There could be minor negative impacts to the riparian zone if visitors make a new unauthorized trail in the riparian zone, largely short-term impacts easily erased by

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recurrent flood events. There would be a significant negative impact on the public's opportunity to experience the riparian zone if the no action alternative is implemented. The potentially reduced visitation would create a minor positive benefit for the riparian zone as a whole, even if temporary.

4.2.7 Wild and Scenic Rivers

The no action alternative would likely have negative impacts to the free flowing values of the river, since tamarisk would increasingly choke off flow in the river. There would be a significant negative impact to the associated outstandingly remarkable recreation value of hiking, scrambling and exploring in the canyon to see the river. The southern canyon contains a large volume of free flowing water, spectacular scenic values, the densest riparian growth and the highest concentration of wildlife associated with the river

4.2.8 Mitigation Measures for the No Action Alternative

Continue to implement the 1983 Amargosa Canyon Natural Area ACEC Management Plan, to be superseded by the Joint Wild and Scenic River/ACEC Management Plan.

4.2.9 Residual Impacts for the No Action Alternative

Negative impacts could result from visitors creating their own access from the existing Amargosa River trail into the south end of the canyon. There could be an increase in the incidence of trespass and an increase in unauthorized trail building, especially if the owners of China Ranch decided to restrict access. And there could be an increase in non-permitted activities from groups accessing the canyon on their own.

Cultural Resources:

Current access to the Amargosa Canyon area could potentially result in the discovery and theft of prehistoric and historic remains. Such negative impacts may be partially mitigated by interpretive and educational programs.

General Vegetation:

If the public does not create their own trail access into the canyon there would be no residual impacts to vegetation by implementing the no action alternative. If the public does build an unauthorized trail there would be direct mortality to those plants removed during construction, with likely no available mitigating measures. Action would, however, likely be taken to inform the public through educational programs and site monitoring.

General Wildlife:

The potential residual impacts to wildlife are similar to those that would affect vegetation.

Invasive Species:

Current monitoring actions for invasive species would continue, but no funding would be available to eradicate tamarisk.

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T & E Species:

In the no action alternative is implemented the residual impacts to T & E species would be similar to those affecting wildlife and vegetation, with the exception that no funding would support monitoring the presence of listed bird species. There would not likely be any direct or negative residual impacts to T & E species if the no action alternative is implemented. Existing plans would be implemented for the protection of special status species.

Water Quality:

There would be no residual impacts from the no action alternative.

Wetlands/Riparian Zones:

The potential impacts to the riparian zone in the no action alternative are similar to those that would affect wildlife and vegetation.

Wild & Scenic Rivers:

There would be no residual impacts affecting the free flowing or outstandingly remarkable values of the river. There could be a negative residual impact to the outstanding remarkable recreation value resulting from the long term loss of hiking opportunities in the canyon.

4.2.10 Cumulative Impacts Analysis of the No Action Alternative

“Cumulative impacts” are those impacts resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions.

If no action is taken, and access is still not available from the north, there would be a greatly increased level of uncertainty for long-term public use of the canyon. The only remaining convenient public access would be from the China Ranch. This access could be limited by the owners at any time without the access provisions of the proposed action. As a result, members of the public familiar with the canyon would continue to attempt to find their own way into the canyon, resulting in on-going trespass in both Tecopa and Tecopa Heights. Furthermore, agency staff would have difficulty accessing the canyon to monitor, assess or work on resources. There would overall be a severe negative impact on public recreation from the loss of trail opportunities in the Amargosa Canyon, including handicap access.

4.3 Alternatives C – No Trail Improvement in Wilderness

4.3.1 Areas of Critical Environmental Concern (ACEC)

Overall, the Alternative C would likely result in similar outcomes for ACEC values as the proposed. The construction of the proposed new trailhead and trail amenities (shaded picnic tables, vault toilet, and information kiosks) would have negligible impacts on the values managed in the ACEC since that work takes place outside wilderness.

4.3.2 Cultural Resources

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Prehistoric and Historic Resources:

The Class III survey indicated that no resources would be affected by the proposed action and since Alternative C would only reduce the potential for impacts to cultural resources the effects would be reduced by the scale of the work.

4.3.3 Vegetation

General Vegetation:

As with the proposed action, Alternative C would require cutting some vegetation to establish the trail, primarily mesquite, arrow weed, and quail brush. However, since tamarisk would also be removed from a significant riparian portion of the trail, the proposed action would have offsetting, strongly positive effects on vegetation in the area as a whole —by allowing native riparian plants to reestablish. Minor impacts, consisting of annually trimming vegetation, would be conducted along the trail and at the site of the new river foot crossing, plus the approaches.

The vegetative communities and plant species at sites of proposed work would be directly and indirectly impacted by the activities associated with implementing Alternative C are similar to the Proposed Action. Directly, some minor vegetative loss, disturbance, and/or mortality would occur from the construction of the improved parking area, vehicle barriers, trail amenities and signs and trail segments on private land at China Ranch. The vegetative loss/mortality would be reduced based on the reduction in the scope of action. Indirectly, the possibility of a vegetative community type conversion could occur from weed establishment as a result of soil disturbance. There is a slight possibility that this alternative could result in permanent and/or temporary tamarisk invasion in limited areas, but this would be more than offset by eradication efforts.

Invasive Species

Tamarisk, (*Tamarix ramosissima*) is the invasive weed of greatest concern within the ACEC/WSR. As with the proposed action, Alternative C includes some removal of Tamarisk within the project area. The impacts of Tamarisk removal have been reviewed in a separate analysis and this proposed action will not modify those requirements. Any removal of invasive plants will be done in accordance with the stipulations contained in the previous analysis. Athel tree (*Tamarix aphylla*) is not considered an invasive species, but causes problems at spring sites due to the extreme water use.

4.3.4 Recreation

The improvement of the existing trail system will result in increased access to prime scenic and recreational resources. As with any increase in visitation to an area, concerns arise from over use, OHV intrusion, trail braiding and other indirect impacts. However, properly improved trails should help eliminate further erosion on the trail, forcing hikers into other area. In all the proposed action would improve access and enjoyment of the existing recreational resources in the area. However in Alterantive C, the reduction in the scope of the trail improvements will limit the public's access to the area. Without the extension of the trail into designated wilderness, some of the resources would be difficult and possibly unsafe to try and reach.

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Limiting the public's access to the outstanding values of the wild and scenic river would result in impacts to the visitation and overall experience.

4.3.5 Threatened, Endangered, Candidate or Special Status Animal Species

As in the proposed action, impacts to all vegetation and wildlife would be reduced by the scope of the project. By reducing the length of the trail improvements, the resulting reduction in impacts to all species would likewise be reduced.

4.3.6 Wetlands/Riparian Zone

As with the proposed action, Alternative C would result in limited direct impacts to the riparian zone from development of the trailhead. The trailhead is located primarily on a previously disturbed upland site (the T&T railroad berm), above the riparian zone. There would be few direct impacts to the riparian zone from construction and subsequent use of the majority of the trail because it is mostly outside the riparian zone. There would be minor negative impacts to the riparian zone where the trail enters the zone, especially along Willow Creek and where the trail must enter the riparian zone because of topography or where it crosses the river. It is estimated trail construction along Willow Creek would result in the loss of riparian plants in a 36" wide path for perhaps 400 yards. Since the majority of the direct impacts occurs along Willow Creek, Alternative C would result in the same impacts to wetland and riparian zones.

4.3.7 Wild and Scenic Rivers

Since Alternative C removes any trail improvements in the project, all positive and negative effects of the action would be removed. Both the beneficial and negative impacts would be removed based on the Alternative C limitations.

4.3.8 Wilderness

The proposed action would construct and improve trail segments located within designated wilderness. The construction would include using hand tools for trail improvement and vegetation trimming. Although all the construction would take place within the wilderness, using primitive methods of construction would not deter from the overall wilderness experience. Additionally, the work would be completed outside of the nesting season for listed bird species and therefore would not impact visitors or scientific research. Over all the direct impacts to wilderness would be minimal based on the limited nature of the work. Indirect impacts would be minimized by the use of primitive tools and methods along with timing the work to avoid high visitation periods.

4.3.9 Mitigation Measures

All of the mitigation measures required in the Proposed Action would apply to Alternative C.

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4.1.10 Residual Impacts

Residual impacts of Alternative C would be the same as the Proposed Action except for the reduction in the scope of the project. Additionally the residual impacts may lead to more trail abuse and braiding as the trail within designated wilderness continues to deteriorate and therefore causing users to seek alternative routes. These impacts will also be detrimental to the qualities within the Wild and Scenic River corridor that may eventually impact the free flow of the river.

4.1.11 Cumulative Impacts of Alternative C

The cumulative impacts of Alternative C are similar to the Proposed Action with a reduction in overall impacts based on the limitation of the trail improvements to areas outside designated wilderness.

5.0 Personal and Agencies Consulted

From the BLM Barstow Field Office:

Brad Mastin, Outdoor Recreation Planner
Tim Williamson, Wilderness Specialist
Jim Shearer, Archeologist
Chris Otahal, Wildlife Biologist
Anthony Chavez, Range Conservationist
Jeffery Childers, Recreation Branch Chief - Acting